Examining the Association between Trust Perceptions and Suicide Approval: A Sociological Analysis

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Abstract

Sociology has become a minor player in the study of suicide, with previous analyses tending to focus on how structural aspects of social relationships are implicated in suicide risk. By contrast, less attention has been given to how individuals perceive their social relationships. This PhD attempts to address this oversight by examining how perceptions of trust in key social groups are associated with suicide approval, a proxy measure for suicide risk. Drawing upon existing sociological and psychological theory, trust is conceptualised as a multidimensional construct that can have different consequences for suicide risk depending on whether it is invested in more intimate or distant relationships. These ideas are empirically tested through an analysis of data from waves 6 and 7 of the World Values Survey, covering 243281 individuals across 102 countries. Measures of trust are developed by applying exploratory factor analysis to items on trust in six different groups. Results point toward two latent dimensions of particular trust (trust in neighbours and personal acquaintances) and general trust (trust in strangers, religious outgroups and national outgroups), with family trust forming a standalone item. These three trust measures are then used to predict suicide approval as part of a Bayesian multilevel model. On average, family and particular trust are found to be negatively associated with suicide approval whereas general trust is found to be positively associated with this outcome. In turn, these associations are shown to vary in magnitude across countries, suggesting they are influenced by contextual factors. It is concluded that trust perceptions may be relevant for explaining suicide risk and could have different consequences for this outcome depending on the type of relationship in which trust is embedded.

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Author’s Declaration

I declare that, except where explicit reference is made to the contribution of others, that this dissertation is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.

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Chapter 1 – Introduction

Suicide remains a significant public health issue in contemporary societies. According to the most recent estimates from the World Health Organisation (WHO 2024), over 720,000 people die by suicide each year. Worryingly, this figure only represents the tip of the iceberg; for every suicide there is an estimated 20 suicide attempts and an even larger number who think about or make plans to end their life (Klonsky *et al.* 2016; WHO 2024). All countries around the world are affected by suicide, with suicide rates tending to be larger in high-income countries but 73% of suicides occurring in low- and middle-income countries (Klonsky *et al.* 2016; WHO 2024). For each suicide, there is a potentially greater number of family, friends and members of the community who are afflicted by grief and left to suffer in silence due to the lingering stigma that is attached to suicide (Abbott and Zakriski 2014, pp.668-9; Kawashima *et al.* 2022, pp.1259-61). Given these alarming figures, there is an urgent need to better understand the factors that give rise to or protect against suicidal thoughts and behaviours with the aim of advancing prevention efforts.

The current PhD endeavours to contribute to this goal by examining the link between relationship perceptions and suicide risk from a sociological perspective. Specifically, the PhD is concerned with how perceptions of trust in key social groups are associated with a unique indicator of suicide risk – approving attitudes toward the act of suicide. By investigating this issue, the PhD hopes to identify additional factors that policymakers, educators and clinicians may act upon to reduce the number of lives lost to suicide.

The purpose of this introductory chapter is to situate the current PhD within the wider literature on suicide. The chapter begins with a review of sociology's position in the field of suicidology, highlighting how sociology has come to be a minor player in suicidology and what may be done to remedy this state of affairs. In particular, it is argued sociologists need to engage with psychological work on suicide and a focus on relationship perceptions represents a suitable starting point for this task. A case is then made for studying perceptions of trust based on existing evidence for their connections with suicide and the need to develop this body of work. Having outlined the main concerns of the project, the chapter proceeds to elaborate on the indicator of suicide risk that forms the main outcome variable – suicide approval – as it is less established than measures of suicidal thoughts and behaviours proper. The chapter concludes with a summary of the project aims and how these will be addressed over the course of the remaining chapters.

The Sociology of Suicide

The study of suicide occupies a peculiar place in the history of sociology. It is common knowledge among sociologists that Durkheim's book on the subject, *Suicide* (2002 [1897]), was not only one of the first to analyse suicide rates from a sociological perspective; his work is generally regarded as a sociological classic, having been instrumental in establishing the discipline and promoting the use of quantitative methods for studying social phenomena (Taylor 1982, p.22; Pickering and Walford 2000, p.1; Fincham *et al.* 2011, p.7). Yet, aside from a brief spell of works published in the latter half of the 20th century, the study of suicide has since become a minor focus within sociology (Fincham *et al.* 2011, p.7; Wray *et al.* 2011, p.506; Mueller *et al.* 2021, p.2). For example, Wray *et al.* (2011, pp.511-2) examined the

percentage of articles on suicide published in four major sociology journals from 1990-2009, finding that this never exceeded 3% and typically fluctuated around 1%. This low engagement with the problem of suicide is reflected in sociology's contribution to suicidology as whole, with Fincham *et al.* (2011, p.27) citing figures that, from over 300,000 articles published on suicide from 1980, only around 400 could be classified as sociological. It would seem little has changed since, and as Abrutyn and Mueller (2021, p.522) note, sociologists continue to be "outsiders" in the broader field of suicidology. This is unfortunate as sociology has much to contribute to the study of suicide. The key advantage of a sociological approach is that it highlights how a deeply personal act such as suicide remains fundamentally social, being influence by the individual's relationships and their constituent norms and practices (Fincham *et al.* 2011).

There are perhaps two main reasons why sociology has contributed less to suicide research in recent years. First, as several researchers have argued, suicidology as a profession is largely dominated by psychology and psychiatry, which tend to individualise human behaviour and champion a biomedical understanding of suicide as a product of mental pathology (Hjelmeland and Knizek 2020; Abrutyn and Mueller 2021, p.2; Chandler and Wright 2023). Indeed, a commonly cited but heavily disputed statistic from psychological autopsy studies is that mental illness is implicated in over 90% of suicides (Joiner *et al.* 2016, p.242). Within this framework, the primary strategy for addressing suicide is to modify the individual's distorted thoughts (White 2017, p.474), thereby directing attention away from wider social structures and fostering "a perception that one needs to be a psychiatrist or psychologist to be able to prevent suicide" (Hjelmeland and Knizek 2017, pp.488-9). To some extent, this characterisation of suicidology is overexaggerated and it is important to acknowledge that more recent perspectives understand suicide as resulting from a mixture of biological, psychological and social factors (O'Connor and Kirtley 2018). Nevertheless, given the current state of suicidology, explanations of suicide that focus on the individual's social relationships and cultural context may be given lower priority compared with psychological theories.

It is also possible that the response of social scientists working outside this dominant framework has only served to reinforce the status quo. A number of researchers (McDermott and Roen 2016; Hjelmeland and Knizek 2020; Chandler and Wright 2023) have adopted a highly critical stance toward mainstream suicidology, advocating for more qualitative research that challenges the biomedical paradigm by exploring the complex and socially situated meanings individuals assign to suicide. While this line of research has tremendous value and provides a much needed counterweight to the more psychologically oriented agenda of mainstream suicidology, Wray *et al.* (2011, p.511) caution that such a confrontational approach may further marginalise the voices of sociologists in academic discussions of suicide. The authors note that psychologists, biomedical researchers and public health scholars have made extensive efforts to pursue an interdisciplinary approach to suicide, helping to generate new insights and produce a more holistic understanding of the causal mechanisms underlying suicidal behaviours (Wray *et al.* 2011, p.511). Thus, by rejecting the agenda of mainstream suicidology outright, sociologists may be missing opportunities to learn from and add to this important body of work (Wray *et al.* 2011, p.511), further cementing our position as outsiders. In turn, this may work against what should be our

primary objective in studying suicide: enhancing our understanding of suicide and preventing death.

The second reason sociological research into suicide has progressed little in recent years is related to the lingering influence of Durkheim's original study on the field. According to Taylor (1982, pp.22-3), the sociologists following on from Durkheim in the 20th century were struck by the extent to which his findings were replicated over time, leading them to conclude that Durkheim was largely correct and stifling efforts at theoretical innovation. Where theoretical developments did occur, these were usually concerned with clarifying concepts that were poorly defined in *Suicide* and using them to deduce additional propositions concerning suicide rates (e.g., Gibbs and Martin 1971). Of course, it would be misleading to claim that all aspects of *Suicide* have been supported; indeed, such a conclusion can only be based on a partial reading of Durkheim's work that fails to critically engage with problematic assumptions underpinning his analysis, such as his sexist reading of suicide statistics (Canetto 2008, pp.260-1) and uncharitable dismissal of imitation theories (Abrutyn and Mueller 2014b, p.702). Furthermore, recent research demonstrates that his arguments around poverty, imitation, and religion are in need of revision (Pescosolido and Georgianna 1989; Stack 2000a; Baller and Richardson 2009; Iemmi *et al.* 2016; Platt 2016; Abrutyn *et al.* 2019).

Nonetheless, it remains the case that sociological work on suicide in the 21st century continues to draw upon Durkheim (Fincham *et al.* 2011, p.28; Mueller *et al.* 2021, p.4), with many researchers having attempted to refine Durkheim's ideas by combining them with insights from other theoretical perspectives (e.g., Pescosolido and Georgianna 1989; Fincham *et al.* 2011; Abrutyn and Mueller 2014c). It would therefore seem that Durkheim's legacy in the sociology of suicide is more mixed than Taylor (1982) initially suggested; while Durkheim's study may have inhibited progress in the field at first, the surfacing of anomalous findings has helped to destabilise his authority and encouraged new lines of inquiry that seek to build upon his work.

From this overview of sociology's position in the field of suicidology, we can draw two conclusions about how to advance sociological research into suicide. First, although it is important for sociologists to remain critical of mainstream suicidology, it is equally essential that we maintain an open dialogue with psychology and related disciplines; where possible, we should seek to integrate findings across disciplines to arrive at a more nuanced understanding of suicide that takes account of biological, psychological and sociological processes. In other words, we need to properly engage with suicide as a biopsychosocial phenomenon. Fortunately, there seems to be a number of avenues for synthesising sociological and psychological insights on suicide. As Abrutyn and Mueller (2021, p.523) highlight, the Interpersonal-Psychological Theory (IPT) of suicide is partly inspired by Durkheim's concept of egoistic suicide through its construct of thwarted belongingness; likewise, the 3-Step Theory (3ST) grants a central role to relationships in preventing suicide (Klonsky *et al.* 2021, p.4) while a key premise of the Integrated-Motivational-Volitional Model (IMV) is that suicide results from a complex interplay of genetic vulnerabilities, psychological processes and features of the social environment (O'Connor and Kirtley 2018). Sociology is therefore well poised to traverse disciplinary boundaries and may benefit from incorporating elements of psychological theory into its understanding of suicide. As such, this PhD will attempt to engage with psychological theory to develop a more rounded perspective on how social relationships are implicated in suicide risk.

This, in turn, goes some way to addressing the second point – if sociological research into suicide is to move forward, we need to retain those aspects of Durkheim's theory that continue to be useful while revising them to better take account of existing evidence. Indeed, perhaps the key reason sociologists have returned to Durkheim's work for understanding suicide is that, despite its limitations, the core of his thesis – that the individual's relationship to the group has a direct bearing on their wellbeing and risk for suicide – remains valid and holds promise for suicide prevention (Abrutyn and Mueller 2014c, pp.327-8). This is at least the position adopted in this PhD; the notion that social relationships give life meaning and help to ground us in the world seems compelling and draws attention to processes that have been downplayed in subsequent theories. It is for this reason that aspects of Durkheim's theory will be incorporated into the current PhD and complemented with insights from other disciplines and schools of thought.

Relationship Perceptions and Suicide

One way to begin bridging the divide between sociological and psychological approaches to suicide is for researchers to pay closer attention to how the individual perceives their social relationships. To elaborate on this concept, it is helpful to borrow a distinction made in the social capital literature between structural and cognitive social capital. Structural social capital refers to social networks and the roles, rules and procedures that characterise them (Uphoff 1999, p.218). It can be seen as the more objective side of social relationships (Uphoff 1999, p.219) and is typically measured by asking respondents about their number of social contacts and the frequency with which they engage in social interaction (Harpham 2008). In contrast, cognitive social capital refers to the mental processes that underlie social relationships, such as values, attitudes and norms (Uphoff 1999, p.217). The latter can be seen as the more subjective side of social relationships (Uphoff 1999, p.218) and is commonly measured by inquiring about an individual's feelings of belongingness or trust (Harpham 2008). For Ehsan and De Silva (2015, p.1021), this means that structural social capital reflects the quantity of our social relationships whereas cognitive social capital reflects the quality of those relationships.

It is the cognitive side of social relationships that represents a promising starting point for advancing sociological understandings of suicide. Not only would a serious engagement with relationship perceptions bring sociology directly into the domain of psychology; it is precisely this aspect of social relationships that has been neglected in previous sociological studies of suicide (Abrutyn and Mueller 2016, p.60; Still 2021, p.134). As Taylor (1982) highlights, the reason for this oversight has its roots in Durkheim's *Suicide* and its reception by social scientists in the 20th century. While Durkheim analysed suicide rates in relation to structural factors such as marital status and family density, he was not interested in these variables themselves. Rather, as Taylor (1982, pp.8-9, 16-7) notes, Durkheim saw these variables as proxies for more complex social processes that could not be directly observed – i.e., different states of society that affect the individual from without and make their presence felt in emotion and attitudes. In other words, Durkheim's theory of suicide was also attentive to psychological aspects of social relationships, including feelings of group detachment and its effects on mood (Abrutyn and Mueller 2014c).

Nonetheless, Taylor (1982, p.9) claims it was precisely this account of suicide rates in terms of collective states that was abandoned by subsequent researchers; instead, researchers were more impressed with the correlations Durkheim recorded between suicide rates and structural variables. For Taylor (1982, pp.36-8), this initiated a stream of sociological research into suicide he describes as "externalistic"; that is, it attempted to explain variations in suicide rates by appealing exclusively to factors outside the individual, such as levels of urbanisation and unemployment rates. Despite making this claim in the 1980s, Taylor's assessment of the sociological literature on suicide continues to have relevance today, albeit with some notable exceptions (e.g., Maimon and Kuhl 2008; Still 2021). For example, sociological studies of suicide have continued to focus on factors such as marital status (Cutright and Fernquist 2004; Bálint *et al.* 2016; Kposowa *et al.* 2020), religious affiliation (Torgler and Schaltegger 2014; Moore 2015; Barranco 2016) and unemployment rates (Kõlves *et al.* 2013). In turn, where analyses of suicide informed by sociological theory have attempted to employ alternative measures, they continue to be centred around structural aspects of social relationships, such as a combination of the above factors (Tsai *et al.* 2014) or ecological-level measures of organisational density (Recker and Moore 2016).

In drawing attention to these limitations, no intention is made to dismiss the genuinely valuable work that has been accomplished; many of these studies test classical Durkheimian ideas in novel ways and interrogate their suitability for explaining suicide rates in diverse populations (e.g., Tsai *et al.* 2014; Barranco 2016). Nonetheless, while contributing to the Durkheimian framework, these studies continue to neglect how the perception of social relationships may be implicated in suicide. This is regrettable as relationship perceptions could potentially play a larger role in shaping suicide risk than the structural variables that have previously been studied. For example, two systematic reviews of the literature on social capital and mental health (De Silva *et al.* 2005; Ehsan and De Silva 2015) have reported that cognitive aspects of social relationships, such as feelings of trust, belongingness and cohesion, consistently exhibit protective effects against poor mental health outcomes; by contrast, results are more mixed regarding structural aspects of social relationships, such as participation in social clubs and voluntary work. Given that mental health conditions such as depression and alcohol/drug abuse are connected to suicide (Klonsky *et al.* 2016, p.312), we might expect subjective features of social relationships to have similar consequences for suicide risk.

Trust as a Relationship Perception

It has been argued that sociological analyses of suicide need to take greater account of relationship perceptions. To this end, this PhD will focus on a specific kind of perception – trust. While the definition of trust remains a matter of dispute (see Chapter 4), it can be broadly defined as a "belief that, at worst, others will not knowingly or willingly do [us] harm, and at best, that they will act in [our] interests" (Newton 2001, p.202). There are several reasons for studying trust in connection with suicide risk. First, a number of psychological and epidemiological studies have indicated that individuals who report greater trust in selected groups are less likely to report having thought about suicide (Economou *et al.* 2013; Yamamura 2015; Kim *et al.* 2017; Noguchi *et al.* 2017; Hill *et al.* 2019) or attempted suicide (Langille *et al.* 2012; Dykxhoorn *et al.* 2021). In turn, aggregate levels of

trust have been found to correlate negatively with suicide rates (Helliwell 2007; Kelly *et al.* 2009; Okamoto *et al.* 2013). Trust may therefore constitute a protective factor against suicide.

Second, trust can be viewed as a fundamentally interdisciplinary concept, having been an object of analyses across psychology (Mikulincer 1998; Hogg 2010), political science (Newton 2001; Uslaner 2002), sociology (Lewis and Weigert 1985; Robbins 2016) and public health (Kawachi *et al.* 2008; Campos-Matos *et al.* 2016). Thus, for the purposes of linking sociological and psychological insights on suicide, trust seems to provide fertile ground for synthesising these ideas.

Finally, it is important to study how trust beliefs relate to suicide risk as existing research on the topic presents a number of limitations. Previous quantitative studies have attempted to examine suicidal thoughts and behaviours in relation to two types of trust – particular and general trust. The defining characteristics of particular and general trust are examined in more depth in chapter 4. For the moment, particular trust can be defined as trust in known and specific others while general trust refers to trust in a broader array of non-specific groups or "most people". One problem with this body of work is that researchers have rarely been able to control for particular and general trust simultaneously, preventing us from understanding whether certain types of trust are more strongly associated with suicide risk. On the other hand, there are further limitations depending on the type of trust studied.

Particular Trust: Scope and Generalisability

Among previous quantitative studies of suicidal thoughts and behaviours, particular trust has featured as a predictor in at least five (Langille *et al.* 2012; Yamamura 2015; Noguchi *et al.* 2017; Hill *et al.* 2019; Dykxhoorn *et al.* 2021). While this collection of studies provides valuable information on the connections between particular trust and suicide risk, the operationalisation of particular trust and design of these studies prevent us from drawing reliable inferences.

First, findings from many of these studies are restricted to specific age-groups and populations, such as school children (Langille *et al.* 2012), adolescents in psychiatric care (Hill *et al.* 2019) and persons aged 65+ (Noguchi *et al.* 2017). Second, while two studies have been conducted with the general public (Yamamura 2015; Dykxhoorn *et al.* 2021), only Dykxhoorn *et al.* (2021) were able to assess the association between particular trust and suicidal ideation/attempts at the individual level. By contrast, Yamamura (2015) examined particular trust at the level of Japanese prefectures, making it unclear whether his findings would hold among individuals. Third, although one study utilised a trust measure that took account of the individual's trust in various groups (Hill *et al.* 2019), most only assessed suicidal thoughts and behaviours in relation to trust in neighbours (Yamamura 2015; Noguchi *et al.* 2017; Dykxhoorn *et al.* 2021), with a further study assessing trust in school peers (Langille *et al.* 2012).

Thus, existing quantitative evidence on the association between particular trust and suicide risk has limited generalisability and largely concerns trust in neighbours. The latter point is especially problematic as we might expect trust in family and friends to play an equal, if not larger role in shaping suicide risk, given that other studies have found family and friendship ties to be implicated in suicidal thoughts and behaviours (Maimon and Kuhl 2008; Benson *et al.* 2016; Zortea *et al.* 2019). To build upon existing findings, therefore, we need to employ

measures of particular trust that encompass more than trust in neighbours and examine how these measures correlate with suicide risk among the general population. This represents one goal of this PhD; as will be outlined in Chapter 5, the project intends to take advantage of existing survey data to develop a more comprehensive measure of particular trust and test its association with an indicator of suicide risk among a large, cross-national sample.

General Trust: Measurement Validity

Where previous studies of suicidal thoughts and behaviours have examined general trust, they have relied upon a standard survey question that, despite minor variations in scoring or wording, is purported to gauge this construct – "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" (Delhey *et al.* 2011). While this question appears to have face validity, there has been growing debate as to whether it actually gauges general trust (Nannestad 2008; Sturgis and Smith 2010; Delhey *et al.* 2011; Torpe and Lolle 2011; Reeskens 2013; Frederiksen 2019). This debate has centred around the ambiguity of the phrase "most people". In other words, it is unclear whether participants consider "most people" to denote people in general or whether they conceive of "most people" in terms of specific individuals and/or groups.

Some studies have indicated that the standard trust question is a valid measure of general trust as it coincides with more positive views of strangers and minoritised groups, implying that it encompasses a broader array of people with whom the individual may be unfamiliar. For example, based on a sample of 2517 adults from Philadelphia, Uslaner (2002, pp.52-4) found that the standard trust question formed part of a general trust dimension along with items gauging trust in strangers. More qualified support for the standard trust question comes from Reeskens (2013), who analysed European Values Study (EVS) data covering 35,882 participants across 29 countries. Reeskens (2013) observed that respondents who claimed to trust most people were more tolerant of minoritised groups on average, but this tolerance was not extended equally to all groups; specifically, those reporting trust were more open to cultural minorities and people with a history of social deviance (e.g., drug-taking, heavy drinking, having a criminal record) but were more wary of political extremists.

By contrast, other studies find that respondents are more selective in who they include under the definition "most people". Thus, Delhey *et al.* (2011) examined data on 63,352 respondents from wave 5 of the World Values Survey (WVS) to determine the accuracy of the standard trust question. The researchers found that, in certain countries (e.g., China, Ghana, South Africa), trust in most people is more indicative of trust in specific groups such as family, personal acquaintances and neighbours. Likewise, Sturgis and Smith (2010) utilised British survey data to analyse responses to the standard trust question alongside a follow-up question on how the participant understood "most people". The researchers found that participants thinking of known others (e.g., friends, family, colleagues) were more likely to report trusting most people compared to those thinking of people in general (e.g., everyone, the general public, no one in particular), suggesting the standard trust question gauges particular trust.

Given the above findings, it seems we cannot be confident in knowing what type of trust is captured by the standard trust question; in certain contexts, the question seems to perform adequately as a measure of general trust whereas in others it appears to be measuring a

different kind of trust entirely. As a result, this means we cannot be confident in inferring an association between general trust and suicide risk based on previous studies. We therefore need to assess the relationship between general trust and suicide risk using more valid measures than the standard trust question. This comprises a second goal of the current PhD; as will be explained in Chapter 5, the project will attempt to use a more valid measure of general trust and examine its association with a specific indicator of suicide risk.

Gauging Suicide Risk

Up to this point, it has been argued that perceptions of trust could have relevance for understanding suicide risk and therefore warrant further study. The focus has therefore been on the potential of studying trust perceptions as a predictor of suicide risk. By contrast, less has been said about the aspects of suicide risk that constitute the focus of this PhD. Thus, before concluding this introductory chapter, it is necessary to outline the indicator of suicide risk that will be studied and the challenges it presents.

Suicide Approval: A Proxy Measure for Suicide Risk

The indicator of suicide risk that will be studied in this PhD concerns attitudes around the perceived legitimacy of suicide. This is a construct that has variously been referred to as suicide approval (Agnew 1998), suicide acceptability (Stack and Kposowa 2016a), right to die attitudes (Domino and Takahashi 1991), suicide permissiveness (Renberg and Jacobsson 2003) and moral objections to suicide (Lizardi *et al.* 2008). The term suicide approval will be used throughout this project as it is believed to adequately convey the meaning behind the term while avoiding some of the biases and problematic implications of competing terms[1].

Suicide approval has been regarded as a suitable proxy for suicide risk as it is associated with a range of suicidal thoughts and behaviours. For instance, individuals who approve of suicide are more likely to have experienced suicidal ideation (Foo *et al.* 2014; Lee *et al.* 2021; Oexle *et al.* 2022), made plans to end their life (Joe *et al.* 2007; Kleiman 2015), attempted suicide (Sun and Zhang 2018; Kim *et al.* 2022) and score higher on composite measures of suicidality (Reynders *et al.* 2015). Longitudinal analyses based on death registration records have further indicated that individuals who condone suicide under various circumstances may have higher odds of dying by suicide (Feigelman *et al.* 2014; Phillips and Luth 2020). In drawing attention to these findings, it should not be concluded that suicide approval is interchangeable with suicidal thoughts and behaviours proper (Joe *et al.* 2007, p.175). As such, suicide approval is a more imprecise indicator of suicide risk than measures of suicidal ideation and suicide attempt history. Nonetheless, the above findings do

[1] The notion of a right to die has strong connotations of euthanasia and assisted-dying as it was advanced as part of efforts to legalise these practices in countries like the UK and USA . While related to suicide, these practices are distinct and have historically been associated with voluntary death in the case of terminal illness. On the other hand, the term moral objections to suicide forms part of the Reasons for Living Inventory, where it is used to refer to the perceived legitimacy of suicide from a religious standpoint (Lizard *et al.* 2008, p.3). In turn, other psychometric scales that include a moral attitude domain have framed this in terms of religious prohibitions against suicide, such as viewing suicide as shameful and advocating for suicides to be buried in separate cemeteries (see Witte *et al.* 2010). In other words, terms such as moral attitude and moral objections may imply religious and stigmatizing views of suicide.

suggest that studying suicide approval can offer some insights into potential risk factors for suicide (Stack 1998, p.501).

In short, this PhD is more precisely concerned with how different trust beliefs are associated with suicide approval. It is therefore important to outline how suicide approval is defined and what kinds of attitudes it covers in order to contextualise the analyses to come.

Conceptual Issues with Suicide Approval

While prior sociological studies have used suicide approval as a proxy for suicide risk, their treatment of the construct is nevertheless problematic. It seems prior researchers have been less concerned with defining suicide approval than emphasising its correlations with suicidal thoughts and behaviours in order to justify their analyses. As a result, suicide approval has been discussed in a largely cursory manner, seemingly as an afterthought based on whatever measure the researcher happens to be using. For instance, after outlining his measure of suicide acceptability from the WVS, Stack (1998, p.509) defines suicide acceptability briefly as measuring "the appropriateness of suicide for people in general". Likewise, while Agnew (1998, pp.205-6) takes care to point out how suicide approval may be a precursor to suicide or reduce the likelihood that people will intervene to prevent suicide, nowhere in his work does he offer a formal definition of suicide approval.

This lack of engagement with the definition of suicide approval is potentially problematic. If we have not formulated a clear picture of the phenomenon we are studying, we not only risk misunderstanding the implications of our findings; we risk conflating it with phenomena that are possibly distinct, resulting in misguided inferences and questionable analyses. While the meaning of suicide approval appears obvious on the surface, a closer inspection of the literature shows that researchers have included disparate ideas under the term. For example, Lund *et al.* (2016) attempted to measure suicide approval using a 5-item scale including items such as "I think [individual] should have the right to kill himself [herself]" and "If I were in [individual]'s situation, I would probably feel the same way". As Lund *et al.* (2016, p.28) themselves observe, the second item appears to be concerned with feelings of empathy toward suicidal individuals rather than approval. Similarly, Liu *et al.* (2016) utilised a 29-item scale to gauge permissive attitudes toward suicide. Some of these items gauged whether the individual condones suicide (e.g., "When life contains no happiness, suicide can be justified") while others could be said to measure derogatory views of suicide (e.g., "Suicide is a type of crazy behaviour").

While these methodological problems are important, there is more at stake here than imprecise definitions and questionable findings. Depending on how we conceptualise suicide approval, it may overlap more or less with the concept of suicide stigma. As Rimkeviciene *et al.* (2015) highlight, suicide stigma has generally been understood as harmful for prevention efforts as it may block individuals from accessing support during a suicidal crisis or compound their distress by triggering feelings of shame and worthlessness (see also Oexle *et al.* 2019). This means interventions targeting attitudes toward suicide walk a fine line as "efforts to destigmatize suicidal behaviour must be careful not to normalize (or even glorify) it, because doing so could lead to an increase rather than a decrease in the frequency of such behaviour" (Rimkeviciene *et al.* 2015, p.592). Thus, in relation to the current PhD, we need

to be cautious that efforts to reduce suicide risk by acting on approval do not inadvertently achieve the opposite by bolstering stigma.

Disentangling Approval from Stigma

Despite these ambiguities around terminology, there are grounds for viewing suicide approval as a unique set of attitudes to suicide stigma. To develop this point, it is helpful to consider how researchers have operationalised both these concepts. From inspecting the literature on stigma, it can be seen that definitions of stigma tend to focus on the attribution of negative qualities to selected groups and its consequences for their perceived character and social reputation. For instance, Goffman (1990, p.12) defined stigma as an attribute that discredits the individual, meaning they are "reduced in our minds from a whole and usual person to a tainted, discounted one". Goffman (1990, pp.12-3) adds that stigma is predicated on processes of othering as the stigmatised individual is believed to be fundamentally different from typical members of their social group. Likewise, Batterham *et al.* (2013, p.13) define stigma as "negative and erroneous attitudes about a particular group of people"; they then proceed to measure this construct in the case of suicide by asking participants to imagine a typical suicidal person and rate their agreement with a series of descriptors for this person (e.g., shallow, pathetic, immoral).

In contrast, when researchers have discussed suicide approval, they have placed more emphasis on how suicide is viewed *as an act* rather than how *suicidal individuals* are viewed. Thus, as noted above, Stack (1998, p.509) claims that suicide acceptability is concerned with the perceived legitimacy of suicide for people in general; the focus is therefore not on suicidal individuals and their imputed qualities but how acceptable it would be for anyone to take their own life. Canetto *et al.* (2021, p.293) are more explicit on this point, emphasising that "attitudes about suicidal behaviour are distinct from attitudes about suicidal individuals". Eskin (2004) has also argued that it is crucial to distinguish the acceptance of suicide as an act from the acceptance of suicidal persons. Eskin (2004, p.537) puts forward a differential-stigma hypothesis in which approving attitudes toward the act of suicide are seen as a risk factor for suicidal thoughts and behaviours as they may incline the individual to consider suicide when faced with hardships. In contrast, accepting attitudes toward suicidal persons are conceptualised as a protective factor as they reduce the chances a suicidal individual will encounter hostility or ostracism when seeking support for their distress.

These conceptual differences can be more clearly observed in the items that are used to gauge suicide approval and suicide stigma. For instance, suicide approval has typically been measured by asking participants whether they view suicide as a right (Hsu *et al.* 2024) or can be justified (Stack 1998). Related to this line of reasoning, some studies have measured suicide approval by asking whether suicide may be condoned under certain circumstances, such as experiencing terminal illness, psychological pain or bankruptcy (Blosnich *et al.* 2017; Choi and Noh 2020). Measures of suicide approval therefore focus on whether suicide represents a course of action that is open to the individual either because it is seen to be the individual's choice or because it represents an appropriate means of coping with specific hardships. Conversely, measures of suicide stigma cover attitudinal domains ranging from stereotyping (e.g., viewing suicidal people as cowardly and dangerous), ostracism (e.g., avoiding someone who is suicidal) and tabooing (e.g., viewing suicide as shameful and

suppressing discussion of suicide) (Eskin 2004; Batterham *et al.* 2013; Abbott and Zakriski 2014).

Evidence from psychometric studies also provides some support for treating the stigmatisation of suicidal persons as distinct from the approval of suicide. For example, based on a sample of 402 high school students in Turkey, Eskin (2004) found that accepting attitudes toward the act of suicide are negatively correlated with a willingness to include a suicidal friend in social activities ($r = 0.43$, $p < 0.01$). In turn, acceptance of suicide was unrelated to views that a suicidal friend would be dangerous and no longer fit in with one's circle of friends ($r = 0.04$, $p > 0.05$). These findings were later replicated by Eskin *et al.* (2016) using a sample of 5572 university students from 12 different countries. Consistent with this evidence, psychometric analyses of the Suicide Opinion Questionnaire (SOQ) have tended to report that suicide approval comprises a distinct factor that can be separated from views of suicide as cowardly, selfish and weak (Domino *et al.* 1982; Rogers and DeShon 1992; Rogers and DeShon 1995; Batterham *et al.* 2013; VanSickle *et al.* 2016). Yet, it also important to acknowledge that some studies find suicide approval and suicide stigma to be negatively associated with one another to a moderate degree (Reynders *et al.* 2015; Williams *et al.* 2018; Oexle *et al.* 2022).

Available evidence therefore indicates that it is appropriate to treat suicide approval as distinct from suicide stigma, even if the two share some overlap. Specifically, we can conclude that suicide approval is concerned with attitudes about whether the act of suicide is justifiable or represents a viable course of action for individuals. In approving of suicide, individuals may appeal to situational factors that are seen to provide valid grounds for ending one's life (e.g., terminal illness, psychological pain). Alternatively, suicide may be accepted or rejected based on more abstract principles, such as notions of the individual's right to execute their life as they deem fit. Based on this evidence, this PhD maintains that suicide approval can be studied in its own right for the purposes of understanding what factors may contribute to suicide risk.

Conclusion

Suicide continues to be a pressing public health issue that demands urgent attention. While the sociology of suicide has a long history and holds promise for aiding prevention efforts, sociological engagement with the topic of suicide has dwindled in recent years. To address this oversight, it is important for sociologists to build upon existing theoretical frameworks while incorporating insights from psychology and related disciplines. In particular, it has been argued that a study of relationship perceptions in the form of trust represents a suitable starting point for this task. As an interdisciplinary concept, trust bridges the psychological and the sociological, forming both an individual perception and a component of social relationships. In turn, prior research indicates that trust beliefs may help to protect against suicidal thoughts and behaviours, suggesting it is important to develop our understanding of trust and its connections to suicide risk. To this end, the current PhD examines the associations between trust beliefs and a specific indicator of suicide risk – suicide approval.

Having established the main focus of the project and its key components, the following chapters seek to address a number of issues relevant to the study of trust and suicide. Chapters 2-4 attempt to lay the groundwork for the analyses to come by reviewing the

literature on these topics. In Chapter 2, sociological and psychological theories of suicide are examined to derive insights on how social relationships may be implicated in suicide risk. While these theories deal with suicidal thoughts and behaviours, it is less clear whether they can be effectively used to explain suicide approval. As such, Chapter 3 provides a systematic review of the literature on social relationships and suicide approval to better understand what aspects of social relationships may be connected to this outcome. Chapter 4 then switches focus to the key explanatory variable in this PhD – trust. The chapter reviews existing conceptualisations of trust, how different types of trust may influence patterns of association, and what consequences these may have for suicide risk.

Following on from this review of the literature, chapters 5-7 present details on a quantitative analysis of trust beliefs and their relations to suicide approval. Chapter 5 outlines the methods used to conduct these analyses and reviews some of the challenges they involve. Chapter 6 presents a psychometric analysis of trust in various groups and uses this as a basis for constructing indexes to gauge different types of trust. These trust indexes are then used as explanatory variables for modelling suicide approval in chapter 7, allowing us to understand how different types of trust are associated with suicide risk.

Chapter 8 then concludes by reflecting on how findings from the project may contribute to existing research on suicide, the implications of findings for suicide prevention and directions for future research.

Chapter 2 – Theories of Suicide and Social Relationships

The previous chapter introduced the main focus and rationale of this PhD: to understand how trust perceptions are associated with suicide approval. The purpose of the present chapter is to review sociological and psychological theories of suicide to develop a clearer picture of how social relationships are implicated in suicide risk. In doing so, the chapter aims to lay the theoretical groundwork for thinking about how perceptions of trust may be linked to these outcomes. It was also highlighted in the previous chapter that the focal indicator for suicide risk in this PhD is suicide approval. Thus, a secondary aim of the current chapter is to consider what existing sociological and psychological theories of suicide can tell us about suicide approval in particular.

The chapter beings by reviewing Durkheim's theory of suicide, given its influence over the sociology of suicide and because it "remains the most elaborate sociological explanation" despite growing awareness of its limitations (Abrutyn and Mueller 2014b, p.699). Durkheim's theory is therefore treated as a point of departure for examining other theories and understanding what advantages they offer. The chapter then proceeds to more recent sociological perspectives on suicide, focusing on network theory and General Strain Theory (GST). It will be demonstrated that both theories have roots in Durkheim's writings but substantially modify his ideas and draw attention to distinct processes in the development of suicidal thoughts and behaviours. Crucially, both theories touch upon the issue of suicide approval, making them especially relevant to this PhD.

The chapter then turns to psychological perspectives on suicide, concentrating on the Interpersonal Psychological Theory (IPT) and attachment theory. It should be emphasised that these are not the only psychological theories of suicide to include a focus on social relationships; for example, it was noted in Chapter 1 that the 3-Step Theory (3ST) and Integrated-Motivational-Volitional (IMV) also assign an important role to social relationships. Nonetheless, the IPT and attachment theory are selected for two reasons. First, as will become apparent in Chapter 4, both theories are well suited to thinking about trust and suicide as they emphasise the importance of relationship perceptions, with some studies already having attempted to consider trust under these frameworks (e.g., Benson *et al.* 2016; Hill *et al.* 2019). Second, some of the key processes outlined in the 3ST and IMV – e.g., adverse relationships as a risk factor for suicide, social support as a buffer against stressors – are similar to those covered in GST. While it is important to recognise the different assumptions and theoretical traditions that characterise these theories, it was decided to consider these issues from the perspective of GST given that it is a sociological theory that directly engages with suicide approval.

Durkheimian Theory

According to Abrutyn and Mueller (2016, p.58), Durkheim put forward a structural theory of suicide with two key premises: 1) the structure of social relationships has a bearing on suicide, and 2) the central dimensions of relationship structure are integration and regulation.

For a visual depiction of these structural dimensions and their corresponding forms of suicide, see Figure 2.1.

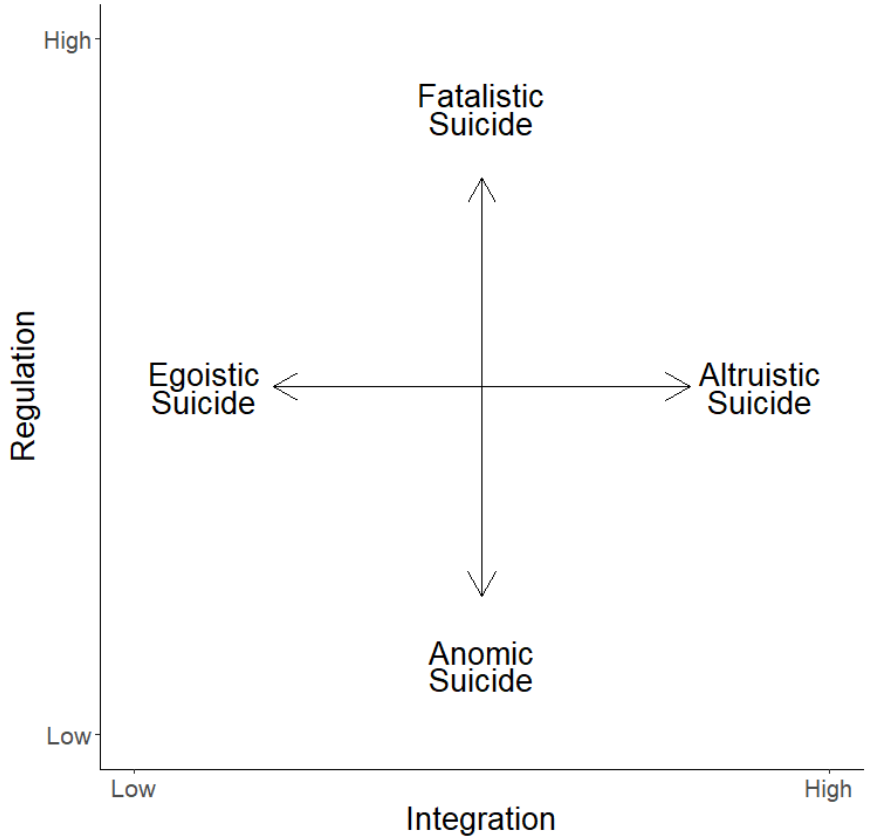


Figure 2.1: Structural Dimensions and Types of Suicide in Durkheim's Theory

Beginning with social integration (x-axis of Figure 2.1), this dimension remains a point of contention among researchers. While social integration has variously been defined as the strength of social ties (Gibbs and Martin 1971, p.67) and the availability of social support (Pescosolido and Georgianna 1989, p.43), others have insisted that Durkheim used the term to refer to shared beliefs and practices across the group (Stack 2004; Berk 2006). Indeed, the notion of common beliefs and practices is prevalent throughout Durkheim's discussion of social integration and suicide. For example, Durkheim (2002, pp.112-4) stated that Protestantism is a less integrated religion than Catholicism as it demands less strict adherence to tradition, thereby allowing for divergent interpretations of religious texts. Similarly, after observing that regions with more extensive families have lower suicide rates, Durkheim (2002, pp.159-60) suggested that social interaction is more frequent in larger families and protects against suicide by fostering a more intense collective life of shared memories and feelings.

Social integration, as Berk (2006, p.64) observes, therefore builds upon Durkheim's (2013 [1893]) concept of mechanical solidarity in *The Division of Labour in Society*. Mechanical solidarity is a type of social organisation that attaches individuals to one another and society by establishing similarities between them (Durkheim 2013, p.101). In other words, it socialises individuals into a shared culture, inclining them to identify and sympathise with one another (Durkheim 2013, p.81). The more shared beliefs and practices pervade the group,

the more authority they attain in the minds of individuals; they come to be seen as morally obligatory because they are followed without question by everyone (Durkheim 2002, p.113; Durkheim 2013, p.79). For Durkheim (2013, pp.82-3), this strengthens the individual's bond to the group by reinforcing their commitment to group beliefs and practices. Durkheim maintained two distinct types of suicide were connected to social integration.

The first type of suicide is egoistic suicide, which results from low levels of social integration. Durkheim regarded group attachments as protective against suicide as society instils in the individual a need for collective life. For Durkheim (2002, p.170), the entirety of the individual's upbringing is geared toward preparing them for living alongside others and taking up various social roles. Thus, as a social being, the individual derives a sense of fulfilment and purpose in life from being part of a group and working toward collective goals (Durkheim 2002, pp.170-1). This implies that, as the group disintegrates, the individual's commitment to group beliefs and practices wanes, leaving them alienated from collective goals (Durkheim 2002, pp.171-2). These conditions, Durkheim (2002, pp.168, 171) argued, both facilitate the emergence of suicidal thoughts by making life appear meaningless and free the individual to act on these thoughts by reducing their sense of moral responsibility toward the group.

As well as viewing insufficiently low levels of integration as a cause of suicide, Durkheim (2002, p.175) maintained that extremely high levels of integration could also place the individual at elevated risk. Durkheim (2002, pp.179-80) classified suicides arising from excessive integration as altruistic, stating they were a product of the tighter bond connecting the individual to the group. As this bond becomes stronger, the individual's entire being is more closely moulded in the image of society (Durkheim 2013, p.103), leading them to devalue their own personhood and prioritise group goals over their own life (Durkheim 2002, pp.178-9; Stack 2004, pp.10-1). Altruistic suicide is therefore enacted out of a sense of loyalty to the group; it is exemplified in cases where the individual sacrifices themselves to realise group ideals or kills themselves to atone for social transgressions (Durkheim 2002, p.181; Stack 2004, pp.12-3).

The second key dimension of Durkheim's (2002, pp.209-10) theory is regulation (y-axis of Figure 2.1), by which he meant the ability of society to set limits on the individual's ambitions through the imposition of social norms. While there is more agreement concerning the definition of regulation in Durkheim's work, disputes have centred around whether regulation can be meaningfully distinguished from integration (e.g., Johnson 1965; Danigelis and Pope 1979; Pescosolido and Georgianna 1989). From the discussion of integration above, the reason for their potential overlap is clear; as the individual becomes detached from society, they come to regard collective beliefs and practices as lacking moral authority, meaning they are unlikely to consent to the restraints these customs impose on them (Johnson 1965, p.883; Durkheim 2002, p.209).

For Johnson (1965), this means there is little analytical or empirical value in treating integration and regulation as separate; the latter is simply a derivative of the former. In agreement with this position, Danigelis and Pope (1979) assert that Durkheim's theory of regulation was merely intended to explain findings that contradicted his theory of integration. Durkheim's (2002, pp.141-6) data indicated that the married had a lower risk of suicide than the unmarried, but this finding was largely attributable to the presence of children; childless

husbands were only slightly more protected from suicide than unmarried men whereas childless wives were actually at greater risk of suicide than unmarried women. This led Durkheim (2002, pp.232, 237) to conclude that the marital bond was not in itself a source of integration and that the protection it offered childless husbands was instead a product of its regulatory influence on men's sexual desires specifically. Thus, a key limitation of Durkheim's theory is that it does not specify the conditions under which regulation can be distinguished from integration

Similar to his treatment of egoistic suicide, Durkheim (2002, p.214) claimed that anomic suicide results from inadequately low levels of regulation. For Durkheim (2002, pp.207-8), the individual is incapable of regulating their own desires, meaning they cannot prevent these desires from escalating. This leaves the individual unable to find contentment in their present situation, driving them to seek new possessions or experiences to satisfy their growing desires (Durkheim 2002, pp.208-11). Durkheim (2002, pp.208-9) believed this could lead to suicide by multiplying the chances for individuals to experience repeated frustrations as their desires begin to overshoot existing means or as setbacks force them to live with less than they are accustomed to. Society is therefore needed to restrain the individual's ambitions; when the individual is socialised into shared customs, feeling them to be morally compulsory, they willingly restrict their desires to align with the livelihood society deems appropriate for them (Durkheim 2002, pp.209-11). Using this framework, Durkheim (2002, pp.213-4, 233-4) believed he was able to account for the higher suicide rates observed among unmarried men and during periods of economic expansion/contraction; the instability that characterises these conditions undermines prevailing social norms, temporarily freeing the individual's desires from collective restraints.

The opposite of anomic suicide is what Durkheim (2002, p.239) termed fatalistic suicide, which arises under conditions of extremely high regulation. Durkheim provided little analysis of fatalistic suicide, only discussing its features in a footnote. For Durkheim (2002, p.239), fatalistic suicide occurs because the individual's ambitions are so tightly regulated as to be constantly denied, leaving them with few pleasures in life. Aside from the suicides of young husbands and childless wives, Durkheim (2002, p.239) viewed fatalistic suicide as largely irrelevant to modern societies and suggested it may have been more prevalent among the slaves of antiquity.

Evaluation

Upon first reading, Durkheim's theory may seem to have little relevance for understanding suicide approval. Indeed, Durkheim (2002, p.LI) makes clear that his intention was to explain variations in the suicide rate, not attitudes toward suicide. Furthermore, while trying to account for the contrasting suicide rates of Catholics and Protestants, Durkheim (2002, pp.111-2) rejected attitudes as a possible explanation, claiming that both religions were equally condemnatory of suicide. On this basis, Stack and Kposowa (2016a, p.284) claim that "Durkheim did not believe that suicide acceptability was predictive of suicide", suggesting his theory is irrelevant to the study of attitudes.

However, on closer inspection, some of Durkheim's ideas appear to touch upon the idea of suicide approval. For example, in his discussion of egoistic suicide, Durkheim (2002, p.172) proposes that declining levels of integration lead to the formation of "currents of depression

and disillusionment" that spread across the entire society. These collective emotions give rise to ideologies that attempt to prove the meaninglessness of life and possibly even advocate suicide (Durkheim 2002, p.172). Similarly, in an often-overlooked chapter on the emotional profiles of egoist, altruistic and anomic suicide, Durkheim (2002, p.245) suggests that egoism expresses itself in individual psychology through a preparedness to "terminate a thenceforth meaningless existence" should life become too painful. Thus, based on Durkheim's account, we might expect group detachment to foster more approving attitudes toward suicide by making life appear meaningless.

Alongside these theoretical concerns, the empirical standing of Durkheim's theory can also be questioned. On the one hand, Durkheim's ideas concerning anomic suicide in relation to poverty have been quite convincingly refuted. According to Durkheim (2002, pp.214-5), poverty helps protect against anomic suicide by forcing the individual to live in accordance with their limited means, thereby imposing a natural restraint on their desires. While some aggregate-level studies have documented negative associations between area-level indicators of poverty and suicide rates (Stack and Laubepin 2019), most point toward positive (Stack 2000a; Kõlves *et al.* 2013; Platt 2016; Recker and Moore 2016) or null associations (Smith and Kawachi 2014; Iemmi *et al.* 2016). In turn, the weight of evidence from individual-level analyses indicates that people who are unemployed or situated in the lowest rungs of the socio-economic hierarchy are at greater risk of suicide (Iemmi *et al.* 2016; Platt 2016).

On the other hand, the protective role of marriage and its variations by gender seem to have been broadly confirmed by recent research. Quantitative analyses have reported that the single, divorced and widowed tend to have higher odds of suicide relative to the married (Masocco *et al.* 2008; Bálint *et al.* 2016; Øien-Ødegaard *et al.* 2021), with some studies indicating that marriage may grant stronger protection against suicide for men (Corcoran and Nagar 2010; Fukuchi *et al.* 2013; Kposowa *et al.* 2020). By contrast, marital status effects among women tend to be smaller and do not always reach conventional levels of statistical significance, although a recent meta-analysis has indicated that married women are overall less likely to die by suicide than divorced and single women (Kyung-Sook *et al.* 2018). Comparable results have been generated by studies focusing on the broader construct of relationship breakdown; these studies have indicated that the occurrence of relationship problems and the dissolution of intimate relationships may elevate suicide risk (Stack and Scourfield 2015; Evans *et al.* 2016), with relationship breakdown possibly acting as a more potent trigger for suicide among men (Fincham *et al.* 2011).

Nonetheless, the interpretation of these findings from a Durkheimian perspective is highly problematic. As Kposowa *et al.* (2020, p.92) point out, sexism in 19th century France "blinded Durkheim to the significant sources of social integration in women's lives" and inclined him to favour biological explanations for the contrasting effects of marriage on male and female suicide rates. Thus, according to Durkheim (2002, p.234), marriage provides a remedy for anomic suicide among men by limiting their sexual desires to a single person, thereby preventing these desires from escalating and causing renewed frustrations. By contrast, Durkheim (2002, p.235) claimed that women have less need for marital regulation as their "mental life is less developed" and they only have to "follow [their] instincts to find calmness and peace". Durkheim's marital regulation hypothesis therefore perpetuates a number of sexist stereotypes, such as the idea that women are somehow more passive and embodied than men (Grosz 1994, pp.13-4).

Network Perspectives

As noted above, one of the main criticisms of Durkheim's theory is that he did not adequately separate integration from regulation. Furthermore, Durkheim (2002, p.113) understood these terms in the context of his broader view of society as an amorphous body of beliefs and practices that exist beyond the individual and constrain their conduct from without. Durkheim's theory therefore implies a highly abstract conceptualisation of society, making it difficult to operationalise for research purposes and apply in real situations. It is in response to these limitations that Pescosolido and colleagues (Pescosolido and Georgianna 1989; Pescosolido 1990; Pescosolido *et al.* 2020) sought to improve upon Durkheim's theory by reformulating it in terms of social networks.

Under the network perspective, social networks are conceptualised as "strong, interlocking social relationships" (Mueller *et al.* 2021, p.4) that are constructed and maintained through social interaction (Pescosolido and Georgianna 1989, p.43). This differs from Durkheim's view of society as it shifts the focus to aspects of social relationships that are likely to have more personal significance to the individual in their daily lives (Mueller *et al.* 2021, p.4). For example, while a religious denomination can be seen as a body of beliefs and rituals that are imposed upon its adherents, the experience of this faith for any given individual is likely to consist in participation in a series of networks (e.g., attending worship).

Furthermore, Pescosolido and Georgianna (1989, p.44) argue that the network perspective allows for a more contextually sensitive understanding of how group membership influences suicide risk. Thus, in a quantitative analysis of suicide rates across US counties, Pescosolido (1990) noted that the effect of religious affiliation is not constant across regions. For example, in Northern parts of the USA where Catholicism had established itself more thoroughly, the percentage of Catholic adherents in the population exhibited a protective effect against suicide. By contrast, this protective effect was not observed in Southern regions where the influence of Catholicism had traditionally been weaker. Although these varying effects are difficult to reconcile with a classic Durkheimian perspective on suicide, Pescosolido suggests they indicate different opportunities for network formation and participation – in counties with a longer history of Catholic influence, there are more established channels through which co-religionists can practice their faith.

In accounting for these findings, the network perspective holds that social networks perform the twin functions of integration and regulation (Pescosolido and Georgianna 1989, p.43; Mueller *et al.* 2021, p.4). While these terms are borrowed from Durkheim, they are given a slightly different meaning by Pescosolido and Georgianna. Social integration refers to the "social and emotional support" that individuals can access through their networks, whereas regulation is concerned with the ability of networks to shape the actions of individuals through "advice or behaviour monitoring" (Pescosolido and Georgianna 1989, p.43). Following Durkheim, suicide is hypothesised to become more prevalent as the integrative or regulative functions of social networks become too weak or too strong (Pescosolido and Georgianna 1989, p.43; Mueller *et al.* 2021, p.4). For example, individuals with restricted social networks may have less access to support for coping with personal hardships; in contrast, individuals embedded within dense networks may be more disposed toward suicide if the groups they belong to experience severe crises.

While one merit of the network approach is that it more clearly distinguishes integration from regulation, Pescosolido and Georgianna (1989) unfortunately do not elaborate on how individuals access support from their networks. Nonetheless, Perry and Pescosolido (2015) do begin to address this issue in the context of receiving treatment for mental health conditions. Drawing on insights from the Network Episode Model (NEM), Perry and Pescosolido (2015, p.117) conceptualise mental distress as a crisis that prompts the individual to draw upon their networks to cope. For instance, the individual may turn to others for advice, emotional support or a sense of belongingness (Perry and Pescosolido 2015, p.116). However, not all network members are equally likely to be sought out for support. In a longitudinal study of patients receiving first-time treatment for mental health conditions, Perry and Pescosolido (2015) found that spouses, women and persons with whom participants felt emotionally closer had a higher probability of being selected for health discussion. Thus, recent advancements within the network perspective highlight that features of network structure and quality play a role in facilitating or hindering access to social support.

In turn, understandings of how social networks influence the individual's beliefs and behaviours around suicide have evolved over time. In their original article, Pescosolido and Georgianna (1989, p.40) suggest that religious networks help to shape the individual's conduct in part by affirming religious prohibitions against suicide. As this line of reasoning implies, it is important to consider the cultural content of social networks to understand their implications for suicide – i.e., under certain circumstances, social networks may fail to protect and instead transmit ideas favourable to suicide (Pescosolido *et al.* 2020, pp.26770-1; Mueller *et al.* 2021, pp.5-6). While this possibility was not fully explored by Pescosolido and Georgianna (1989), it has received more attention from researchers in recent years. For example, in their ethnography of a small and affluent community in the USA that had witnessed a high number of adolescent suicides, Mueller and Abrutyn (2016) argue that a shared understanding had developed among residents connecting adolescent suicide with academic failure. The presence of strong community ties helped to spread these ideas among adolescents, meaning suicide became more imaginable for them as something they could use for coping with their own academic frustrations.

Evaluation

In evaluating network perspectives on suicide, it is helpful to contrast them with Durkheim's theory. One of the main differences between the two approaches concerns their understanding of how social integration affects suicide. For Durkheim, sufficient levels of integration play a direct role in preventing suicide by solidifying group attachments and thereby sustaining feelings of purpose in life. In contrast, Pescosolido and Georgianna (1989, p.43) do not elaborate on the processes leading individuals to contemplate suicide; instead, they assign integration a largely secondary role, with social networks only serving to deter individuals from suicide when they are confronted with crises. It should be noted that these two views are not mutually exclusive. For instance, Durkheim (2002, p.168) also noted the potential of social integration to offer a "moral support" that enables the individual to cope with hardships.

The role of social support in protecting against suicide will be examined in greater detail below when considering General Strain Theory. For the moment, it is sufficient to note that

network conceptualisations of integration can be said to complement Durkheim's theory. Another useful feature of the network perspective is that its conceptualisation of regulation frees it from the questionable biological assumptions that underpinned Durkheim's arguments. Thus, whereas Durkheim believed authoritative social norms are required to rein in the individual's natural greed, Pescosolido and Georgianna (1989) maintain that regulation protects against suicide by steering the individual away from self-destructive behaviours.

As this observation suggests, this means the network perspective is at least partly concerned with suicide approval. Thus, a key means through which social networks may alter suicide risk is by persuading the individual to adopt beliefs that are contrary or favourable to suicide. In particular, Pescosolido and Georgianna (1989, pp.40-2) suggest that mere affiliation with groups discouraging suicide is unlikely to impact the individual's attitudes; rather, active participation in the group is required as it is through social interaction with group members that these norms receive mutual confirmation and come to be adopted by the individual. Likewise, Abrutyn and Mueller (2014b, pp.711-3) highlight a number of extenuating factors that influence the degree to which an individual will adopt the attitudes of others, including emotional closeness to and the social prestige of role models. As will be demonstrated in the following chapter, there is some support for these arguments as individuals who attend church more frequently tend to express less approving attitudes toward suicide (see also Stack and Wasserman 1992).

Further evidence consistent with the network perspective is provided by studies showing that exposure to others' suicidal behaviours may elevate the individual's own risks of suicide (Baller and Richardson 2009; Abrutyn and Mueller 2014a; Kleiman 2015). As Abrutyn and Mueller (2014b, p.709) observe, the spread of suicidal thoughts and behaviours is particularly discernible in socially integrated contexts (e.g., schools, prisons, psychiatric wards) where people share more similarities with one another. This could suggest that shared culture predisposes the individual to identify with and adopt the behaviours of those who engage in suicidal behaviours. Nonetheless, some qualitative studies have indicated that additional mechanisms may underlie these associations. For example, John *et al.* (2022) conducted interviews with eight individuals who experienced a near-fatal episode of self-harm during the time of a suicide cluster in South Wales. While some participants claimed to think about suicide more frequently during the cluster, others emphasised the fallout of the cluster in terms of grief, sadness and the dissolution of social groups. Thus, it may be that suicide exposure also influences suicide risk through its effects on emotions and social integration.

Some researchers have also questioned the network understanding of religion and suicide risk. For example, van Tubergen *et al.* (2005) have suggested that strong networks among co-religionists may be less important for explaining suicide than the presence of general community norms discouraging suicide. In other words, it is less relevant whether high numbers of individuals participate in the networks of a given denomination; rather, what matters is that these individuals reside in a community where various social groups converge in viewing suicide as unacceptable. For van Tubergen *et al.* (2005), this means that communities with a larger share of religious adherents should have lower suicide rates because individuals within these communities are likely to receive repeated messages that suicide is not an option. There has been some empirical support for this argument (Stack and Kposowa 2011b; Barranco 2016), which may be taken as evidence against the network perspective.

General Strain Theory

It was explained above that network theory understands social relationships as playing a largely secondary role in shaping suicide risk; for example, while a lack social connections leaves the individual bereft of social support in moments of crisis, enmeshment in strong networks means the individual is more vulnerable to disasters experienced by the group. Network theory therefore gives little consideration to the possibility that social relationships are directly implicated in suicide, giving rise to the very crises and painful emotions that motivate suicidal thoughts and behaviours. To think more carefully about how social relationships may directly influence suicide risk, we can draw upon General Strain Theory (GST).

The inclusion of GST in this PhD may initially appear questionable – GST was originally designed to explain crime, not suicide. In turn, readers may object that using criminological theories to explain suicide inadvertently stigmatises suicide as a form of crime or deviance. This is certainly not the intention for using GST in the current PhD. Following Fincham *et al.* (2011, p.137), it is believed that criminological theory can, with careful revision, be used to understand certain features of suicide as it "offers a means of making sense of the 'senseless' and of turning the 'pathological' into the social". GST seems particularly suited to this task for two reasons. First, Agnew (1992) intended GST as a general framework that could be applied to various forms of harmful behaviour, including eating disorders (Piquero *et al.* 2010), self-harm (Hay and Meldrum 2010) and suicide (Stack and Wasserman 2007; Bishopp and Boots 2014). Indeed, even in their earliest formulation, strain theories have been partly concerned with how individuals respond to adversities in different ways; crime represents one possibility, but it is not the only option available to individuals. Second, GST has roots in Durkheim's writings on anomic suicide, meaning the two share more common ground than first appearances might suggest.

To better understand GST and its relevance to suicide, it is helpful to outline Merton's (1938) original writing on strain as a cause of crime. Classical strain theory understood crime as a structural problem resulting from blocked goals (Merton 1938, pp.678-9; Featherstone and Deflem 2003, p.481) – specifically, the inability of individuals to achieve financial success through legitimate methods, either because these methods proved ineffective (e.g., low-wage work) or unavailable (e.g., limited job opportunities). In response to this strain, individuals encounter intense psychological pressures to eliminate the tension through illegitimate or unconventional means, what Merton (1938, p.676) referred to as "modes of adjustment or adaptation". Although Merton did not explicitly link his conceptual scheme to suicide, some researchers have suggested that the adaptation of retreat has relevance to this topic (Zhang 2019, p.5).

According to Merton (1938, p.677), retreat ensues when the individual is exposed to strain but feels equally committed to societal goals and the normative means of attaining them. Unable to arbitrate between the two, the individual rejects them both, experiencing a sense of defeat or resignation at their predicament (Merton 1938, pp.677-8; Murphy and Robinson 2008, p.509). Thus, in Merton's (1938, p.678) words, retreat represents a means of escaping the requirements of society and the psychological conflicts it has generated. This depiction of retreat appears to map on to a number of key motives for suicide highlighted in the

psychological literature, including suicide as a means of escaping aversive self-awareness and emotional pain (Baumeister 1990).

Although Merton's strain theory set the tone for criminological research from around 1950-1980, it came under increasing fire during the 1980s for its narrow focus on financial success as a driver of strain and its inability to explain why individuals choose specific strategies for coping with strain (Featherstone and Deflem 2003, p.480; Agnew 2012, p.33). To address these criticisms, Agnew (1985; 1992) sought to revise classical strain theory and develop a more comprehensive theory of crime – GST. Using insights from the stress literature, Agnew (1992, pp.48-50) broadened the definition of strain to encompass negative relationships more generally, defining these as relationships in which the individual's desires or expectations are frustrated. This revised definition of strain is roughly consistent with Merton as it is based on the idea that the individual is unable to attain some goal. However, for Agnew (1992, pp.52-55; 2012, pp.34-5), this goal need not be a distant aspiration for financial success but any more concrete or immediate objective, such as a desire to be popular or an expectation of fair treatment. Furthermore, whereas Merton understood strain as a tension in the social structure, Agnew's (1992, p.48) conceptualisation of strain is social-psychological as it is focused on whether the individual's desires are frustrated.

By redefining strain as negative relationships, Agnew avoided the singular focus on financial success that characterised Merton's strain theory. Thus, a key innovation introduced by Agnew (1985, p.154; 1992, pp.58-9) was the idea that strain may involve blocked attempts to avoid painful situations; that is, an individual may seek to escape the source of their pain, but being unable to do so through normative means they resort to unconventional methods such as suppressing their pain with drugs. Likewise, Agnew (1992, pp.57-8) suggested that strain may involve the loss or threatened loss of valued persons and objects, such as the loss of a spouse through divorce or a house in the event of foreclosure (Stack and Wasserman 2007).

To begin tackling the criticism that strain theory could not explain why individuals choose specific coping strategies, Agnew (1992, p.59; 2012, p.36) developed a theme that was only implicit in Merton's work – the experience of strain gives rise to negative emotions. While Agnew's (1998, pp.59-60) main focus was on anger as a motivator for crime, he also suggested that the individual may experience depression when they blame themselves for the strain confronting them (Broidy and Agnew 1997, p.282). According to Agnew (1992, p.60; 2014, p.1895), depression may lower the individual's propensity toward violent crime given its inhibiting effects on energy and motivation; instead, depression may be more conducive to self-directed behaviours that aim to alleviate unpleasant emotions. Thus, internal blame and depression are more characteristic of the retreat response, suggesting they may incline the individual toward suicide.

Alongside these emotional responses, Agnew (1992, pp.71-2; 2014, pp.1896-7) highlighted that a number of individual and interpersonal factors may act as constraints to harmful behaviours, making the individual less likely to pursue these actions in response to negative emotions. A key coping resource for the purposes of this PhD is social support. Borrowing from Cohen and Willis' (1985, pp.312-3) stress-buffering model and Pearlin *et al.'s* (1981) work on the stress process, Agnew (1985, pp.71-2) suggested that social support may help to neutralise the negative emotions that motivate harmful behaviours (emotional support) or provide the individual with advice (informational support) and resources (instrumental

support) that enable them to alter their situation or reinterpret it as less threatening. Thus, even when confronted with severe strains, the individual may be at lower risk of suicide if they are embedded within an effective social support network.

Evaluation

From the above description of GST, we can see how the concept of strain fits with and builds upon Durkheim's writings on anomic suicide. Thus, for Durkheim, anomic suicide is primarily motivated by accumulating frustrations as the individual finds themselves incapable of appeasing their growing desires. Likewise, Agnew defines strain in terms of thwarted desires and expectations. However, whereas Durkheim's treatment of anomic suicide is based on the questionable assumption that humans are naturally greedy and require outside regulation, GST does not tie us into this premise; instead, the theory focuses on how the individual's relationships actively enable or hinder their efforts to realise their desires.

Another advantage of GST is that it has been used to theorise suicide approval, making it especially relevant to this PhD. Thus, for Agnew (1998, pp.207-8), suicide can be regarded as one means of addressing the negative emotions caused by strain (Jung and Olson 2014, p.1044); that is, suicide nullifies this emotional anguish by terminating consciousness altogether, a line of argument that fits with escape theories of suicide (Baumeister 1990). So long as the individual has recourse to alternative means of handling strain (e.g., social support), they will be less likely to view suicide as an appropriate solution (Agnew 1998, pp.207-8; Jung and Olson 2014, p.1044). However, if these coping strategies prove ineffective and the strain persists, then suicide may become increasingly attractive to the individual as the only remaining means of escaping their distress (Agnew 1998, p.207; Jung and Olson 2014, p.1044). Thus, a key prediction of GST is that individuals will hold more favourable attitudes toward suicide when they are faced with problems they cannot cope with.

There is some evidence to support these premises of GST. For instance, depression is an established risk factor for suicidal ideation (Klonsky *et al.* 2016, p.312). While fewer studies have examined depression in relation to suicide approval, there is accumulating evidence that these variables are also positively associated with one another (Zhang and Sun 2014; Lund *et al.* 2016; Cwik *et al.* 2017; Gill *et al.* 2018; Kim *et al.* 2021). Thus, consistent with GST, depression appears to coincide with higher levels of suicide approval and suicidal ideation.

Similarly, a number of studies have found that higher levels of social support may protect against suicidal ideation (Kaufman 2009; Kleiman *et al.* 2014; Mackin *et al.* 2017; Otten *et al.* 2022). In particular, Kleiman *et al.* (2014) and Mackin *et al.* (2017) tested for stress-buffering effects, finding that individuals exposed to various strains (e.g., negative life events, interpersonal stress) reported lower levels of suicidal ideation if they also had high social support. These findings therefore lend credence to Agnew's suggestion that social support may steer the individual away from harmful behaviours by helping them to cope with strains.

Nonetheless, GST also contains some limitations. First, it seems questionable to regard depression as the only emotional pathway from strain to suicide. For example, in discussing Durkheim's concept of anomic suicide, Abrutyn and Mueller (2014c) observe that suicide may be deeply intertwined with feelings of shame and anger. Shame, Abrutyn and Mueller (2014c, p.335) argue, is typically experienced following social setbacks and losses, such as divorce, demotion and job loss – it is a painful emotion that signals to the individual that their

reputation has been damaged. To cope with these feelings, individuals may attempt to repress their shame and redirect it into anger at those they believe have shamed them. However, the expression of anger can trigger additional feelings of shame as anger is often censured by social groups (Abrutyn and Mueller 2014c, p.335). For Abrutyn and Mueller (2014c, p.336), this can lead the individual to alternate between feelings of shame and anger, thereby amplifying their distress and inclining them toward suicide. Consistent with this argument, sociological research has indicated that male suicide may occur in the context of a perceived loss of masculine honour and be accompanied by aggressive motives, such as the desire to punish a former partner (Scourfield *et al.* 2012; Scourfield and Evans 2015).

Second, the role of social support in alleviating negative emotions is more complex than initially theorised by Agnew. For example, psychological research has indicated that a particular type of social support – co-rumination – may serve to exacerbate negative emotions. According to Rose (2002, p.1830), co-rumination is a form of social interaction in which individuals repeatedly discuss a problem, encourage one another to air their grievances and fixate on the negative implications of the problem. While these processes can facilitate emotional bonding between individuals, they are also thought to increase the perceived severity of the problem and thereby reinforce negative emotions (Rose 2002). In support of Rose's thesis, some studies have found that co-rumination with peers and work colleagues may contribute to feelings of burnout, depression and anxiety (Boren 2013; Balsamo *et al.* 2015; Spendelow *et al.* 2017). Thus, it is possible that social support may also elevate suicide risk if it only serves to heighten the individual's emotional distress.

The Interpersonal-Psychological Theory of Suicide

Up to this point, the present chapter has reviewed sociological theories of suicide. While these theories do not dismiss perceptions of relationships entirely, it is clear that their account of these perceptions remains underdeveloped. Thus, Durkheim acknowledges that feelings of group attachment protect against egoistic suicide, but he is mostly concerned with understanding how levels group homogeneity reinforce these attachments. Likewise, network theory has become more attentive to the role of emotional closeness in facilitating social support, but it is yet to explore such factors in relation to suicide. To begin thinking about the role of relationship perceptions in influencing suicide, we can consider the IPT. Originally proposed by Joiner (2005) and later refined by Van Orden *et al.* (2010), the IPT is regarded as one of the leading psychological theories on suicidal thoughts and behaviours (Hjelmeland and Knizek 2020, p.168). Furthermore, the IPT shares a number of conceptual affinities with Durkheim's theory of suicide (Button 2016, p.274; Abrutyn and Mueller 2021, p.522), meaning it offers a promising basis for thinking about how relationship perceptions may be implicated in suicide from a sociological standpoint.

The IPT is distinguished from preceding theories of suicide in that it aims to differentiate the conditions giving rise to suicidal thoughts from those translating suicidal thoughts into suicidal actions (e.g., suicide attempts) (O'Connor and Kirtley 2018, p.2). In particular, the IPT distinguishes the desire to suicide from the ability to enact lethal self-injury, arguing that these constructs have different sources and that both are required for suicidal actions to become possible (Van Orden *et al.* 2010, p.581; Hagan *et al.* 2016, p.208). Figure 2.2 provides a visual depiction of the IPT.

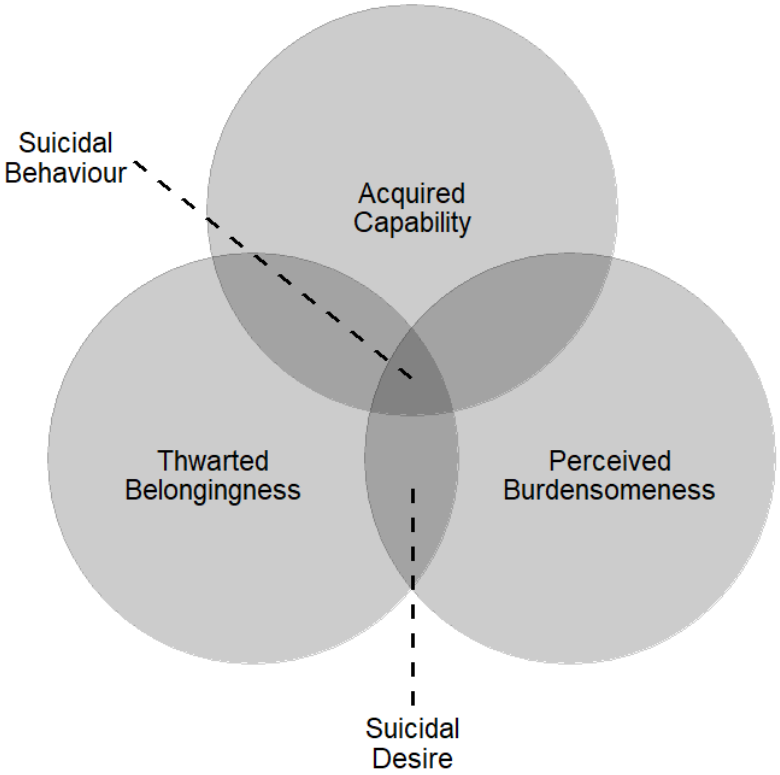


Figure 2.2: IPT Constructs as outlined by Hagan et al. (2016, p.208)

Two distinct interpersonal states are claimed to underlie suicidal desire – thwarted belongingness and perceived burdensomeness. The concept of thwarted belongingness was influenced by Shneidman's (1998) psych-ache theory of suicide and Baumeister and Leary's (1995) work on the need to belong. For Shneidman (1998, pp.248-9), suicide is motivated by the desire to escape unbearable psychological pain that results from a number of fundamental needs going unmet, including needs to be loved, avoid shame, and have a sense of order in the world. Where the IPT differs from psych-ache theory is that it regards the need to belong as being central to the development of suicidal desire. Baumeister and Leary (1995, p.499) conceptualised the need to belong as an innate feature of human psychology that developed over the course of human evolution to enhance species-survival; it is a need to form relationships with others that are characterised by regular interaction, positive emotions and mutual concern (Baumeister and Leary 1995, p.497).

According to Joiner and colleagues (Van Orden *et al.* 2010, p.582; Hagan *et al.* 2016, p.208), the need to belong is thwarted when the individual experiences intense loneliness and is deprived of reciprocally supportive relationships. Loneliness is conceptualised as a subjective state in which the individual perceives their available social connections to be insufficient; on the other hand, the individual perceives a lack of mutually supportive relationships when they feel they neither receive comfort and assistance from others nor provide these in turn (Van Orden *et al.* 2010, p.582). To defend their position that thwarted belongingness is implicated in suicide, Van Orden et al. (2010, p.578) cite a range of studies documenting positive associations between lethal suicide attempts and various forms of social disconnection, such as feelings of loneliness, social withdrawal and divorce.

In contrast, the concept of perceived burdensomeness is derived from Sabbath's (1996 [1969]) hypothesis that adolescents who die by suicide have formed a conscious or unconscious perception of themselves as expendable by internalizing their parents' hostile attitudes toward them. However, Van Orden *et al.* (2010, p.583) maintain that perceived burdensomeness can apply to family relationships as well as the individual's relationships more broadly, such as their connections to friends and work colleagues. Two cognitive-affective states are claimed to underlie perceived burdensomeness; first, a perception of the self as being excessively incompetent to the point of being a burden on others, and second, feelings of self-hatred (Van Orden *et al.* 2010, p.208; Hagan *et al.* 2016). Van Orden *et al.* (2010, pp.583-4) claim that the concept of perceived burdensomeness helps to account for a number of suicide risk factors that may undermine the individual's sense of self-worth and usefulness, such as unemployment, physical illness and homelessness.

The IPT holds that passive suicidal ideation (i.e., the desire to be dead) results when the individual experiences high levels of either thwarted belongingness or perceived burdensomeness; conversely, active suicidal ideation (i.e., the desire to kill oneself) only develops when both interpersonal states occur together and are perceived as permanent (Van Orden *et al.* 2010, pp.588-9; Hagan *et al.* 2015). Thus, suicidal desire is predicted to be strongest when the individual feels themselves to be alone, a burden on others and hopeless about altering this situation.

As previously noted, for the individual to act on their suicidal thoughts, they need to have a sufficiently high capability for self-directed violence. According to the IPT, the capability for suicide comprises fearlessness about death and elevated pain tolerance (Van Orden *et al.* 2010, p.585; Hagan *et al.* 2016, pp.208-9). Van Orden *et al.* (2010, p.585) emphasise that suicide is difficult as it contradicts deeply ingrained instincts to avoid pain and death that have developed over the course of human evolution. In other words, individuals are not born with the capability for suicide but acquire it through repeated exposure to painful and life-threatening experiences. These experiences gradually habituate the individual to painful and frightening stimuli, meaning they are less likely to respond to these stimuli with alarm (Van Orden *et al.* 2010, pp.585-7).

Evaluation

At first glance, there appears to be a partial overlap between the Durkheimian approach to suicide and the IPT. In particular, the concepts of egoism and thwarted belongingness share a high degree of synergy as both entertain the idea that humans possess a fundamental need for social connectedness that, when unmet, gives rise to suicidal desire. However, the manner in which this need is conceptualised varies between the two perspectives. Thus, for Durkheim, society establishes in the individual a need for collective life through socialisation. In contrast, Baumeister and Leary (1995) define the need to belong as a feature of human biology. These differing ontological assumptions do not necessarily make the two perspectives incompatible; as Baumeister and Leary (1995, p.499) speculate, even if the need to belong has a biological basis, the intensity of this need and the practices through which it is fulfilled may vary across cultural contexts (see also Hagan *et al.* 2016). Thus, we can conceptualise the need to belong as being both grounded in biology and shaped by cultural norms around sociality.

However, despite its influence within the psychology of suicide, the IPT has received mixed empirical support in recent years. A recent meta-analysis of studies testing the IPT's core predictions among diverse populations (e.g., military personnel, students, adults residing in the community) reported that thwarted belongingness and perceived burdensomeness, while exhibiting statistically significant associations with suicidal ideation and suicide risk, did not improve upon traditional predictors of these outcomes (Chu *et al.* 2017, p.25). Thwarted belongingness in particular was found to have a much weaker association with suicidal thoughts and behaviours compared to perceived burdensomeness (Chu *et al.* 2017, p.27), a finding that was echoed in a previous systematic review (Ma *et al.* 2016, p.40). These doubts around the importance of thwarted belongingness to suicidal ideation have also been confirmed more recently by longitudinal studies (Rogers and Joiner 2019; Pagliaccio *et al.* 2023).

Alongside these empirical challenges, the theoretical underpinnings of the IPT have been called into question. A key point of contention in this regard is whether the joint occurrence of thwarted belongingness and perceived burdensomeness is logically possible – i.e., if the individual has little to no social contacts, it would seem impossible for them to be a burden on others (Van Orden *et al.* 2010, p.585). While Hjelmeland and Knizek (2020, p.170) take this inconsistency as an additional reason for rejecting the IPT, it would seem that this tension applies more in the abstract than in practice. For example, most studies record positive bivariate correlations of weak to moderate strength between thwarted belongingness and perceived burdensomeness (Hallensleben *et al.* 2016, p.194; Rogers and Joiner 2019, p.60), meaning both constructs tend to vary in the same direction. Furthermore, a number of researchers have argued that the degree to which an individual views themselves as competent and worthy depends on whether they feel accepted or rejected by others (Bowlby 1977, pp.206-7; Leary *et al.* 1995; Cast and Burke 2002, pp.1046-7), suggesting it is theoretically plausible for thwarted belongingness and perceived burdensomeness to coincide.

A more serious criticism of the IPT is Hjelmeland and Knizek's (2020, p.170) argument that the IPT is more accurately classified as an intrapersonal theory of suicide than an interpersonal theory. This is because, as Van Orden *et al.* (2010, p.584) emphasise, the IPT conceptualises perceptions of burdensomeness as misperceptions that do not correspond with reality. Joiner *et al.* (2016, p.242) have taken this position further by theorising that perceptions of burdensomeness represent a "derangement" of human eusociality, an evolutionary-based set of behaviours that incline the individual to sacrifice themselves for protecting their kin. As Hjelmeland and Knizek (2020, p.171) highlight, assuming perceptions of burdensomeness to be misperceptions or "derangements" discounts the possibility that these have been formed through concrete experiences of abuse, stigmatisation or oppression. Thus, by prioritising the role of perceptions, the IPT makes social context irrelevant to the explanation of suicide and diverts attention away from the social structures that give rise to self-critical cognitions (Abrutyn and Mueller 2021, p.526).

However, while defining perceptions of burdensomeness *a priori* as misperceptions is problematic, this does not rule out the possibility of interpreting the IPT in a manner that preserves the role of social contexts in causing suicide. In a thoughtful analysis of how the IPT might inform a political approach to suicide prevention, Button (2016, p.275) argues that perceptions of burdensomeness may be exacerbated in neoliberal capitalist societies because they elevate individual autonomy and self-sufficiency to cultural ideals that, in practice, are

difficult to attain. In this way, an evolutionary-based tendency to avoid burdening others is infused with cultural norms that condemn dependency, thereby provoking intense feelings of guilt when independence cannot be maintained (Button 2016, p.275). Thus, the IPT has the potential to offer an analysis of the individual's self-critical perceptions that is situated within their immediate and wider social context, although this potential has rarely been capitalised on[2].

Finally, the IPT is silent on the subject of suicide approval, making it less clear whether the theory is applicable for studying this outcome. It should be noted that this has not prevented previous researchers from using the IPT to think about possible correlates of suicide approval. For example, drawing upon the IPT, Blosnich *et al.* (2017) posited that the societal stigmatisation of lesbian, gay and bisexual (LGB) groups may result in them experiencing higher levels of thwarted belongingness and perceived burdensomeness, thereby elevating their suicide risk. To test this hypothesis, the researchers analysed General Social Survey (GSS) data from 2008-2014, finding that LGB groups were more likely than heterosexuals to approve of suicide under various conditions. However, while these findings suggest the IPT may be relevant to explaining suicide approval, Blosnich *et al.* (2017) were not able to directly examine how thwarted belongingness and perceived burdensomeness are associated with this outcome.

Attachment Theory

The final psychological theory that will be considered is attachment theory. According to Gilbert (2006, p.289), attachment theory represents a social evolutionary model of human bonds and psychology that has played a key role in understanding the development of various mental health conditions, including depression and anxiety (Mikulincer and Shaver 2012). The theory was initially advanced by Bowlby (1970; 1980) in the 1970s and 1980s, with substantial theoretical and empirical inputs from Ainsworth based on her observational studies of mother-child interactions (Ainsworth and Bell 1970; Ainsworth 1979). The theory has since been utilised by psychologists (Adam 1994; Zortea *et al.* 2019) and sociologists (Fincham *et al.* 2011) for explaining why certain individuals may be more vulnerable to suicide than others, making it particularly salient to this PhD.

An attachment is an emotional bond connecting the individual to specific others, such as a parent or romantic partner, that is relatively stable over time (Ainsworth and Bell 1970, p.50; Bowlby 1977, p.203). In theorising the attachment system as a unique feature of human psychology, Bowlby (1977) argued that it is a biologically based set of behaviours designed to promote species survival. According to Bowlby (1970, p.199), the human infant begins to form an attachment with their primary caregiver, or whoever they interact with most frequently, during their first year of life. The purpose of the attachment system is to keep the infant and caregiver near to one another, helping to ensure the infant is protected from threats they would otherwise be incapable of fending off (Bowlby 1977, p.204). The caregiver therefore acts as a source of emotional comfort for the infant, enabling them to explore their environment with confidence as they feel assured the caregiver can be called upon should any threats arise (Bowlby 1970, pp.208, 260). This means that, if the infant detects their caregiver

[2] An exception is Baams *et al.* (2015), who theorise the heightened suicide risk of LGBT youth from the perspective of the IPT.

is absent or is unlikely to provide them with support, they are inclined to become highly emotionally distressed (Bowlby 1970, pp.208-9, 260).

For Bowlby (1980, pp.207-9), the infant's experiences of receiving love and support from their caregiver have a direct bearing on their ability to form attachments in later life. This is because the infant gradually organises these experiences into a cognitive model of themselves and their caregiver, what Bowlby (1970, pp.81-2) termed a working model, allowing them to anticipate how the caregiver may respond to their actions and formulate plans for realising their attachment goals. While these models can be called 'working' insofar as they are initially flexible and readily revised in light of new experiences, they begin to stabilise as repeated experiences confirm the infant's view of themselves and their caregiver (Bowlby 1980, pp.202, 208; Rothbard and Shaver 1994, pp.33-4). Thus, with time, the infant's working model becomes a relatively fixed set of expectations that are used for interpreting their relationship to the caregiver and other attachment figures, such as friends and romantic partners (Bowlby 1977, p.209).

Bowlby (1977, pp.206-7; 1980, pp.204-5) was concerned that children who had their needs for care and affection repeatedly denied would develop an insecure pattern of attachment, which he considered to be a root cause of various psychopathologies. An insecure attachment is underpinned by a working model of the self as undeserving of love and others as uncaring or unreliable in their capacity to provide support (Bowlby 1980, pp.204-5, 213). In contrast, a secure attachment results when the infant's needs for care and affection are consistently met by the caregiver; it is based on a model of the self as worthy of love and others as dependable and caring (Bowlby 1977, p.206; Bowlby 1980, pp.204-5). Subsequent research has elaborated upon this conceptual scheme by suggesting that attachment behaviours fall along two dimensions: anxiety and avoidance (Mikulincer and Shaver 2003, pp.68-70). While individuals high in anxiety express greater uncertainties around partner availability, individuals high in avoidance report more distrust in partners and discomfort with emotional closeness. Under this conceptual scheme, a secure attachment is characterised by low levels of anxiety and avoidance. By contrast, insecure attachments can be divided into three types: ambivalent (high anxiety, low avoidance), dismissive-avoidant (low anxiety, high avoidance) and fearful-avoidant (high anxiety, high avoidance) (Mikulincer and Shaver 2003, pp.69-70).

Bowlby did not systematically theorise how the attachment system may be implicated in suicide, although he did regard some suicidal behaviours as a manifestation of an insecure attachment. For example, he noted that individuals whose emotional bonds are fragile and transient tend to be suicidal (Bowlby 1977, pp.208-9). The potential utility of the attachment perspective for explaining certain features of suicide was explored further by Adam (1994), who proposed a developmental model of attachment and suicidal behaviour. Based on a number of clinical studies, Adam (1994, pp.278-1, 284-5) argued that suicidal persons report a higher incidence of parental loss and mistreatment (e.g., physical abuse, emotionally unresponsive parents) in childhood compared with non-suicidal persons. Furthermore, he noted from clinical observations that patients admitted to hospital following a suicide attempt tend to exhibit behaviours similar to children who have been separated from their caregiver, such as accusing family members of not loving them or becoming withdrawn and expressing a strong desire for affection (Adam 1994, pp.285-6).

This led Adam (1994, p.288) to propose that adverse childhood experiences are related to suicide via their effects on the attachment system. For Adam (1994, p.288), insecure attachments establish in the individual a heightened vulnerability to suicide through the working models they presuppose. In other words, the cognitions that characterise an insecure attachment pattern (e.g., low self-worth, fears around being abandoned) make it difficult for the individual to forge stable relationships and cope when they experience rejection or relationship breakdown (Adam 1994, pp.288, 291). This means that the individual is likely to become highly distressed when faced with a severe relationship crisis, such as the loss or threatened loss of an attachment figure, giving rise to suicidal thoughts and behaviours (Adam 1994, p.288). Suicide is therefore, according to Adam (1994, p.290), a form of "extreme attachment behaviour" that is guided by the goals of the attachment system. For example, Adam (1994, p.292) suggested that suicide attempts and communications of suicidal intent may be aimed at coercing an attachment figure into remaining in a relationship, with more lethal suicide attempts indicating the individual's greater pessimism regarding their chances of restoring the relationship.

Evaluation

One of the main advantages of attachment theory is that it offers a comprehensive explanation of individual personality and social relationships that draws from multiple psychological perspectives (Rothbard and Shaver 1994, p.31; Mikulincer and Shaver 2003, p.54). In other words, the theory allows for a more holistic understanding of human behaviour as the attachment system is seen to be both grounded in biology and responsive to environmental influences. Attachment theory is therefore well placed to address Hjemeland and Kzinek's (2020) accusation that psychological perspectives on suicide have tended to reduce social relationships to perceptions. Indeed, Bowlby (1980) maintained that the working-models an individual develops for interpreting their relationships are primarily based on their concrete experiences of care or mistreatment during childhood, meaning attachment theory is attentive to objective and subjective features of social relationships.

This concern with the person-environment link also helps attachment theory to explain certain patterns in suicide that are more difficult to reconcile with a Durkheimian framework. For instance, while evidence indicates that divorce and separation are risk factors for suicide (Stack and Scourfield 2015; Evans *et al.* 2016; Kyung-Sook *et al.* 2018), not all individuals who experience these events die by suicide. As Adam's (1994) development model of suicide argues, these differing responses to divorce and separation most likely reflect variations in attachment security, with insecure attachments serving as a distal risk factor that compounds distress in the event of relationship breakdown. Fincham *et al.* (2011) provided some confirmation for this hypothesis in their qualitative analysis of 100 suicide case files from an English coroner's office. For example, the researchers observed that in cases where relationship breakdown appeared to be the main trigger for suicide, there was evidence of overdependence on romantic partners and, among men, strong feelings of sexual jealousy and a desire to exercise control in the relationship (Fincham *et al.* 2011, pp.150-1). While this suggests that insecure attachments may have elevated the distress of relationship breakdown, Fincham *et al.* (2011, pp.161-2) insist that these suicides also need to be understood in relation to culturally hegemonic definitions of masculinity, which emphasise proprietary sexuality and male domination over women.

Quantitative research has also supported the claim that attachment orientations and experiences are associated with suicidal thoughts and behaviours. From a systematic review of quantitative studies, Zortea *et al.* (2021) concluded that secure attachments were generally protective against suicidal ideation and suicide attempts, whereas anxious and avoidant attachments were found to increase the risks of these outcomes. Nonetheless, studies that distinguish between attachment figures point toward a more complex picture. For instance, de Jong (1992) assessed suicidal ideation and attachment relationships among a sample of 126 undergraduate students. Results indicated that students with a history of suicidal thoughts and behaviours had significantly lower scores on maternal and paternal attachment relative to controls but did not significantly differ in terms of peer attachment. Similarly, Sheftall *et al.* (2013) found only paternal attachment to be a statistically significant predictor of suicide attempt history among a sample of 236 adolescents who had received inpatient psychiatric care. Thus, it may be that attachments to certain figures have a stronger bearing on suicidal thoughts and behaviours.

Despite its theoretical advantages and empirical verification, attachment perspectives on suicide are not without limitation. First, a central premise of attachment theory is that attachment patterns are relatively enduring and generalisable to other types of intimate relationships, such as romantic or peer relationships (Rothbard and Shaver 1994, p.31). Evidence for the temporal stability of attachment patterns is mixed at best, with a meta-analysis showing that the correlation between an individual's attachment categorisation across time points decreases with longer time intervals (Pinquart *et al.* 2013). Second, for the purposes of studying suicide approval, attachment theory offers little insight into how the workings of affectual bonds could impact suicide attitudes. Nonetheless, as the following chapter will highlight, there is a small body of evidence to suggest that bonds with parents and parenting style are associated with suicide approval.

Third, while shedding light on the development of distal and proximate risk factors for suicide, Adam's (1994) developmental model can be criticised for reducing suicide to a form of "extreme attachment behaviour". Even if the attachment system is implicated in some suicides, it is more contentious to presuppose that such suicides are primarily motivated by a concern with eliciting care and support from others. For example, in their phenomenological analysis of attachment experiences among 9 people who had previously attempted suicide, Zortea *et al.* (2019) found that 8 participants reported mistreatment by family members in childhood, such as suffering physical abuse or being abandoned by parents. These experiences contributed to feelings of worthlessness, isolation and distrust, thereby giving rise to psychological pain and discouraging participants from seeking help in moments of crisis. Consequently, suicide came to be seen as the only option left to participants for escaping their unbearable situation. Zortea *et al.'s* (2019) study therefore highlights that attachments do not influence suicidal behaviours in a uniform way but may have various consequences for the individual's psychological wellbeing and coping strategies.

Conclusion

The current chapter set out to review sociological and psychological theories of suicide with the following aims: first, to understand some of the potential pathways through which social relationships may influence the occurrence of suicidal thoughts and behaviours; second, to

determine whether existing theories of suicide can contribute any insights regarding the explanation of suicide approval in particular.

In terms of the first aim, a number of distinct processes linking social relationships to suicide were identified. It was highlighted that some theories regard human beings as possessing a fundamental need for affiliation with others that, when frustrated, creates mental distress which can escalate into suicidal thoughts and behaviours. Thus, under the IPT, thwarted belongingness is seen as a central predictor of suicidal ideation as it is believed to cause unbearable psychological pain. Likewise, attachment theory posits that humans are naturally inclined to form affectual bonds with selected individuals and groups; when individuals lack secure attachments to others, they are more likely to experience adverse reactions in the event of relationship breakdown, increasing their odds of suicide. Durkheim's theory also maintains that group attachments can protect against suicide by imbuing life with a sense of purpose. However, for Durkheim, the beneficial effects of group attachments depend on their intensity; at high levels of integration, group attachments may constitute a risk factor for suicide as the individual is likely to prioritise the group over their own survival.

Another factor that was highlighted across theories is the potential for social relationships to protect against suicide through social support processes. As network perspectives argue, social support can protect against suicide by helping to sustain morale in times of crisis. GST adds to this understanding of social support by linking it to the stress response, arguing that social support may help to alleviate the negative emotions (e.g., depression) that motivate suicidal actions or provide the individual with resources for resolving their difficulties.

In turn, a number of theories emphasise that adverse relationships in which the individual is mistreated by others may contribute to suicide risk. To some extent, Durkheim's concept of fatalistic suicide anticipates this idea as he suggested that overbearing relationships in which the individual's desires are constantly denied constitute a risk factor for suicide. However, attachment theory and GST develop this line of argument in greater detail. Thus, under attachment theory, childhood experiences of neglect, abuse and abandonment are the main cause of insecure attachments as they prompt the individual to develop working models of themselves as unlovable and others as unreliable. Likewise, in GST, strain is defined as relationships in which the individual's desires are denied or infringed upon; this means that various adverse relationship experiences can serve as motivations for suicide, including bullying and abuse.

Finally, some of the factors highlighted were unique to specific theories. Thus, network perspectives raise the possibility that social relationships may influence suicide risk by exposing the individual to beliefs more or less favourable to suicide. The IPT is distinctive in foregrounding the role of perceived burdensomeness as a motivating factor suicide. Likewise, Durkheim's theory assigns more importance to cultural uniformity and the presence of authoritative norms as the main structural determinants of suicide.

Turning to the second aim, it was noted that existing theories of suicide may offer some guidance on the correlates of suicide approval. For the most part, Durkheim has little to say on the subject; nonetheless, Durkheim alludes to the possibility that group detachment may foster a more approving attitude toward suicide by giving rise to feelings of apathy and a view of life as meaningless. Network perspectives are also partly concerned with suicide approval by being attentive to the cultural content of networks; that is, different social

networks entertain varying beliefs around suicide (e.g., religious prohibitions, cultural scripts for suicide), meaning the individual is likely to develop a more or less approving attitude toward suicide depending on the networks they participate in. Finally, GST argues that suicide approval is likely to increase with the intensification of negative affect as this prompts the individual to search for more drastic means of ending their suffering. In other words, suicide approval is expected to develop alongside suicidal ideation. By contrast, the IPT and attachment theory do not explicitly deal with suicide approval, although some studies into suicide approval have been informed by these theoretical frameworks.

The next step is to determine whether these theoretical perspectives may have utility for understanding variations in suicide approval.

Chapter 3 – Social Relationship Factors and Suicide Approval: A Systematic Review

The previous chapter considered various theories of suicide, focusing on how they understand social relationships in connection with suicidal thoughts and behaviours. While the mechanisms and variables highlighted in these theories are seen as relevant to the explanation of suicide, it is less evident that they apply to the explanation of suicide approval. Indeed, a search for systematic reviews into suicide approval and its correlates indicated that little research has been conducted on this topic. One systematic review has explored how health-care professionals' attitudes toward suicide are shaped by a variety of factors, including religious beliefs and experiences with suicidal patients (Boukouvalas *et al.* 2020); however, this review only examined suicide attitudes broadly and did not consider suicide approval in particular. This is unfortunate given that, as highlighted in Chapter 1, suicide approval may be especially relevant to the individual's chances of experiencing suicidal thoughts and behaviours.

Another challenge with evaluating previous research into suicide approval is the diversity of measures that have been developed to assess this construct. One of the earliest scales to include a component on suicide approval was Domino and colleagues' (1982) Suicide Opinion Questionnaire (SOQ). The SOQ was initially designed as a structured interview covering various aspects of suicide attitudes, such as perceived causes and motivations for suicide. Subsequent attempts to apply factor analysis to the SOQ have produced mixed results, with different studies yielding 15-, 8- and 5-factor solutions that exhibit low levels of internal consistency (Domino *et al.* 1982; Domino and Takahashi 1991; Rogers and DeShon 1992). However, a factor gauging approving attitudes toward suicide has been consistently reported across studies; typical items from this factor include "suicide is an acceptable means to end an incurable illness" and "people do not have the right to take their own lives".

Another widely used measure of suicide attitudes is the Questionnaire on Attitudes Toward Suicide (ATTS), which was developed by Renberg and Jacobsson (2003). As well as covering attitudinal domains such as perceived causes and prevention of suicide, the ATTS assesses whether the respondent approves of suicide both for people in general and themselves specifically. From their initial factor analysis of the ATTS, Renberg and Jacobsson (2003) identified two factors pertaining to suicide approval: Suicide as a Right – views that suicide is a right and an acceptable means of ending an incurable illness; and Resignation – views that suicide may be a relief and the only solution in certain situations. The ATTS has been found to demonstrate better psychometric properties than the SOQ (Kodaka *et al.* 2010), although efforts to replicate its factor structure have also produced mixed results (Kodaka *et al.* 2013a; Foo *et al.* 2014; Stecz 2021).

While the above scales do not constitute an exhaustive list, they highlight the diversity of ways in which suicide approval has been understood and the complexities surrounding its measurement. Indeed, as Domino *et al.* (2000, p.300) observe, the unstable factor structure of the SOQ may speak to the difficulty of capturing these attitudes in a single scale. It is therefore important to be attentive to how suicide approval is measured when evaluating findings around its correlates.

A final issue that needs to be considered when analysing suicide approval is its interconnections with suicide stigma. As explained in Chapter 1, suicide stigma can be defined as negative stereotypes and derogatory attitudes that are directed toward suicidal persons (Batterham *et al.* 2013, p.13). While there is evidence to suggest that suicide approval is inversely related with suicide stigma (Oexle *et al.* 2022), the latter is thought to elevate the individual's risks of suicide by compounding their distress and preventing them from accessing social support (Eskin *et al.* 2016; Hom *et al.* 2019; Oexle *et al.* 2019). It is therefore important to take account of evidence on suicide stigma where available to allow for a more cautious interpretation of associations. In other words, we might be wary of treating a given factor as protective against suicide if it lowers approval while also increasing stigma.

In light of the aforementioned issues, the main purpose of the present chapter is to provide a systematic review on how different aspects of social relationships are associated with suicide approval. Specifically, the chapter sets out to address the following questions:

> 1a. What social relationship factors have been studied as covariates of approving attitudes toward suicide?
>
> 1b. What social relationship factors have been found to be reliably associated with approving attitudes toward suicide?
>
> 2a. How have approving attitudes toward suicide been measured in these studies?
>
> 2b. Do the instruments used to measure approving attitudes toward suicide have a bearing on how these attitudes are associated with social relationship factors?

A secondary aim is to consider whether, among studies that examined suicide approval as an outcome, any information was provided on how social relationship factors associate with suicide stigma.

Methods

Search Strategy

A protocol for the review was registered with PROSPERO (ref: CRD42022370092). Suicide approval was defined as attitudes regarding the extent to which suicide is seen as morally justified or an appropriate option for dealing with crises. In previous systematic reviews, social relationships have been defined at their broadest level as a multilevel construct, encompassing (1) networks and social support at the individual level and (2) social structures and cultural traditions at the group level (Tough *et al.* 2017, p.2). In turn, systematic reviews based on the adjacent construct of social capital have emphasised that social relationships can be divided into structural and cognitive components (De Silva *et al.* 2005, p.619; Ehsan and De Silva 2015, p.1021). Whereas structural components of social relationships are thought to be more objective and involve observable behaviour (e.g., marital status), cognitive components are seen as more subjective and gauge relationship quality (e.g., emotional closeness). Thus, the current review operates with a broad definition of social relationship factors as objective and subjective features of social relationships, covering domains such as the exchange of social support, feelings of closeness, and peer-based learning of values.

Developing a search strategy for studies into suicide approval was challenging as there is no established terminology for this construct. Thus, researchers have variously used the terms suicide approval (Agnew 1998), suicide acceptability (Stack and Kposowa 2008), moral objections to suicide (Linehan *et al.* 1983), cultural scripts (Canetto *et al.* 2021) and suicide condemnation (Galynker *et al.* 2015) to refer to similar clusters of attitudes. These issues are compounded by the absence of Medical Subject Headings (MeSH)/Subject Terms for attitudes toward suicide more generally, let alone suicide approval.

The decision was therefore made to conduct keyword searches only, using all relevant fields to ensure wider coverage of studies. To capture different terms for suicide approval, proximity searching was applied using strings such as *suicide N2 accept** and *suicide N2 attitude**. These strings return all results where *suicide* occurs within at least two words of *accept** or *attitude**, where the * allows for different following characters. For example, this includes results such as suicide acceptability, accepting attitudes toward suicide and suicide acceptance. No search terms were used for social relationship factors as the focus of the review was on various aspects of social relationships. It therefore seemed unwise to search for specific social relationship factors as this might unintentionally exclude other relevant factors. See Appendix 3A for additional details on search terms and databases.

To implement the above search strategy, only databases that allowed for proximity searching could be utilised. The databases used were APA PsychINFO, CINAHL, Embase, Psychology and Behavioural Science Collection, SocINDEX, Web of Science Core Collection and the Data Citation Index. Searches were initially conduced on 15th January 2023 and were intermittently updated until 28th August 2024, with a grand total of 10318 articles retrieved (see Figure 3.1). Searches were then refined to articles, written in English and published from January 2013 onwards. The decision to apply a date restriction was taken in light of evidence that suicide attitudes may have changed over time (Renberg and Jacobsson 2003; Witte *et al.* 2010; Tong and Phillips 2018; Lee *et al.* 2023), making it more appropriate to consider results within a narrower timeframe. Articles were then imported into EndNote to identify duplicates. After removing duplicates, 2517 articles were available for abstract screening.

Eligibility Criteria

The following eligibility criteria were utilised for selecting articles:

Inclusion:

1. Empirical studies reporting information on associations between approving attitudes toward suicide as an outcome and at least one social relationship factor as an explanatory variable
2. Studies published in English
3. Quantitative studies of any design
4. Studies published in the last 10 years of the date searches were conducted

Exclusion:

1. Empirical studies only reporting on other suicide-related attitudes as an outcome (e.g., perceived causes, effectiveness of prevention, stigma)
2. Secondary data analyses that do not report new findings

3. Non-empirical studies
4. Qualitative studies

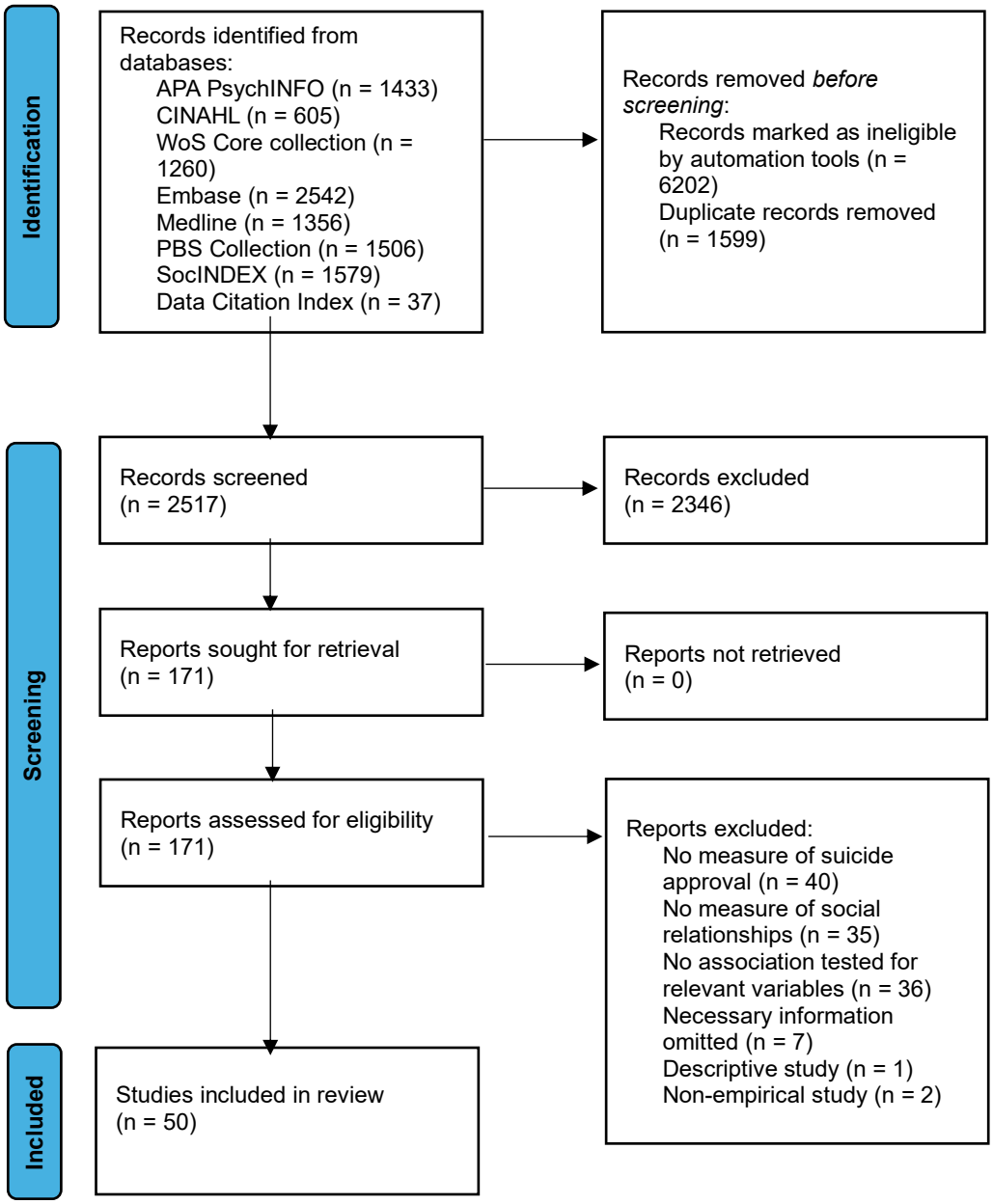


Figure 3.1: Flow chart of selection process

Some studies controlled for social relationship factors without making this explicit in the abstract. Thus, during the abstract-screening phase, articles were selected for full-text screening so long as their abstract indicated that suicide attitudes were being studied as an outcome.

At both the abstract and full-text screening phases, a second reviewer evaluated 20% of articles against the inclusion/exclusion criteria. The first and second reviewer compared results and resolved discrepancies through discussions. The first reviewer then reinspected

the initial 80% of studies to check that verdicts were consistent with the results of these deliberations. In the event that discrepancies could not be resolved, these were referred to a third team member for evaluation.

Agreement rates were fairly high during the abstract screening (94.44%), although they were lower for the full-text screening (73.53%). The lower agreement rating for the full-text screening was partly connected to the broad focus of the review, resulting in a diverse amount of social relationship factors to be considered for inclusion/exclusion. Only one study needed to be referred to a third team member based on the full-text screening[3].

Based on these eligibility criteria and search procedures, 171 articles were selected for full-text screening, 50 of which were included in the review. All studies were assigned a number from 1-50. Information on these articles can be found in Appendix 3B.

Data Extraction and Quality Assessment

A data extraction sheet was prepared for retrieving pertinent information from articles (see Appendix 3C). This covered contextual information (e.g., research aims, country, date of publishing), methodological features (e.g., study design, sampling procedures, measurement instruments), key findings (e.g., main effects, statistical interactions) and limitations.

To evaluate study quality, the Mixed Methods Appraisal Tool (MMAT) was used (Pace *et al.* 2012; Hong *et al.* 2018). The decision to use the MMAT was initially based on the intention to include qualitative studies in the review, which was abandoned after it became evident that this would be unfeasible to cover within the timeframe for the project. The MMAT was nevertheless retained as it is also suitable for evaluating quantitative studies of any design. This decision seemed appropriate as it could not be anticipated what study designs would feature in the review.

All included studies were classified as cross-sectional analytic, meaning they were evaluated under the non-randomised quantitative section of the MMAT. This involved assessing studies based on five criteria, such as whether the sample is representative of the target population. For each criterion, a verdict of *Yes*, *No* or *Can't Tell* was reached. The developers of the MMAT caution against assigning overall quality scores to studies and instead recommend reporting study performance by each relevant criterion (Hong *et al.* 2018, p.1). As such, the decision was made to report the proportion of studies achieving a *Yes* verdict for each criterion.

As with the application of inclusion/exclusion criteria, a second reviewer conducted quality appraisal for 20% of included studies. Comparison of verdicts, resolution of discrepancies and verification of results were then conducted according to the procedures outlined above. Agreement rates were fairly high (80%) regarding three MMAT criteria: valid measures, exposures occurring as intended and complete outcome data. By contrast, agreement rates were lower for two criteria: controlling for confounders (60%) and use of representative samples (40%). Disagreements around sample representativeness largely involved

[3] This study assessed whether participants knew someone with suicidal ideation, with the first and second reviewer unsure whether to treat this as a form of exposure to suicidal behaviours. After consulting a third team member, the decision was made to exclude this study.

convenience samples[4]. The decision was made to only treat a convenience sample as representative if authors provided evidence that their sample did not systematically differ from the target population on relevant factors.

Data Synthesis

Due to heterogeneity in outcome measures and exposure variables, findings were collated through a narrative synthesis structured around the exposure variables. To judge how an exposure was associated with the outcome, the direction of coefficients and their statistical significance was evaluated. For each article, the threshold for judging statistical significance was based on the author's stated alpha level or their designation of results as statistically significant in terms of conventional cut-offs (e.g., 0.05). In turn, care was taken to document whether associations were attenuated by the inclusion of confounding factors or modified by other variables. To understand whether the instruments used to measure suicide approval may have biased results, associations were also broken down by measurement instruments. For example, studies examining frequency of church attendance and suicide approval were divided into those that recorded positive, negative and null associations; these findings were then tabulated against the measures used to measure suicide approval.

Findings

Study Characteristics

The geographic coverage of studies was fairly broad, including countries from East Asia, Europe, South Asia, South America, North America as well as several cross-national studies (see Table 3.1). For study 31, the geographic location was uncertain as participants were recruited via social media. Most studies were conducted in the USA, followed by cross-national studies and studies based in South Korea.

The median sample size across studies was 493.5, with a range of 97 to 82898. In turn, most studies were based on samples of community-dwelling individuals (42%). Students (24%) were the second most frequently sampled group, followed by various medical professionals (10%) such as pharmacists, mental health professionals and nurses. Military and adolescent samples featured in two studies each, while only one study recruited psychiatric patients.

Women tended to outnumber men across studies, with a weighted 54.25% of participants reporting their sex as female. From the 30 studies that reported the mean age of participants, the weighted average was 41.67 years old. In turn, ages ranged from 13 to 98 across studies. Only 16 studies reported information on ethnicity, making it difficult to determine the composition of different ethnic groups.

[4] It is possible that these disagreements reflected disciplinary differences between the first reviewer (sociology) and second reviewer (psychology). Thus, in psychology, it is common practice to make use of convenience samples in experimental research, with random assignment to experimental conditions used to control for differences between participants. By contrast, experiments are rarely conducted within sociology; instead, quantitative analyses tend to be based on secondary survey data, with regression techniques being used to adjust for differences between participants (Sturgis and Luff 2021).

Table 3.1: Geographic Context of Studies

Context	Count	Percentage
USA	9	18
Cross-national	7	14
South Korea	6	12
India	5	10
Japan	4	8
Poland	2	4
Brazil	2	4
China	2	4
Iran	2	4
Malaysia	2	4
Taiwan	2	4
Norway	1	2
Canada	1	2
Germany	1	2
Unclear	1	2
Netherlands	1	2
Italy	1	2
Jammu and Kashmir	1	2

Q1A: What Social Relationship Factors have been Studied?

Studies employed a diverse range of measures for social relationships, with 38 unique variable types being identified across studies. For ease of interpretation, these have been grouped into higher order categories (see Table 3.2). The variables studied most frequently were religious affiliation, marital/relationship status and previous exposure to suicidal behaviours in others. The only other variables that featured in 10% of studies or more were frequency of church attendance, number of children and employment status. Thus, where studies included social relationship factors, these were typically addressed to structural aspects of social relationships – e.g., relationship classifications, frequency of exposure, number of relationships – largely in the form of socio-demographic variables.

While variables gauging perceptions of social relationships were not uncommon, there was much less consistency in the types of variables included. For instance, five studies examined the perceived importance of different types of social groups and institutions; these measures covered the perceived importance of religion, family, friends and work. Likewise, few studies measured perceptions of social relationships that play a prominent role in theories of suicide, such as thwarted belongingness, perceived burdensomeness and perceived social support. Thus, research into suicide approval has only examined subjective dimensions of social relationships sporadically, thereby limiting our ability to draw inferences concerning such variables.

Table 3.2: Social Relationship Factors Retrieved from Studies

Variable Type	Count	Percentage
Family Relationships		
Marital/relationship status	17	34
Children/number of children	5	10
Parental Bonding	1	2
Parental Authority	1	2
Parent-Parent Relations	1	2
Parent-Child Relations	1	2
Family type	1	2
Family importance	1	2
Religious Relationships		
Religious affiliation	20	40
Church attendance	8	16
Religion importance	2	4
Religious activities	1	2
Aggregate: Church attendance	1	2
Aggregate: Religion importance	1	2
Aggregate: Prayer frequency	1	2
Aggregate: God importance	1	2
Work Relationships		
Employment status	7	14
Work importance	1	2
Aggregate: Unemployment rate	1	2
Social support		
Perceived support	3	6
Multidimensional support	1	2
Exposure to Suicidal Behaviours		
Exposure/frequency of exposure	15	30
Closeness to deceased	2	4
Kinship with deceased	1	2
Interpersonal-Psychological Factors		
Thwarted Belongingness	3	6
Perceived burdensomeness	3	6
Social Disconnection		
Loneliness/Subjective Isolation	2	4
Lone living	1	2
Social media use	1	2

Table 3.2: Continued

Variable Type	Count	Percentage
Other Aspects of Social Relationships		
Community stress	1	2
Adverse school relations	1	2
Sexual abuse	1	2
Positive relations	1	2
Community safety	1	2
Bereavement	1	2
Friend importance	1	2
Aggregate: Self-Expression Values	1	2
Aggregate: Culture Zone	1	2

Notes:
Counts based on variables for which information was available or retrieved from authors

Q2A: How has Suicide Approval been Measured?

A number of instruments for measuring suicide approval were identified across studies (see Table 3.3). 11 of these instruments were psychometric scales that have been established through prior research to a greater or lesser extent, such as the ATTS and SOQ. Five of these psychometric scales, such as the Cognitions Concerning Suicide Scale (CCSS) and Suicide Attitude Questionnaire (SAQ), only featured in one study each and were therefore classified as other scales. Two further instruments consisted of survey items that, while unvalidated, have regularly been used to track suicide attitudes across populations. In contrast, the remaining instruments were categorised as custom items specific to the study at hand.

The most widely used measure was the ATTS, which featured in 15 studies. Other commonly used measures of suicide approval included custom items; the SJI, primarily used as part of the World Values Survey and European Values Study (WVS/EVS); four items from the GSS; and the SOQ.

Table 3.3: Measures of Suicide Approval

Instrument	Abbreviation	Count	Percentage
Attitudes Toward Suicide Questionnaire	ATTS	15	30
Suicide Opinion Questionnaire	SOQ	4	8
Reasons for Living Inventory	RFLI	4	8
Suicide Acceptance Scale	SAS	2	4
Suicidal Behaviour Attitude Questionnaire	SBAQ	2	4
Eskin-Attitudes Toward Suicide Scale	E-ATSS	2	4
General Social Survey Items	GSS items	5	10
Suicide Justification Item	SJI	5	10
Custom item(s)	-	7	14
Other scales*	-	5	10

Notes:
* Includes psychometric scales that only featured in one study

However, it should be noted that the manner in which these instruments were employed was not always consistent across studies. For instance, as previously noted, the initial version of the ATTS developed by Renberg and Jacobsson (2003) included two subscales pertaining to suicide approval: Suicide as a Right and Resignation. Only four studies utilised this scale format; the remaining 11 studies adopted alternative schemes that were either derived on a conceptual basis or through use of factor analytic techniques. Similar practices were observed for the SJI, GSS items and the SOQ. For instance, responses to the four GSS items were sometimes summed to form a global index of suicide approval (studies 11, 36) and other times were analysed separately (study 45).

Instruments also differed in how they sought to elicit participants' views on the acceptability of suicide. In 15 (30%) studies, participants were only asked whether they approve of suicide in the abstract, without being told the motivating circumstances for the suicidal action. This includes studies using custom items that simply asked participants whether they believe suicide is a right (e.g., study 49); it also includes the SJI, which asks participants to rate the justifiability of suicide on a scale of 1 (never) to 10 (always). Consequently, participants' answers to these questions may have been informed by their implicit understandings of who is likely to die by suicide and what typically causes this outcome.

In some cases, questions on the acceptability of suicide were framed from a specifically religious standpoint. For instance, the SBAQ includes a Right to Suicide subscale inquiring into views that only God has the authority to end a life, that suicide constitutes a right and that suicidal individuals should be discouraged from taking their life. The Moral Objections subscale of the RFLI covers similar attitudes.

In contrast, 11 (22%) studies used instruments that asked participants to consider the acceptability of suicide under specific circumstances. For instance, study 32 constructed an index of suicide attitudes that specifically gauged approval in the event of pain and suffering. The most elaborate of these instruments were vignette questionnaires, which were used in studies 30 and 43. These questionnaires provide several vignettes about a fictional character who attempts suicide after encountering some hardship; features of the character or hardship are varied across vignettes, with participants being asked to rate the acceptability of the character's decision to suicide.

Finally, 50% of studies employed instruments that included a mix of abstract and context-specific questions, such as asking participants whether they view suicide as a right and as an appropriate response to incurable illness.

Overall, therefore, there was considerable heterogeneity in how studies measured suicide approval; even where identical instruments were used, these were not always implemented in a like manner. This may limit the comparability of findings across studies as there is no universal standard for gauging suicide approval.

Q1B: What Social Relationship Factors are Associated with Suicide Approval?

Family Relationships

Marital/Relationship Status

Out of the 17 studies examining marital/relationship status and suicide approval, seven (studies 1, 10, 17, 31, 36, 46, 49) reported at least one statistically significant association. Three of these studies (10, 31, 46) dichotomised marital status into categories of married/partnered and unmarried/unpartnered, finding that the married/unpartnered were lower in suicide approval. The remaining four studies (1, 17, 36, 49) utilised more nuanced classifications, all of which found the married/partnered to be less approving of suicide than the single. Study 1 also reported that the divorced were lower in suicide approval than the single based on a European sample. In turn, study 36 found the widowed to be lower in suicide approval than the single in the USA.

Three studies (17, 31, 36) further indicated these associations may be contingent on other factors. Study 17 found the association between marital status and suicide approval was no longer statistically significant at $p < 0.1$ after controlling for religious factors and perceived importance of family/friends. Based in the USA, study 36 found marital status to be associated with suicide approval in the 1980s but not the 2010s. An Oaxaca decomposition further suggested that levels of suicide approval had increased from the 1980s to the 2010s, with declining numbers of married individuals helping to explain 4.2% of this increase. Study 31 examined suicide attitudes among individuals from India and English-speaking countries; compared to the single, individuals in a relationship were less likely to agree that suicide is a solution under three separate circumstances. However, in two cases these associations only held among Caucasian individuals.

The remaining 10 studies all reported null associations between marital status and suicide approval. These included studies from East Asia (studies 11, 22, 28, 34, 39, 47) and Europe (studies 2, 33, 38, 43).

Overall, therefore, the majority of studies indicate that marital status is not significantly associated with suicide approval. Where statistically significant associations have been recorded, they have all suggested the married/partnered are less approving of suicide than the unmarried, although these patterns may be contingent on other factors (e.g., time period).

Children

Three studies (2, 17, 26) recorded a statistically significant association between having children/number of children and suicide approval. Two studies examined bivariate associations between having children and the RFLI among Polish university students (study 2) and South Asians in the USA (study 26). In both cases, moral objections were stronger among those with children. Finally, study 17 was based on a European sample and used the SJI to measure suicide approval. The study found individuals with more children were more likely to view suicide as never justifiable across a series of models controlling for various factors.

In contrast, study 34 recorded a null association between having children and RFLI-Moral Objections to suicide in Taiwan. Likewise, while study 10 reported a negative association

between having more children and the SJI, the association was not significant at the author's stated significance level of 0.05.

Thus, there is some evidence to suggest that individuals with any or higher numbers of children may be less approving of suicide. Nonetheless, the quality of this evidence is debatable, with many studies only testing bivariate associations or using unvalidated, single-item measures of suicide approval.

Parenting Style and Quality

Three studies (4, 18, 21) examined variables around parenting style/quality. Studies 4 and 18 were both based in East Asia and used the ATTS to measure suicide approval. In study 4, the Parental Authority Questionnaire (PQA) was administered to South Korean adolescents. The PQA distinguishes between three types of parenting: permissive, authoritarian and democratic. In unadjusted analyses, adolescents who perceived their parents as democratic were found to score lower on ATTS-Suicide as a Right and ATTS-Resignation relative to adolescents with permissive or authoritarian parents; after adjusting for confounders, only the differences between democratic and authoritarian parenting styles remained statistically significant at the 0.05 level.

Study 19 was conducted with Japanese medical students and assessed parental bonding using the Parental Bonding Instrument (PBI). The PBI distinguishes between maternal and paternal bonding, with each being graded along two dimensions: care and overprotection. In bivariate analyses, students reported stronger agreement on ATTS-Suicide as a Right the higher their maternal overprotection and the lower their paternal and maternal care. However, paternal overprotection was not associated with ATTS-Suicide as a Right and no parental bonding variables were associated with ATTS-Unjustifiable. When adjusting for confounders, none of the parental bonding variables were associated with either ATTS outcome at the authors' stated α level of 0.05.

Study 21 was based on Iranian university students and aimed to develop a scale of adverse relations that included subscales for relations with parents (child-parent) and between parents (parent-parent); correlational analyses indicated that students reporting more adverse child-parent relations and adverse parent-parent relations were more approving of suicide.

Thus, there is some evidence that parenting style and quality is related to suicide approval. Specifically, receiving firm but warm treatment from parents and experiencing less adversity in relations with and between parents may coincide with a less approving attitude toward suicide. However, these associations appear to be more pronounced in bivariate analyses, suggesting that confounders may play a role in shaping these findings.

Other Aspects of Family Relationships

Based on a European sample, study 17 found that individuals who ascribed more importance to family in their life scored lower on the SJI. Study 41 examined responses to the SOQ among nursing students in India. Compared to nursing students from nuclear families, those from extended families agreed less with the claim that suicide is an acceptable means of ending an incurable illness.

Religious Relationships

Religious Affiliation

Out of 20 studies examining religious affiliation, 13 (studies 8, 10, 17, 22-4, 34-6, 41, 44, 47, 50) reported at least one statistically significant relationship with suicide approval. To ease the interpretation of findings, Table 3.4 presents results from all studies that compared individuals of a given religious affiliation to the unaffiliated (studies 8, 10-1, 22-3, 28, 34-8, 44, 47). It can be seen that suicide approval was typically lower among those affiliated with a religion, although the consistency of these effects varied by denomination. Only Muslims were found to be less approving of suicide than the unaffiliated across all tested cases. Although a similar pattern was observed for Christians, results were more mixed when testing specific branches of Christianity (e.g., Catholic, Protestant, Orthodox).

Table 3.4: Comparisons of Religiously Affiliated and Unaffiliated on Suicide Approval

Religious Affiliation	**Tested**	**Negative Effect***	**Null Effect**
Unaffiliated (*ref.)*	13		
Catholic	3	2	1
Protestant	5	4	1
Muslim	3	3	0
Hindu	2	1	1
Buddhist	3	2	1
Orthodox	2	1	1
Christian	3	3	0
Other	5	3	2
Any	5	1	4

Notes:
*Only study 10 recorded a positive effect for unknown religions

Seven studies (17, 23-4, 35, 41, 44, 50) also found that suicide approval differed between those adhering to different religious faiths, although the patterning of effects was not always consistent. For example, while three studies (23, 35, 50) found Muslims to be less approving of suicide than Hindus, two studies (15, 24) reported no statistically significant differences between these denominations. Likewise, two studies (17, 44) found Protestants to be more approving of suicide than Catholics whereas study 35 found no statistically significant difference.

Three studies (17, 23, 44) also examined interactions between religious denomination and other variables. Using cross-national samples, studies 17 and 23 found that suicide approval varied by religious denomination, with these patterns being modified by frequency of church attendance. In turn, study 23 further suggested that other religious variables, such as perceived importance of religion and prayer frequency, interacted with religious denomination in shaping suicide approval. Study 44 used data from the GSS to examine suicide attitudes in the USA. Compared to Protestants, the unaffiliated, Catholics and Jewish individuals were more approving of suicide whereas those belonging to other religions

exhibited no statistically significant differences in suicide approval. However, these effects varied by age – older Catholics expressed less approving attitudes whereas the unaffiliated and those belonging to other religions expressed more approving attitudes as they aged.

In contrast, the remaining studies (7, 11, 15, 28, 37, 38, 40) all reported null associations involving religious affiliation and suicide approval. These studies were based in China (studies 11, 28), India (studies 7, 15, 40), South Korea (study 37) and the Netherlands (study 38).

Overall, the majority of studies indicate that affiliation with certain religious denominations coincides with lower suicide approval. However, not all religious denominations appear to consistently promote a disapproving attitude – e.g., Catholicism, Buddhism, Protestantism, Orthodox Christianity. Furthermore, other variables (e.g., church attendance, perceived importance of religion, age) may modify these associations.

Church Attendance

All studies examining church attendance (studies 10, 17, 22, 23, 30, 36, 43, 45) reported a statistically significant association with suicide approval, such that people who attend church more frequently are less approving of suicide. For instance, study 30 found that people who attend church more regularly are less likely to agree that suicide is a right when it is seen to be motivated by lifelong disability or other precipitants. Similarly, using data on US adults from the GSS, study 45 found more frequent church attendance is associated with lower odds of approving suicide in the event of incurable illness, feeling tired of life, dishonouring family and bankruptcy.

As well as producing evidence for main effects, three studies (17, 22, 23) recorded interactions between church attendance and other variables. Findings for studies 17 and 23 were reported above in relation to religious denomination. Study 22 used data from the Korean General Social Survey to examine views of suicide as a right, a solution and an ethical breach. Church attendance was found to interact with stress, such that more frequent church attendance weakened the positive association between stress and suicide approval. In other words, church attendance partly acted as a stress buffer.

The available evidence therefore suggests that church attendance is negatively associated with suicide approval. This association appears to hold across contexts and measurement instruments, suggesting it is fairly robust. In turn, there is some evidence that church attendance shapes suicide approval by buffering the harmful effects of stress.

Other Aspects of Religious Relationships

Two studies (1, 23) used data from the WVS to examine how perceived importance of religion is associated with the SJI. In both cases, scores on the SJI were lower among those who ascribed more importance to religion. Study 23 also conducted an ecological-level analysis of religious variables and suicide approval based on the WVS. Results indicated that country levels of church attendance, importance of religion, importance of God and prayer frequency were negatively associated with the SJI in bivariate analyses; however, only the perceived importance of God was significantly associated with suicide approval in multivariable analyses. Finally, study 7 found religious activities to be unrelated to the Acceptability subscale of the SAQ in India.

Exposure to Suicidal Behaviours

Exposure/Frequency of Exposure

The association between exposure to suicidal behaviours and suicide approval was tested in 15 studies. Nine studies explored whether participants had experience/knowledge of suicidal behaviours among a broader range of groups, such as personal acquaintances or someone. Other studies more clearly demarcated the groups participants were asked to consider, such as occupational contacts, family and friends or someone close. In turn, eight studies considered whether participants knew someone who had died by suicide; the remaining studies covered a broader spectrum of suicidal behaviours, including ideation/attempts/death, ideation/attempts, attempts/death and unspecified suicidal behaviours.

Out of these 15 studies, five (studies 11, 12, 28, 42, 47) reported at least one statistically significant association. In all cases, the association was such that exposure to suicidal behaviours coincided with more suicide approval. Furthermore, all five studies were conducted in East Asian countries. For instance, study 12 found that Japanese social workers who had personal or occupational exposure to suicide ideation/attempts/death scored lower on ATTS-Unjustifiable Behaviour; however, there were no significant differences in ATTS-Suicide as a Right by personal or occupational exposure. Using two waves of the South Korean Suicide Survey, study 47 applied Latent Profile Analysis (LPA) to the ATTS to categorise participants into three groups – this included a permissive group that scored higher on the Right to Die and Resignation factors. Multinomial regressions indicated that the probability of permissive group membership was positively associated with exposure to suicide death in 2013 but not 2018. Using data on rural Chinese women aged 15-34, study 28 found that a family history of suicide was only associated with suicide approval in bivariate analyses; when controlling for other factors such as depression, the association was no longer statistically significant at $p < 0.05$.

Conversely, studies reporting only null associations between suicide exposure and measures of suicide approval had wider geographic coverage, including South America (studies 5, 6), South Asia (study 7), East Asia (studies 13, 48), Europe (study 43), North America (studies 9, 14, 20) and one study (29) where the context was unclear.

Overall, most studies found having exposure/frequency of exposure to suicidal behaviours to be unrelated to suicide approval. Furthermore, even when statistically significant associations were recorded, they did not hold across all relevant subscales, studied time periods or modelling specifications. The available evidence for an association between suicide exposure and suicide approval is therefore mixed at best.

Features of Relationship to Deceased

Studies 14 and 27 considered the nature of participants' relationships to close ones who died by suicide. Study 14 compared two groups of young adults in the USA: an exposure group that experienced a cluster of suicides in high school and an unexposed comparison group. Correlational analyses within the exposure group indicated that individuals reporting higher average closeness to all known deceased scored lower on ATTS-Suicide as a Right but not ATTS-Resignation. However, this association was no longer statistically significant at $p < 0.05$ after accounting for gender and age.

Study 27 included two samples of people bereaved by suicide in Japan and the USA. Bivariate analyses suggested that, among US individuals, higher closeness and first-degree kinship with the deceased were associated with greater endorsement of suicide as a right. In contrast, neither variable was associated with right to die attitudes among Japanese individuals. Furthermore, closeness and kinship were unrelated to SAS-Justification across both contexts.

Thus, among individuals who had someone close to them die by suicide, features of their relationship to the deceased do not appear to exhibit a consistent association with suicide approval. Where associations have been documented, these have only been observed in the USA and may be attenuated by other variables. Furthermore, it should be emphasised that the evidence base is too small for us to draw reliable inferences concerning these associations.

Social Support

Four studies (14, 25, 28, 32) tested associations involving suicide approval and social support. Social support was largely measured in terms of perceived support, such as feeling understood by family and friends, feeling backed by family in hard times and having someone to speak openly with about important topics. Two studies (14, 25) distinguished between sources of social support in terms of whether this came from family, friends or partners/a special person. The remaining studies, by contrast, either assessed social support from family and friends combined (study 28) or unspecified groups (study 32).

Out of these four studies, three (studies 14, 25, 28) reported at least one statistically significant association. Study 14 found that social support from family, friends and a special person were negatively correlated with ATTS-Resignation among US adults exposed to a suicide cluster; results were essentially unchanged when friend social support was further tested while controlling for age and gender. However, this same study also found that ATTS-Suicide as a Right was unrelated to any measure of social support in bivariate and multivariable analyses. Study 25 aimed to validate a resilience measure among Iranian students that included dimensions on family, peer and partner social support. The family support dimension was found to negatively correlate with suicide approval; no other social support dimension was related to this outcome. Based on a sample of rural Chinese women aged 15-34, study 28 found that social support was negatively associated with suicide approval in bivariate analyses but not after adjusting for confounders.

By contrast, study 32 reported a null association between social support and suicide approval among a sample of South Korean adults.

Available findings therefore point toward an association between social support and suicide approval, although it does not consistently hold across measurement instruments and modelling specifications. The observation that studies distinguishing between sources of social support were more likely to identify negative associations may hint that social support is more effective when it is procured within certain types of relationship. However, due to the low number of studies on social support and suicide approval, the accuracy of this explanation is highly uncertain.

Work Relationships

Employment Status

Out of seven studies examining employment status, six (studies 1, 17, 31, 38, 48, 49) reported at least one statistically significant association with suicide approval. However, the nature of these associations were highly mixed, making it unclear how employment status relates to suicide approval. Two studies (1, 31) found the unemployed to be more approving of suicide than the employed. Study 1 further indicated that this association was stronger among women compared to men while study 31 found it to be more reliable among Caucasians than Indians. In contrast to these findings, study 48 pointed toward the opposite conclusion, reporting that the unemployed scored lower than the employed on SAS-Justification based on a Japanese sample.

On the other hand, some studies (17, 38, 49) found that full-time workers only differed from groups other than the unemployed. Study 17 used cross-national data from Europe, finding students and part-time workers were less likely to view suicide as never justifiable compared with full-time workers. However, after including interactions between religious affiliation and church attendance, these differences were no longer statistically significant at $p < 0.1$. Using data from the Netherlands, study 38 compared various employment statuses on the SJI. In the 1980s, scores on the SJI were higher among the self-employed and lower among students compared to full-time workers; however, in the 2000s, students no longer exhibited statistically significant differences from full-time workers at $p < 0.1$ and the self-employed now scored lower on the SJI.

Only study 22 found employment status to be unrelated to suicide approval in all models based on a sample of South Korean adults.

Thus, while there is evidence for an association between employment status and suicide approval, interpreting this evidence is challenging. Two studies indicate that unemployment is associated with a more approving attitude toward suicide while one suggests the opposite. In turn, two studies indicate that groups other than the unemployed (e.g., students, part-time workers, the self-employed) differ from full-time workers in terms of suicide approval, but these differences are not consistent over time and populations. Thus, we cannot draw any firm conclusions regarding these associations.

Other Aspects of Work Relationships

Using a cross-national European sample, study 1 found that people who ascribed more importance to work scored lower on the SJI, with this association being stronger among men. Study 23 carried out an ecological level analysis across 60 countries, finding average scores on the SJI to be unrelated to unemployment rates in bivariate and multivariable analyses.

Interpersonal-Psychological Factors

Only three studies (3, 16, 20) examined suicide approval in relation to the IPT constructs of thwarted belongingness and perceived burdensomeness. All studies reported statistically significant associations involving at least one IPT construct and a measure of suicide approval.

Study 16 was based in Germany and aimed to validate the CCSS. The CCSS includes three dimensions relevant to suicide approval: Right to Suicide – taking suicide as a right and an acceptable means of ending pain; Interpersonal Gesture – viewing suicide as an appropriate means of achieving interpersonal goals; Resiliency – rejecting suicide as an option even in the face of adversities. Perceived burdensomeness was found to positively correlate with each dimension of the CCSS while thwarted belongingness was only positively correlated with CCSS-Interpersonal Gesture.

Study 20 found higher thwarted belongingness was negatively correlated with RFLI-Moral Objections among a sample of 97 US army personnel; in other words, individuals with low belongingness expressed fewer objections to suicide. Conversely, perceived burdensomeness was uncorrelated to RFLI-Moral Objections. Study 3 recruited 201 men from the USA and found perceived burdensomeness to be positively correlated with a scale of permissive suicide attitudes developed from the ATTS. However, higher thwarted belongingness was negatively correlated with permissiveness, contradicting findings from studies 16 and 20.

The available evidence therefore suggests that the interpersonal risk factors for suicide detailed in the IPT may also foster a more approving attitude toward suicide. There was some indication that perceived burdensomeness may be more reliably associated with suicide approval as it demonstrated statistically significant associations with all three subscales of the CCSS in study 16 and a general measure of suicide permissiveness in study 3. However, given that all tests of IPT constructs in relation to suicide approval were based on bivariate analyses, it is unclear whether these associations would hold when controlling for other factors.

Social Disconnection

Three studies (21, 28, 32) examined measures of social disconnection separate from thwarted belongingness. Study 21 found suicide approval to be positively correlated with subjective loneliness among a sample of Iranian university students. Study 32 found South Korean adults were more likely to view suicide as a solution to pain/suffering when they reported more subjective isolation (e.g., having no one to trust, feeling alone). In turn, social media use further helped to lower suicide approval by reducing social isolation and improving psychological wellbeing. In contrast, study 28 examined how the GSS items associate with a number of suicide risk factors among women aged 15-34 in rural China. Lone living was included as a predictor but was unrelated to suicide approval in bivariate and multivariable analyses.

Overall, few studies have examined features of social disconnection in relation to suicide approval, meaning we cannot draw reliable inferences on these associations. However, the evidence may hint that subjective measures of social disconnection (e.g., loneliness) are more reliably associated with suicide approval than objective measures (e.g., lone living).

Other Aspects of Social Relationship

Seven studies (10-1, 17, 21, 27, 33, 48) also examined disparate measures of social relationships that could not be grouped into any higher order category. Study 10 found country levels of self-expression values to be unrelated to suicide approval, although they did interact with individual-level endorsement of these values to predict suicide approval. In turn,

countries with a Catholic, Protestant, Ex-Communist and Confucian cultural tradition were found to have higher levels of suicide approval than countries with a Latin cultural tradition.

In study 11, data were collected from Chinese residents of communities that had either experienced a suicide or no suicides; more stressful community relationships were positively associated with suicide approval in communities that had experienced a suicide but not in communities where no suicides had occurred.

Study 17 found that individuals who ascribed more importance to friends were more likely to view suicide as never justifiable based on a cross-national sample from Europe.

Study 21 developed a scale of adverse relations that measured experiences such as sexual abuse and mistreatment from school peers; higher scores on these measures were associated with more suicide approval.

In study 27, Japanese and US individuals who had experienced suicide bereavement were asked about their perceptions of community safety and suicide attitudes. The study produced highly mixed results; on the one hand, views of suicide as a right were uncorrelated with perceived community safety; on the other hand, the correlation between SAS-Justification and perceived community safety was positive among Japanese individuals but negative among US individuals.

Situated in Poland, study 33 included a measure of positive relations from Ryff's Psychological Wellbeing Scale and found it to be unrelated to a scale of suicide approval based on the ATTS.

Finally, study 48 recruited Japanese adults and found bereaved individuals to score lower on SAS-Justification compared to those who had not experienced bereavement.

Q2B: Do Measures of Suicide Approval Bias Results?

It was not possible to examine whether the instruments used to measure suicide approval biased associations for all exposure variables. This was largely due to certain exposures only featuring in a limited number of studies (e.g., perceived burdensomeness, loneliness, parental bonding) or only being tested against a limited number of instruments; for example, having children/number of children was only tested against the SJI and RFLI. Nonetheless, for exposures tested against a wider range of instruments, there was some evidence that associations involving marital status and suicide exposure could have been influenced by instrument biases.

Marital status was tested against 9 distinct measures of suicide approval across studies. While marital status only exhibited statistically significant associations with suicide approval in 7 out of 17 studies, just under half of these associations were recorded using the SJI to measure suicide approval (studies 1, 10, 17). However, studies using this instrument were also able to leverage larger sample sizes, meaning it is unclear whether these findings are due to measurement biases or increases in statistical power.

Suicide exposure was tested against 7 unique measures of suicide approval. Out of the 15 studies to assess this exposure, five recorded statistically significant associations, all of which used the ATTS or GSS items to measure suicide approval (studies 11, 12, 28, 42, 47).

However, as previously noted, these five studies were all based in East Asian countries, meaning contextual features may have had a bearing on results.

Overall, therefore, there was some evidence that associations involving marital status and suicide exposure may have been influenced by measurement biases with suicide approval. However, in both cases, these patterns were confounded with other features of the studies (e.g., sample size, context), making it unclear whether measurement biases were driving these results.

Factors that Lower Approval and Raise Stigma

As noted in the introductory section, any beneficial effects of social relationships on suicide approval may be qualified by accompanying increases in suicide stigma. Out of all 50 studies, 15 also assessed how features of social relationships are associated with measures of suicide stigma. These measures covered various facets of stigma, including views that people who express suicidal intent are insincere and will not attempt suicide; that suicidal individuals are dangerous and should be avoided; and that suicide is cowardly, selfish and or shameful.

Statistically significant associations between a measure of suicide stigma and selected aspects of social relationships were recorded in six studies. In half of these studies, there was some indication that factors associated with lower suicide approval may also coincide with higher levels of stigma. In Study 35, religious denominations expressing the least approving attitudes toward suicide also scored higher on E-SRSP Emotional Involvement; this means individuals belonging to these denominations were more likely to state that a suicidal friend could be dangerous and would not fit into one's circle of friends. However, these individuals also scored higher on E-SRSP Social Acceptance, which gauges a greater willingness to invite a suicidal friend to their house and contact this friend more frequently. Likewise, study 14 found social support from family was positively correlated with views of suicide as selfish while social support from a special person was positively correlated with views of suicide as vengeful. On the other hand, social support from family was negatively correlated with the view that people who communicate suicidal thoughts are not serious about dying. Finally, study 12 reported that social workers who personally knew someone who had thought about/attempted/died by suicide were not only more inclined to view suicide as justified; they were also less likely to view the expression of suicidal intent as a mere threat.

Thus, there was some evidence that factors associated with lower levels of suicide approval may also coincide with more stigmatizing views of suicide. However, these associations were far from clear-cut, with some variables being linked to less stigma in certain areas and more stigma in other areas. Additional research is therefore needed to understand how suicide stigma is linked with social relationship factors and what this could mean for suicide approval.

Quality Appraisal

All studies were evaluated under the non-randomised quantitative section of the MMAT. Table 3.4 details the proportion of studies meeting each applicable criterion under this section.

Table 3.5: MMAT Ratings for Studies

Criterion	Percentage
Representative sample	32
Valid measures of constructs	40
Complete outcome data	54
Controls for confounding factors	54
Exposure occurred as intended	84

Just under a third of studies were classified as using a representative sample of their target population. Where studies achieved a representative sample, participants were collected through random or stratified sampling procedures. Conversely, studies that did not meet this criterion typically utilised convenience sampling and did not provide descriptive statistics for their target population, making it unclear how well their sample approximated the population of interest.

Studies fared slightly better in terms of valid measures, with 40% being classified as meeting this criterion. As there is no gold standard for measuring suicide attitudes (Kodaka *et al.* 2010), studies were rated as using valid measures for this construct if they utilised established scales or if they provided evidence for the psychometric properties of their chosen scale. In most cases where studies were rated as not meeting this criterion, suicide approval was measured using a single item, unvalidated items or alternative formats of existing scales without providing evidence of their psychometric properties.

Just over half the studies were classified as having complete outcome data and controls for confounders. Where studies were classified as not having complete outcome data, this was typically because the reporting of findings did not make clear how many observations were lost due to missing responses. In turn, studies that did not control for confounding factors reported bivariate analyses only, such as t-tests or correlations.

Finally, exposures were deemed to have occurred as intended for the majority of studies. In cases where studies were classified as not fulfilling this criterion, this was largely because they did not provide sufficient information for relevant variables, making it difficult to evaluate the status of their exposures. Only study 40 was classified as not fulfilling this criterion based on the information provided. Study 40 examined how responses to the SOQ differed by religious affiliation in India; out of 205 participants, only 11 reported a religious affiliation other than Hindu, meaning comparisons based on these categories are likely to be highly unreliable.

Discussion

The purpose of this systematic review was to understand how different aspects of social relationships are associated with approving attitudes toward suicide. In particular, the review sought to examine what social relationship factors have been studied; whether any of these factors are reliably associated with suicide approval; how suicide approval has been measured across these studies; and whether the instruments used to measure suicide approval may have had a bearing on these findings.

In terms of studied aspects of social relationships, most studies have concentrated on structural factors, such as religious affiliation, marital status and previous exposure to suicidal behaviours. By comparison, subjective aspects of social relationships – e.g., subjective loneliness, perceived importance of various groups, feelings of closeness – received less attention. Furthermore, few studies examined social relationship factors that are emphasised in leading theories of suicide, such as perceived social support, thwarted belongingness and perceived burdensomeness. Thus, to build upon existing work, future research could examine how subjective features of social relationships and key theoretical variables may be linked to suicide approval.

The review has also highlighted that various aspects of social relationships may be associated with suicide approval. In terms of family relationships, there was some evidence that having children may be associated with lower levels of suicide approval. This finding is consistent with previous research showing that parenthood may afford some protection against suicide (Fincham *et al.* 2011; Dehara *et al.* 2021; Stack 2021). From a Durkheimian perspective, having children may provide the individual with a sense of purpose in life or incline them to prioritise parental responsibilities above their own feelings, thereby discouraging them from suicide even in the face of hardships (Durkheim 2002). Nonetheless, it needs to be remembered that many of the studies examining parenthood in relation to suicide approval only employed bivariate tests of association, thereby undermining the reliability of results. Furthermore, no studies tested for gendered effects. This is unfortunate as previous research has indicated that having children may grant women more protection against suicide than men (Dehara *et al.* 2021; Stack 2021). Future research should therefore attempt to examine the association between parenthood and suicide approval using more robust methods and explore how this association varies by gender.

Another aspect of family relationships that appeared to be associated with suicide approval was the style and quality of parenting received by individuals. In particular, the available evidence suggested that individuals who described their parents as warm, caring but firm were less approving of suicide. These findings can perhaps be understood through the lens of attachment theory – that is, receiving adequate care from parents may help to establish a secure attachment orientation, thereby granting the individual some immunity from stressors that would otherwise increase their risks for suicide (Adam 1994; Zortea *et al.* 2019). However, not only did few studies examine measures of parenting stye/quality; those that did were largely based on younger samples (e.g., medical students, adolescents), thereby limiting the generalisability of findings. More research is therefore needed to understand whether parenting style/quality is associated with suicide approval and how these associations play out among older cohorts.

There was considerable evidence to suggest that religious ties are linked to suicide approval. A number of studies reported that individuals express less approving attitudes toward suicide if they are affiliated with certain religious denominations, such as Islam. However, for denominations such as Protestantism, Catholicism, Orthodox Christianity and Buddhism, these effects were not always consistent across studies. These mixed results may indicate that contextual factors moderate the association between religious affiliation and suicide approval. Thus, network theories maintain that affiliation with a given religious denomination has stronger effects on individual behaviour and attitudes in contexts where that denomination has traditionally been influential (Pescosolido 1990). For instance, it is intriguing that few

studies documented statistically significant associations in China, a context that is highly secularised (Stack and Laubepin 2019, p.372). Previous research has also highlighted that affiliation with a given religion may afford more protection against suicide in some contexts than others (van Tubergen *et al.* 2005; Barranco 2016).

Many studies reported that people who attend church more frequently are less approving of suicide, a finding that matches previous analyses of church attendance and suicidal thoughts and behaviours (Rasic *et al.* 2009; Kleiman and Liu 2014). In turn, there was some indication that these associations vary by religious denomination. These patterns could speak to learning effects – that is, individuals who frequently participate in their religion may be more likely to internalise its norms and beliefs (Pescosolido and Georgianna 1989; Stack and Wasserman 1992). This could account for the variation in effects by religious denomination as some denominations may adopt a stronger position on suicide or promote specific beliefs that influence the perception of this act (e.g., belief in an afterlife, reincarnation, finding purpose in suffering) (Stack and Kposowa 2011b). On the other hand, it could be that frequent church attendance provides individuals with a source of comfort and support in times of crisis (Pescosolido and Georgianna 1989; Stack and Kposowa 2011b); indeed, at least one study (22) in the review provided confirmation for this possibility by suggesting church attendance helps to buffer the harmful effects of stress.

There was also some evidence that constructs from the IPT may have relevance for predicting suicide approval. In particular, the available evidence indicated that perceived burdensomeness may contribute to higher levels of suicide approval. By contrast, findings were more mixed for thwarted belongingness. This is in keeping with findings from previous systematic reviews of the IPT, which have found perceived burdensomeness to be a more potent predictor of suicide risk than thwarted belongingness (Ma *et al.* 2016; Chu *et al.* 2017). It could be that thwarted belongingness exhibited a less consistent association with suicide approval due to learning effects. In other words, if the individual experiences a sense of belonging with groups who condone or feel indifferent toward suicide, they may be more likely to adopt these attitudes for themselves. Such confounding effects seem plausible given that only bivariate associations between the IPT constructs and suicide approval were tested. Thus, additional research that controls for multiple factors is needed to understand how the constructs of thwarted belongingness and perceived burdensomeness are linked to suicide approval.

In line with previous research into social support and suicidal thoughts and behaviours (Kleiman *et al.* 2014; Mackin *et al.* 2017; Otten *et al.* 2022), a small number of studies found that social support may be negatively associated with suicide approval. However, these associations did not always hold across measurement instruments and different model specifications. There was also some suggestion that social support may be more reliably associated with suicide approval when it is procured from a specific type of relationship (e.g., family ties), although too few studies distinguished between relationship types for us to have confidence in this conclusion. It would seem important for researchers to explore this possibility in greater detail as previous studies have suggested that individuals are more likely to turn to specific groups (e.g., spouses, mothers) for coping with mental health crises (Perry and Pescosolido 2015).

Finally, there was some evidence that other subjective/qualitative aspects of social relationships (e.g., feelings of loneliness, perceived importance of family, adverse relations with others) are associated with suicide approval. These findings may further highlight the importance of understanding how the individual experiences their relationships with others if we are to better predict their attitudes toward suicide. However, as these relationship factors were tested in so few studies that often did not control for potential confounders, it is unclear whether they are reliably linked to suicide approval.

In contrast to the above factors, some features of social relationships were found to be largely unrelated to suicide approval. For example, marital status was only related to suicide approval in 7 out of 17 studies. This finding is somewhat surprising since previous research suggests that marital status is predictive of death by suicide (Kyung-Sook *et al.* 2018; Kposowa *et al.* 2020). It is possible the mixed evidence for an association between marital status and suicide approval is due to contextual factors, such as changing views of marriage. One piece of evidence that potentially fits with this explanation was provided by study 37, which found marital status to be associated with suicide approval in the USA for the 1980s but not the 2010s. Alternatively, it may be that the mere presence of marital ties matters less for suicide approval than the quality of relationships with spouses (Still 2021). Thus, to build upon existing findings, researchers could examine how wider cultural factors impinge on the association between marital status and suicide approval as well as controlling for measures of marriage quality.

Another variable that exhibited mixed associations with suicide approval was exposure to suicidal behaviours. This finding is also peculiar as previous studies have found that exposure to suicidal behaviours increases an individual's risks for suicidal ideation and suicide attempts (Baller and Richardson 2009; Abrutyn and Mueller 2014a; Kleiman 2015). These discrepant findings could be connected to differences in the populations studied. For instance, the previously cited studies on suicide exposure and suicidal ideation/suicide attempts were all based on adolescent samples. By contrast, studies examining suicide exposure in the present review were based on older cohorts in diverse situations, such as medical students, nurses and young adults. Following Abrutyn and Mueller (2014b, p.709), it may therefore be that exposure to suicidal behaviours only prompts changes in suicide approval under specific circumstances, such as when individuals perceive fundamental similarities with those who engage in suicidal behaviours.

Out of all the variables covered in the current review, findings concerning employment status are the most difficult to interpret. In some studies, the unemployed were found to be more approving of suicide than full-time workers while in other studies this pattern was reversed. Furthermore, some studies indicated that other employment statuses (e.g., student, retired, self-employed) were more closely associated with suicide approval, although there was little consistency in the direction of these associations. These findings appear to clash with studies of suicidal thoughts and behaviours, which have found unemployment to be a risk factor for suicide (Iemmi *et al.* 2016; Platt 2016). It may therefore be that employment status is less relevant to the explanation of suicide approval than suicidal thoughts and behaviours proper.

Taken together, findings from the above studies may provide some grounds for expecting predictors of suicidal thoughts and behaviours to exhibit similar associations with suicide approval. This does not mean suicide approval should be seen as interchangeable with

suicidal thoughts and behaviours; as the findings regarding marital status, suicide exposure and employment status highlight, there may be factors that influence suicidal thoughts and behaviours without altering or having contrary effects on suicide approval. Nonetheless, there does appear to be a degree of overlap between the predictors of these constructs. This could suggest that the above factors are associated with suicidal thoughts and behaviours in part because of their effects on suicide approval; that is, by promoting more or less approving attitudes toward suicide, they may alter the probability that an individual will consider suicide when confronted with crises (Eskin 2004; Phillips and Luth 2020).

As well as highlighting that various social relationship factors are associated with suicide approval, the review has also brought attention to the diversity of instruments used to measure suicide approval. As previously noted, most studies measured suicide approval using the ATTS, which constitutes a relatively established scale of suicide attitudes. However, even where studies utilised the ATTS, the manner in which it was deployed varied considerably across studies. This was also true for other commonly used measures of suicide approval, such as the SOQ and GSS items. Compounding this heterogeneity, measures also differed in terms of whether they asked participants to consider the acceptability of suicide in the abstract, in response to situational factors (e.g., bankruptcy, psychological pain, incurable illness) or from a specific standpoint (e.g., religious).

To some extent, this diversity in measurement is necessary. According to cultural script theory, narratives around suicide, its typical causes and justifying circumstances vary across contexts (Canetto and Sakinofsky 1998; Canetto 2021), making it unlikely that any single measure of suicide approval would be equally applicable in all times and places. Nevertheless, to the extent that researchers are interested in comparing suicide approval across contexts, it would seem important to use measures that exhibit a higher degree of consistency. More research is therefore needed to understand how applicable certain measures of suicide approval are across diverse contexts and what can be done to enhance comparability.

There was no clear indication that the use of different measurement instruments for suicide approval biased statistical associations. In cases where statistically significant associations were observed more frequently for certain pairs of exposures and outcome measures, confounding factors (e.g., sample size, geographic contexts) could also have been implicated. Additional research is therefore needed to ascertain whether the type of instrument used for gauging suicide approval has an impact on recorded associations.

Finally, there was only limited evidence to suggest that social relationship factors associated with lower levels of suicide approval coincide with increases in suicide stigma. In particular, religious affiliation, social support and having no exposure to suicidal behaviours were found to associate with some stigmatising attitudes (e.g., viewing suicidal individuals as dangerous, viewing suicide as selfish). However, even in these instances, religious affiliation and social support were also associated with some less stigmatising attitudes. It is therefore uncertain whether social relationship factors may lower suicide approval at the cost of bolstering stigma. More research is therefore needed to understand how suicide approval and suicide stigma relate to one another and are influenced by social relationship factors.

Limitations

In evaluating findings from the review, it is important to acknowledge several limitations with the search procedures and study sample. First, the review utilised a broad definition of social relationship factors, meaning the criteria for including/excluding studies were more opaque. Readers may therefore dispute some of the variables chosen for analysis. For instance, it may be argued that religious affiliation does not necessarily constitute a social relationship as an individual can personally identify with a faith even if they have no connections to fellow believers. Thus, subjectivity is likely to have played a greater role in shaping the outcome of the review, thereby undermining the reliability of conclusions.

Second, the decision to limit the review to studies published since 2012 may have prevented us from understanding how the effects of exposures on suicide approval have changed over time. Indeed, as noted above, there was some indication of temporal effects regarding marital status, suggesting that time period may have been an important element to take into consideration.

Finally, as the included studies utilised a diverse range of measures for suicide approval, it is more doubtful that they were gauging similar attitudes, thereby undermining the validity of findings. Future systematic reviews may seek to mitigate this problem by selecting a single instrument for analysis, such as the ATTS or GSS items.

Conclusion

Overall, the systematic review has established that certain aspects of social relationship may be linked to suicide approval. In turn, the review has highlighted that existing theories of suicide and social relationships may be able to shed light on this outcome. Nonetheless, additional research is needed into subjective/qualitative aspects of social relationships that moves beyond bivariate analyses. The current PhD will attempt to address these issues. Specifically, the next chapter will consider trust as a subjective feature of social relationships and examine its relevance for understanding suicide risk.

Chapter 4 – Trust, Social Relationships and Suicide

Up to this point, the PhD has considered how social relationships may be implicated in suicide risk and reviewed evidence for their associations with suicide approval. This chapter narrows the focus to a specific aspect of social relationships – perceptions of trust. Specifically, the chapter reviews some competing perspectives on trust, inspects their theoretical assumptions and supporting evidence, and uses this knowledge to think more carefully about how trust may shape the quality of social relationships. It will be demonstrated that trust is a complex phenomenon that engages cognition and emotion to varying degrees, depending on the relationship in which it is invested. In turn, it is argued that trust perceptions need to be distinguished in terms of the familiarity and social proximity of the trustee to the truster, a distinction that has traditionally been made using the concepts of particular and general trust. Using these insights on trust, its components and implications for relationship quality, ideas from the previous chapters are then used to form predictions about how trust perceptions may influence suicide risk.

Issues with Studying Trust

Over the last 70 years, social scientists have made greater efforts to study trust and its consequences for society and individual wellbeing. This line of research began with the work of economists and social psychologists in the 1950s, which drew upon game theory to understand how trust is implicated in processes of risk assessment and co-operation (Hogg 2010, p.53; Barbalet 2019, p.11). The concept of trust has since been taken up by political scientists, management researchers and sociologists for addressing problems specific to their fields (Broch-Due and Ystanes 2016, pp.2-3; Barbalet 2019, pp.11-2), such as the maintenance of social cohesion and democratic government. As interest in trust has spread across disciplinary boundaries, there has been a notable increase in the number of publications related to trust. For example, Barbalet (2019, p.12) reports that, from the 1950s to 2000s, the number of article titles containing the word ‘trust’ increased from 22,600 to 2,030,000. Trust has therefore become a major focus of research in the social sciences.

Part of the reason trust has garnered this attention is related to the range of benefits it is claimed to produce. For instance, trust has been seen as a driver of economic development (Yamagishi and Yamagishi 1994; Fukuyama 1995, p.7), a motivating factor for civic engagement (Putnam 2000, pp.136-7; Uslaner 2002, p.10), a foundational element of social solidarity (Lewis and Weigert 1985, p.968; Hogg 2010, p.51), and a key sign of mental wellbeing (Keyes 1998; Broch-Due and Ystanes 2016, p.1). The language used to talk about trust is no less emphatic about its importance, with some describing it as “a functional prerequisite for the possibility of society” (Lewis and Weigert 1985, p.968) and as a defining feature of “all-round good citizens” (Putnam 2000, p.137). While some researchers are more sceptical about the benefits of some types of trust (Fukuyama 1995; Uslaner and Brown 2005), it is apparent that trust is generally understood to be a positive force that has the potential to improve quality of life for societies and individuals.

Despite the amount of research and excitement that has been generated around trust, the concept remains poorly defined. There seem to be two main reasons for this imprecision. First, due to Coleman's (1990) and Putnam's (2000) separate publications on trust and social capital, trust has been shackled to the concept of social capital and its attendant features of networks, norms and reciprocity (see Newton 2001, p.202). This has resulted in trust being conflated with a number of terms that should be treated as distinct. For instance, Putnam (2000, p.137) states "[a] society that relies on generalized reciprocity is more efficient than a distrustful society…". Thus, in the same sentence, Putnam treats reciprocity (mutual exchange of favours) as interchangeable with trust. Further examples of conflation can be found in the epidemiological literature (e.g., Olsen and Dahl 2007; Lindström and Giordano 2016), where social capital is claimed to promote physical and mental health through various network processes but is then measured using trust alone. In other words, trust is assumed to be a proxy for networks, rather than a unique phenomenon with its own dynamics.

Second, because trust has been researched across a wide range of fields, a number of conceptualisations have been proposed (Newton 2001, p.203; Broch-Due and Ystanes 2016, pp.2-3). For instance, trust has been portrayed as a rational expectation that is developed through experience (Coleman 1990, p.99; Hardin 1993); a cultural value that is shaped by religious traditions and economic conditions (Inglehart and Baker 2000, p.25; Delhey and Newton 2005); and as a stable disposition subject to genetic influences (Hiraishi *et al.* 2008; Sturgis *et al.* 2010). While each conceptualisation has a degree of plausibility, their different and sometimes incompatible theoretical assumptions make it difficult to reconcile them into a comprehensive definition of trust.

Given these ambiguities and inconsistencies in terminology, the purpose of the present chapter is not to reach a definitive conceptualisation of trust. Indeed, it will be shown that competing perspectives on trust help to capture different pieces of the overall puzzle and draw our attention to distinct kinds of trust with their own consequences for individual wellbeing and relationship quality.

What is Trust?

From a review of the trust literature, Robbins (2016, p.973) notes that one common element can be distilled from competing definitions of trust: trust arises under conditions of uncertainty regarding others' behaviour (Lewis and Weigert 1985, pp.968-9; Sztompka 2000, p.20; Yamagishi 2011, pp.10-1). For example, we may expect an online vendor to provide us with intact goods, but they may turn up damaged; we may expect our friends to listen to us when we address them, but they may ignore us. In both examples, we are unable to know precisely how others will behave. Even if we are more certain in some cases, a degree of doubt remains. It is for this reason that Lewis and Weigert (1985, p.970) claim that trust is situated between total knowledge and total ignorance; for trust to be possible, we must have enough knowledge to make a prediction about others' behaviour without this prediction being a foregone conclusion.

As this observation suggests, another characteristic of trust is that it involves making expectations of others' behaviour (Yamagishi 2011, pp.22-3). This does not necessarily mean we are aware of making such expectations when we place trust in others. As Broch-Due and Ystanes (2016, pp.1-2) observe, trust is often an unnoticed feature of social relationships that

only becomes evident to us when we feel suspicious of or betrayed by others. In this sense, trust is akin to concepts such as habitus (Bourdieu 2010) and common-sense knowledge (Garfinkel 1984, pp.36-7); it includes a series of unconscious expectations we have developed through repeated exposure to persons in our social environment, allowing us to anticipate their conduct with an intuitive sense of certainty. This may be one reason why trust is often described as a device for managing the complexity of social interactions – i.e., trust allows us to discount some possible and disturbing futures (e.g., receiving faulty merchandise, being ignored by our friends) *as if* they could not happen, thereby helping us to settle upon a course of action with greater ease (Lewis and Weigert 1985, p.969; Giddens 1991, pp.39-40). However, beyond recognizing that trust involves making expectations of others' behaviour under conditions of uncertainty, there is little consensus on what constitutes trust.

Trust as a Rational Expectation

For those adopting a rational choice model of humans as calculating and concerned with maximizing utility, trust is commonly thought to involve specific expectations regarding the potential gains of exchanging with others (Coleman 1990, p.99; Hardin 1993, pp.506-7). Hardin (1993) provides the most developed account of the rational approach, having refined Coleman's earlier work on social capital and trust. Hardin (1993, p.506) posits that there are three components to all trust relationships: the truster, the trustee and the object of trust. For example, a student may trust a teacher to mark tests fairly or a patient may trust a doctor to provide high quality medical care. Under this framework, trust is reduced to the form '*A* trusts *B* to do *x*' (Hardin 1993, p.506). Hardin (1993, pp.505-6) arrives at this conclusion from his broader definition of trust as encapsulated interest. For us to trust someone, Hardin argues, we have to believe that person is incentivised to act in our interests; that is, we have to believe that our interests align with those of the other person. This leads Hardin (1993, p.516) to conclude that trust is nothing more than risk calculation: "Trust is not a risk or a gamble… my estimation of the risk is my degree of trust in you".

According to Hardin (1993), we learn to be more or less trusting based on our past experiences of interacting with others. This process is akin to a form of common-sense Bayesian inference; by repeatedly entering into exchanges where our trust is tested, we accumulate more information about which persons tend to be trustworthy under which circumstances (Hardin 1993, pp.507-8, 516-7). From these experiences, we form an estimate of the average trustworthiness of persons in our immediate social environment. Thus, for Hardin (1993, p.508), trust is initially learned from our experiences with concrete persons but is later generalised to less well known figures whose attributes are partially familiar to us, such as persons who share our social class or ethnic background. This means that our trust estimates are not a blanket measure for gauging the trustworthiness of all persons; as Hardin (1993, pp.507-8) notes, when we encounter persons who appear very unfamiliar to us, we may be more hesitant about using our existing knowledge to predict their behaviour.

Qualitative research has provided some support for the rational approach by exploring processes of trust under conditions of material deprivation. For instance, Raudenbush (2016) carried out three years of ethnography in a deprived community of the USA to learn why black residents were highly distrusting of others. Her results suggested that a range of experiences converged to promote a wary attitude toward others, including exposure to

violence from other residents and housing policies that threatened eviction for being involved in crime. Similarly, Levin (2013) interviewed 95 women on low income in Chicago to learn about their experiences of dealing with welfare agencies, employers and boyfriends. Taking the example of welfare agencies, her findings suggested that the majority of women came to distrust case workers after encountering repeated verbal abuse and neglect that was fuelled by derogatory stereotypes of single-mothers and welfare recipients (Levin 2013, pp.54-60). Thus, in both studies, participants learned to distrust those around them from their repeated experiences of abuse and marginalisation.

While Hardin's work is useful for highlighting the role of experience in shaping trust, it is not without limitations. As Broch-Due and Ystanes (2016, pp.3-4) observe, Hardin takes an overly cognitive view of trust that perpetuates Westernised, neoliberal notions of the self. In other words, Hardin models trust relations on market transactions, arguing that trust is simply two or more individuals freely consenting to exchange goods and services for the purposes of satisfying their own interests. It is therefore unsurprising that, taking this model to its logical conclusion, Hardin is led to define trust as risk assessment. Lewis and Weigert (1985, p.972) summarise this position as follows:

> … if all emotional content were removed from cognitive trust, we would be left with nothing more than a coldblooded prediction or rationally calculated risk: the ultimate war game in which the only logic is self-interest and kill ratio.

Thus, the rational approach not only conflates trust with risk assessment (Robbins 2016, p.977); it overlooks that trust contains an emotional dimension, with some researchers linking it to feelings of hope, faith and love (Giddens 1991, p.38; Broch-Due and Ystanes 2016, p.2).

Trust as an Emotional Investment

The emotional dimension of trust has been elaborated in greater detail by Lewis and Weigert (1985), who propose a multifaced conceptualisation of trust based on sociological theory. Lewis and Weigert (1985, p.970) acknowledge that trust is partially founded on cognition as it may develop after we have gained sufficient information on another person to make predictions about their behaviour. However, trust may also be grounded in the emotional connections we share with others, meaning it is often infused with positive affect and helps to sustain feelings of mutual attachment (Lewis and Weigert 1985, p.971). This is why, Lewis and Weigert (1985, p.971) argue, the betrayal of trust can be an acutely painful experience, giving rise to negative affect and possibly resulting in relationship breakdown. Furthermore, the degree to which trust is motivated by its cognitive or emotional dimensions is likely to depend on the type of relationship in question. For example, in highly intimate relationships among family, friends or lovers, trust is more likely to be based on emotion, whereas in more impersonal relationships with brief acquaintances and public figures, the cognitive aspect is likely to be predominant (Lewis and Weigert 1985, pp.972-3).

There are clear parallels between Lewis and Wigert's description of emotional trust and attachment psychology discussed in Chapter 2. Thus, Bowlby (1977, p.203) argued that an attachment is an emotional bond which is nurtured in infancy and underpinned by cognitive working-models of self and caregiver. In particular, it was noted that Bowlby (1980, pp.204-5) viewed experiences of parental loss or unresponsive parenting as giving rise to insecure attachments, where the child feels they cannot rely upon caregivers for support and adopts

behavioural strategies designed to minimise their anxiety (e.g., avoidance, clinging to caregivers). While Bowlby did not directly address trust in his work, it is evident that he implicitly acknowledged trust as a foundational element of attachments. For instance, Bowlby (1980, p.208) stated that a history of receiving loving and supportive parenting in childhood gives the adult individual "an almost unconscious assurance that, whenever and wherever [they] might be in difficulty, there are always trustworthy figures available who will come to [their] aid". We can therefore understand trust as one facet of the working-models that underpin an individual's attachment orientation (Mikulincer 1998). In support of this perspective, a recent Canadian study based on 20439 individuals aged 15+ reported that childhood experiences of being cared for by the government, physical/sexual abuse and witnessing parental violence were negatively associated with trust in family, neighbours and strangers (Brown 2023).

Conversely, Giddens (1991) advances an alternative argument for the emotional underpinnings of trust using insights from ethnomethodology. For Giddens (1991, pp.36-8, 44), trust is an emotional investment in prevailing social schemes of interpretation – i.e., the unconscious expectations we make of others based on a deep familiarity with the rhythms and routines of our social environment. This means that trust affords a sense of ontological security, which Giddens (1991, pp.39-40) defines as a feeling of calm and hopefulness that comes from perceiving the world as intelligible, predictable and nonthreatening. Trust, in Giddens' (1991, pp.37, 47) view, is therefore saturated with emotion as our wellbeing is partially staked on others conforming to our expectations, leading us to experience considerable anxiety when others break with established patterns of conduct. Giddens' (1991) work therefore suggests that even our trust in more distant figures may be tinged with emotions, although this may only become apparent to us when this trust is broken.

Quantitative studies have provided some evidence to suggest that trust is partly anchored in emotions or at least undergirds emotional attachments. Burke and Stets (1999) analysed longitudinal data on 286 married couples to determine how consensus regarding martial roles (what they refer to as self-verification) shapes trust and emotional attachments between partners. Cross-sectional analyses indicated that agreement on marital roles had a positive association with trust, which in turn was positively associated with emotional attachment. Yet, longitudinal analyses failed to replicate statistically significant associations between these variables. Nonetheless, Rotenberg *et al.* (2010) found support for a temporal connection between trust and emotional wellbeing by studying loneliness among primary school and university students in the UK. Their findings indicated that higher trust in fellow students was associated with decreases in loneliness over time, both directly and indirectly by helping students to develop more friendships.

Uslaner (2002, p.100) examined various surveys conducted in the USA and reported that a number of indicators gauging optimism (e.g., believing life will turn out according to one's plans) were positively associated with trust in most people. This seems to fit with Giddens' (1991) assertion that our trust in people generally is connected to feelings of hopefulness and security. However, in a cross-national analysis of data from seven countries, Delhey and Newton (2003) were unable to find a statistically significant association between optimism and trust in all countries but Switzerland.

Trust as a Genetic Disposition

In contrast to the above perspectives, some researchers have questioned the role of environmental factors in shaping trust. For these researchers, trust can be understood as a genetically transmitted disposition that is linked to stable features of the individual's personality. For instance, Sturgis *et al.* (2010, p.208) note that an inclination to trust people in general forms one component of agreeableness, a personality trait that combines a kind, co-operative disposition with a benign view of others. Alongside agreeableness, Freitag and Bauer (2016, pp.469-70) posit that trust is further related to the traits of openness and conscientiousness. While individuals high in openness are more imaginative and welcoming of novel ideas and practices, those high in conscientiousness are more calculative, taking greater precautions and carefully evaluating information before acting. Openness may therefore promote trust by increasing tolerance for different groups of people whereas conscientiousness may lower trust by leading individuals to scrutinise the integrity of others more thoroughly (Freitag and Bauer 2016, pp.469-70).

In support of a genetic basis for trust, some studies have recorded associations between various personality traits and trust (Hiraishi *et al.* 2008; Freitag and Bauer 2016). For instance, based on a random sample of 1157 Swiss residents, Freitag and Bauer (2016) found that openness and conscientiousness were associated with the likelihood of trusting friends. In addition, both these traits and agreeableness were related to trust in strangers. Longitudinal studies have also produced evidence that is consistent with a genetic perspective on trust. These studies have monitored temporal changes in the view that 'most people' can be trusted, finding that the proportion of respondents giving consistent responses over time ranges from around 47% to 75% (Uslaner 2002, p.61; Sturgis *et al.* 2012; Laurence 2015). Trust is therefore fairly stable over time, suggesting it may be influenced by lasting traits that have a genetic basis. Nonetheless, this longitudinal evidence also highlights that change is not uncommon, with a sizable proportion of individuals changing their responses in some studies. Thus, even if genetics do establish a relatively fixed trust attitude, later life experiences continue have a bearing on trust.

Other studies have attempted to establish a genetic basis for trust by estimating its heritability from samples of identical and fraternal twins. As Robette *et al.* (2022) explain, heritability measures the proportion of observed variance in a given trait that can be attributed to genetic factors. Research into the heritability of trust has specifically focused on trust in 'most people', returning heritability estimates from 5% to 66% (Hiraishi *et al.* 2008; Sturgis *et al.* 2010; Van Lange *et al.* 2014). These mixed findings have led researchers to draw opposing conclusions regarding the importance of genetics, with some claiming that trust "has a substantial genetic component" (Sturgis *et al.* 2010, p.219) and others stating that the heritability of trust is "virtually absent" (Van Lange *et al.* 2014, p.7). In making sense of these findings, it should be emphasised that the methodological design of twin studies can be problematic. For instance, Robette *et al.* (2022, p.204) caution that heritability estimates are based on the questionable assumption that there are no single genetic or environmental factors making a large contribution to the trait. This implies that a sizable heritability score could be obtained if specific experiences relevant to the trait simply did not occur within the sample. Given that sample sizes for twin studies tend to be small and specific to those enrolled on twin registers, it is plausible that the range of experiences that matter for trust may not be adequately reflected in certain cases, leading to drastically different estimates.

Types of Trust

Up to this point, trust has been discussed as though it were a singular construct. However, researchers tend to divide trust into two distinct types: particular and general trust. A key theoretical and empirical goal for researchers has been to understand how particular and general trust develop and relate to one another (Fukuyama 1995; Uslaner 2002; Delhey *et al.* 2011). Despite this goal, several researchers have commented that the overwhelming focus of research has been on general trust, with much less being known about particular trust (Newton and Zmerli 2011, p.176; Hu 2020, p.501). The main reason for this appears to be that general trust is regarded by many social scientists as uniquely modern, offering solutions to societal dilemmas such as the integration of migrants into host societies (van der Linden *et al.* 2017) and the maintenance of economic competitiveness (Fukuyama 1995). By comparison, particular trust is made to look outmoded and even harmful for modern societies (Uslaner 2002). It is therefore necessary to examine how researchers have conceptualised particular and general trust, their interrelationships and the validity of dividing trust into two types.

Trust in Close and Distant Relations

Particular trust refers to trust in people who are personally known or familiar to us, such as family, friends and work colleagues (Welzel 2010, p.162; Newton and Zmerli 2011, p.171). For many researchers, this means particular trust requires us to have a degree of knowledge about the person in question and is likely built up over time as we acquire more information about them. For example, we may have come to trust someone due to our positive experiences of interacting with them or by learning that they have a favourable reputation among those we do trust (Hardin 1993, pp.510-1; Yamagishi and Yamagishi 1994, pp.138-9; Uslaner 2002). Research indicates that individuals tend to place higher amounts of trust in those they presumably know well, with family typically ranking as the most trusted group (Uslaner 2002, pp.29-30; Newton and Zmerli 2011).

Particular trust is also thought to overlap with the related but distinct construct of ingroup trust from social psychology. As several researchers have noted, we are more likely to associate with people we regard as similar to ourselves, such as those with whom we share the same place of residence, religious affiliation or family background (McPherson *et al.* 2001; Uslaner 2002, p.120; Newton and Zmerli 2011, pp.170-1). We use these attributes to categorise ourselves as members of specific ingroups, which are seen to be more or less homogenous and distinct from those categorised as outsiders (Hogg 2010, pp.55-6). However, as Hogg (2010, p.55) cautions, the attributes imputed to the group should be understood as a prototype that describes the ideal group member, rather than the typical features of those claiming group membership. In other words, group members are claimed to organise and interpret their behaviour in terms of the prototype, but rarely embody all of its qualities. Shared ingroup membership can therefore establish a sense of familiarity and predictability that facilitates particular trust, even if two individuals have little personal knowledge about one another (Hogg 2010, p.58)

Whereas particular trust is directed toward those we know and ingroups, general trust extends beyond our immediate networks to encompass people with whom we are unacquainted and outgroups (Delhey *et al.* 2011, pp.786-7; Newton and Zmerli 2011, p.171).

According to Yamagishi and Yamagishi (1994, p.138), general trust is a "belief in the benevolence of human nature", giving us confidence that others will not wrong us even when we do not know them. Likewise, Uslaner (2002, pp.26-7) contends that general trust is rooted in an optimistic outlook on life; we trust most people because we believe that, despite any differences in background and worldview, they share our core values and can be presumed trustworthy. From a cognitive perspective, general trust has been described as a bias in how we process information about others that leads us to overestimate their goodwill (Yamagishi and Yamagishi 1994, p.139), similar to what Lewis and Weigert (1985, p.970) describe as a "cognitive leap" beyond the available evidence of another person's character.

Given that general trust is not limited to particular connections built on familiarity, Uslaner (2002, pp.76-7) argues it cannot develop from our experiences with specific others. Likewise, as noted above, genetic perspectives hold that trust is relatively immune to experience, with most research in this vein establishing a genetic basis for general trust (Hiraishi *et al.* 2008; Sturgis *et al.* 2010). In line with this argument, Freitag and Bauer's (2016) study indicated that, while personality traits are associated with both trust in friends and strangers, these associations are stronger for trust in strangers. However, aside from the previously discussed limitations with genetic perspectives, general trust has also been found to associate with variables such as participation in voluntary organisations (Paxton 2007; Newton and Zmerli 2011), involuntary job loss (Laurence 2015) satisfaction with standard of living (Delhey and Newton 2003), religious traditions (Delhey and Newton 2005) and socio-economic inequalities (Uslaner 2002). Thus, it would be wrong to conclude that general trust is unaffected by experience, even if genetics play a larger role in its development.

On the other hand, not all researchers accept general trust as a legitimate type of trust. According to Robbins (2016, p.978), Hardin's definition of trust – '*A* trusts *B* to do *x*' – logically precludes general trust since the latter fails to specify a clear target or task. This leads Robbins (2016, p.980) to conclude that general trust is not trust at all but rather a positive stereotype; such stereotypes may increase the likelihood we will trust certain persons in specific situations, but it would be foolish to trust a broad range of people with regard to anything. Nonetheless, Uslaner (2002, p.22) points out that common language suggests it is legitimate to talk about general trust – we tend to refer to some persons as more trusting than others. Furthermore, cross-national research using standard and more refined measures of general trust has demonstrated that levels of general trust vary systematically between countries, with the Nordic countries consistently ranking as the most trusting (Delhey and Newton 2005; Delhey *et al.* 2011). This provides some assurance that general trust is a meaningful construct that captures an important aspect of cultural variation.

From the above descriptions, we can see how particular and general trust have been juxtaposed to one another. Whereas particular trust is thought to involve people we know well and is learned through our experiences with them, general trust is believed to include those we know little and may be grounded in relatively fixed traits and values. In turn, these varying characteristics are thought to coincide with different types and structures of social relationships.

Social Relationships and Trust

Particular trust has typically been presented as a feature of strong ties (Lewis and Weigert 1985, pp.971-2; Newton 1997; Uslaner 2002, pp.26-8). According to Granovetter (1973, pp.1361-2), when two individuals are connected by strong ties, they are likely to dedicate a larger amount of time to the relationship (commitment), be open to sharing personal information with one another (intimacy) and feel more emotionally involved in the relationship (emotional intensity). In turn, Granovetter (1973, p.1362) claims that strong ties are more likely to form between individuals who are similar in important respects, such as those who share the same interests or social attributes.

It is for these reasons that Newton (1997, p.578) likens particular trust to Durkheim's concept of mechanical solidarity. As explained in Chapter 2, Durkheim regarded mechanical solidarity as one basis for group cohesion, claiming it is more common in small, archaic societies with a limited division of labour. This is because, Durkheim (2013, pp.105-6) argued, such societies have heightened levels of cultural uniformity, which reinforces the authority of shared beliefs and practices. For Durkheim (2002, p.113; 2013, p.106), this promotes an intolerant attitude toward cultural diversity as it is perceived as a threat to the shared beliefs and practices upon which the group's cohesion depends. Particular trust can therefore be seen as an "essential ingredient of mechanical solidarity" (Newton 1997, p.578) as both are claimed to develop from and reinforce a sense of shared identity between individuals. Moreover, if trust in intimate relationships does imply a stronger sense of emotional connectedness, this may contribute to the feelings of group attachment Durkheim regarded as central to mechanical solidarity.

In contrast, general trust has often been regarded as a feature of weak ties (Granovetter 1973, pp.1373-4; Newton 1997; Uslaner 2002, p.9). Although weak ties entail less of an emotional connection and may only involve fleeting encounters with strangers, they are consequently more effective at spreading information across social networks as they connect us with a broader array of people (Granovetter 1973, pp.1370-1; Baller and Richardson 2009). Some researchers have argued that general trust develops from weak ties. For instance, Paxton (2007) argues that individuals learn to trust people in general through participation in connected voluntary associations, which maintain links to other organisations and the wider community. According to Paxton (2007, pp.51-3), connected voluntary associations allow for the extension of trust beyond known others by teaching individuals how to negotiate differences in opinion and through processes of vouching – i.e., trusted group members can attest to the trustworthiness of others they know. Conversely, some researchers have argued that general trust is a source, rather than a consequence, of weak ties as it encourages individuals to branch out and engage with diverse groups (Uslaner 2002; Achbari *et al.* 2018).

On the basis of this affinity with weak ties, general trust has been depicted as the subjective counterpart of organic solidarity (Newton 1997, pp.578-9). The term organic solidarity was originally proposed by Durkheim (2013) to capture the structure of social relationships in modern, industrial societies with a complex division of labour. Under conditions of heightened organic solidarity, Durkheim (2013, p.102) argued, cultural uniformity is reduced as individuals become highly specialised in their functions and must depend on one another to procure resources they can no longer produce for themselves. Even though Durkheim considered organic solidarity to be a basis for social cohesion, he also was concerned that the

growing prominence of organic solidarity in modern societies had led to an increase in suicides by eroding common culture and promoting excessive individualism (Tomasi 2000, p.15).

It is clear to see how general trust aligns with the features of organic solidarity as outlined by Durkheim. Torche and Valenzuela (2011, p.192) describe trust in strangers as "particularly modern" because, among other things, it is necessary for the functioning of free market capitalism. Whereas feudal relations tied the peasant to a demarcated plot of land and were based on personal loyalties, the growth of free market capitalism pressured individuals to move away from familiar environments in search of profits and employment (Torche and Valenzuela 2011, p.192). Capitalism therefore required frequent interactions among strangers, which both compelled individuals to trust one another and provided them with increased opportunities to build general trust. Likewise, Sztompka (2000, p.12) argues that, as the division of labour has progressed and globalisation has made it so nation-states are more deeply impacted by events outside their borders, we have had to rely on an expanding number of groups and institutions for the purposes of carrying on our daily lives. For Sztompka (2000, p.12), this means general trust has value as a means of maintaining co-operative relations under conditions of heightened social complexity, making it a natural fit to the extensive relations of interdependence that characterise organic solidarity.

The above theoretical descriptions therefore present particular and general trust as fundamental opposites; whereas particular trust is rooted in the past, featuring more prominently in archaic societies and solidifying existing social bonds, general trust looks to the future, arising under modern social conditions and connecting us with novel groups of people. Given these contrasts, it is perhaps unsurprising that particular and general trust have sometimes been regarded as incompatible (Fukuyama 1995; Uslaner and Brown 2005). Indeed, this seems to be the logical implication if we regard particular and general trust as representing mechanical and organic solidarity, respectively; if organic solidarity constitutes a threat to the cultural uniformity that underpins mechanical solidarity, then the ability of particular trust to reinforce group cohesion would seem to diminish precisely as tolerance for diversity and general trust develop.

There is some evidence that particular and general trust may work against each other in certain contexts. For instance, in an ethnographic study among *Ladino* Guatemalans, Ystanes (2016, p.52) reports that trust was largely restricted to domestic and kin relationships, with Mayans in particular being distrusted for their imputed "laziness, vindictiveness, irrationality, ignorance and incapacity for independent thinking". Thus, a social boundary was drawn along familial and racial lines that defined kin and other *Ladinos* as trustworthy while depicting outsiders as untrustworthy (Ystanes 2016, pp.37-9). Similarly, Uslaner and Brown (2005) claimed to examine the relationship between particular and general trust at the aggregate level using survey data on 41 US states. The researchers defined particular trust as "ingroup trust at the expense of outgroup trust", claiming it leads individuals to associate exclusively with their ingroup and develop hostile attitudes toward outgroups (Uslaner and Brown 2005, p.871). While Uslaner and Brown found particular trust to be negatively associated with general trust, the validity of their findings is highly questionable. Specifically, Uslaner and Brown (2005, pp.881-2) measured particular trust using the percentage of religious fundamentalists in a state, defending their decision on the grounds that fundamentalists are especially inclined to be distrust those outside their congregation. Thus,

their measure not only fails to directly assess particular trust; it almost guarantees the association between particular and general trust will be negative. How these two types of trust relate to one another should be an empirical problem, not a matter of definition.

Indeed, when using more valid measures of trust, studies tend to find that particular and general trust are positively associated. Uslaner (2002, p.54) himself recorded a positive association between particular trust (e.g., trust in club members, fellow churchgoers) and general trust (e.g., trust in strangers, most people) based on the 1996 Pew Research Centre Philadelphia Survey. In a thorough breakdown of the interconnections between particular and general trust, Newton and Zmerli (2011) analysed data from wave 5 of the World Values Survey (WVS), focusing on 22 democratic countries. Using three items to measure particular trust – trust in family, acquaintances and neighbours – and three items to measure general trust – trust in strangers, religious outgroups and national outgroups – the researchers found that 99% of individuals who reported high general trust also had high particular trust. In contrast, only 45% of those with high particular trust had high general trust. Correlational and multilevel analyses further indicated that particular and general trust were positively associated with each other within and across all 22 countries. Based on the same dataset and measures, Welzel (2010) found that this positive association holds when extending the sample to non-democratic countries such as China and Russia.

Overall, therefore, these studies suggest it is too simplistic to view particular and general trust as two extremes of a continuum from mechanical to organic solidarity. A more plausible view, as Newton and Zmerli (2011) argue, is to regard particular trust as a condition that is necessary but not sufficient for the emergence of general trust. In other words, particular trust may need to occur alongside other factors (e.g., resource abundance, absence of power inequalities between groups) before it can be converted into general trust.

Two Types of Trust?

As the preceding discussion makes clear, the distinction between particular and general trust is largely unchallenged in the trust literature. However, we can question whether this twofold scheme is sufficient to capture the complexity of trust beliefs in diverse contexts. This is an important question to consider given that, as will be detailed in Chapter 5, the current PhD will examine trust beliefs and suicide risk based on a cross-national sample. Before considering the evidence on this issue, it should be made clear that focus here is trust in other people – what is often referred to as interpersonal (Uslaner 2002) or social trust (Delhey and Newton 2005). Previous research has long drawn attention to a third type of trust involving political institutions (e.g., Putnam 2000), but this is not the focus of the following discussion; rather, the question posed here is whether it is valid to divide social trust into two types.

Using exploratory factor analysis (EFA), Uslaner (2002, pp.54-5) identified three dimensions of general, particular and political trust from a US survey of adults in Philadelphia. Trust in neighbours loaded on both the particular and general trust factors, a finding which Uslaner (2002, p.53) attributes to the mixed proximity of neighbours in our social networks – i.e., we may know some of our neighbours but not others. Furthermore, while trust in family loaded on the particular trust factor, its loading was lower compared to the other items intended to measure this factor. Uslaner (2002, p.53) offers little explanation for this finding, simply stating it is unsurprising "since family is special for everyone". However, given that Uslaner's

analysis was limited to adults in Philadelphia, these findings may not generalise to other countries.

Nevertheless, Yamagishi and Yamagishi (1994) generated similar results based on samples of students and city residents from Japan and the USA. The researchers found that items tapping trust in closer and more familiar groups comprise a distinct factor to items tapping trust in more remote and unknown groups (Yamagishi and Yamagishi 1994, p.144). The factor structure of particular and general trust was found to be largely invariant across samples, suggesting that it may be valid to distinguish between these two types of trust in different contexts (Yamagishi and Yamagishi 1994, pp.145, 152). However, one limitation with Yamagishi and Yamagishi's study is that the questions used to measure trust only inquired into ambiguous groups, such as "people I know well" or "most people".

Delhey *et al.* (2011) produced less definitive support for a 2-dimensional model of social trust when analysing cross-national data from wave 5 of the WVS. Using confirmatory factor analysis (CFA), the researchers hypothesised that trust in family, personal acquaintances and neighbours would measure particular trust while trust in strangers, religious outgroups and national outgroups would indicate general trust. While their initial multigroup CFA was found to have a poor fit to the data, an acceptable fit was achieved by relaxing certain model assumptions, such as allowing for residual correlations between selected items (e.g., trust in strangers and personal acquaintances) and freeing the loadings for trust in strangers and family to vary across countries (Delhey *et al.* 2011 Supplementary Material). Delhey *et al.'s* findings therefore suggest that, even if two latent dimensions of particular and general trust are discernible across countries, certain trust expressions do not fit neatly into this picture.

Indeed, two further studies have indicated that trust in strangers and family may not clearly fit into a two-dimensional model of particular and general trust. Hu (2020) utilised Item Response Theory (IRT) methods to analyse trust expressions based on wave 6 of the WVS. Applying a Rasch model to items on trust in family, personal acquaintances and strangers indicated that these four items could be satisfactorily represented with a single latent dimension. While Hu's analysis failed to consider trust in neighbours, religious outgroups and national outgroups, it nevertheless suggests that stranger trust may be more closely related to particular trust than previous researchers have suggested.

On the other hand, Steinhardt and Delhey (2020) used wave 5 of the WVS to examine trust beliefs in China. The researchers initially hypothesised two dimensions of particular and general trust in line with Delhey *et al.* (2011). However, a CFA based on these assumptions exhibited poor fit to the data; only after trust in family was removed from the model was an acceptable fit achieved that pointed toward two factors of particular and general trust (Steinhardt and Delhey 2020, p.931). Steinhardt and Delhey's results therefore suggest that, at least in certain contexts, trust in family is relatively unique to particular trust.

Indeed, there are theoretical and empirical grounds for expecting the family to constitute a separate domain of trust compared to others in our social circle. In his historical analysis of trust and economic conditions, Fukuyama (1995) sought to demonstrate that cultures prioritising the family concentrate trust exclusively in kinship networks, leading non-kin to be viewed with considerable suspicion. For instance, Fukuyama (1995, p.84) argues that Chinese patterns of association have historically been shaped by Confucianism, an ethical system that specifies appropriate modes of conduct in five key relationships (e.g., parent-son,

ruler-ruled). The cornerstone of Confucianism, Fukuyama (1995, p.85) argues, is obedience to and respect for the family (*jia*), which is expressed in the concept of familial piety (*xiao*) – i.e., children are expected to defer to their parents and prioritise family obligations above those to the State and non-kin. Fukuyama (1995, p.87) maintains that this belief system inclined Chinese peasants to avoid relying on neighbours for support, preferring wherever possible to secure resources from within the family.

It should be noted that Fukuyama (1995) did not view filial piety as the only factor restricting trust to the family in ancient China. For example, he observes that land shortages coupled with the imposition of onerous taxes left many Chinese peasants in dire poverty, thereby elevating the risks of trusting others and limiting opportunities for exchange (Fukuyama 1995, pp.87-8). Nonetheless, his argument demonstrates how the family may have its own trust dynamics that are distinguishable from particular trust more broadly. This conclusion is backed up by psychometric research into collectivism, which finds that an individual's feelings of attachment, commitment and loyalty to the group can be divided into three spheres: the family, peers (e.g., friends and neighbours) and wider society (e.g., nation) (Rhee *et al.* 1996; Realo *et al.* 1997; Realo and Allik 1999). Thus, while most studies point toward a 2-dimensional model of particular and general trust, a 3-dimensional model that distinguishes between family and particular trust also seems plausible.

Linking Trust to Suicide Approval

So far, the chapter has been concerned with developing a clearer picture of trust, its dimensions and attendant features. However, the ultimate goal of this project is to examine the associations between different types of trust and suicide approval. The purpose of this final section, therefore, is to begin linking these two constructs. To accomplish this aim, the chapter draws upon two stands of research: first, cross-national investigations of cultural values and suicide approval, and second, studies of suicidal thoughts and behaviours. As noted in Chapter 1, suicide approval is not equivalent with suicidal thoughts and behaviours; nevertheless, it is associated with these outcomes, meaning studies of suicidal thoughts and behaviours may be instructive in suggesting links between trust and suicide approval.

Culture, General Trust and Suicide Approval

Research into suicide approval has only been incidentally concerned with general trust through the construct of self-expression values (Stack and Kposowa 2011a; Boyd and Chung 2012; Stack and Kposowa 2016a). The concept of self-expression values was originally developed by Inglehart and colleagues (Inglehart and Baker 2000; Inglehart and Welzel 2005) as part of their modernisation theory of cultural change. According to Inglehart and Welzel (2005), self-expression values comprise a set of values and attitudes that champion individual autonomy, the prioritisation of subjective wellbeing, tolerance for diverse practices and beliefs, and general trust. Inglehart and Welzel (2005, pp.22-4) link the development of self-expression values to need to survive, which they claim has been a fundamental driver of human behaviour throughout history.

In agrarian societies characteristic of the feudal era, the majority of individuals encounter substantial barriers to meeting the need to survive as they have little control over nature; their livelihoods can be uprooted by environmental hazards, making existence uncertain (Inglehart

and Welzel 2005, pp.26-7). To cope with this uncertainty, Inglehart and Welzel (2005, p.27) argue, individuals attempt to maximise predictability in other areas of life through a rigid adherence to traditional gender norms and religious beliefs, giving rise to intolerance and distrust of persons who diverge from established patterns of conduct (Inglehart and Baker 2000, p.28). While processes of industrialisation begin to alter this situation by increasing prosperity for certain sections of the population, it is not until societies reach a post-industrial stage that self-expression values become widespread (Inglehart and Welzel 2005, p.20). Inglehart and Welzel (2005) identify three key features of post-industrial societies that contribute to self-expression values.

First, as production capacity expands and social policies are introduced to mitigate the hardships of unemployment, survival comes to be taken for granted by a larger share of the population (Inglehart and Welzel 2005, p.28). This leads priorities to shift from procuring vital resources and minimizing uncertainty to improving subjective wellbeing (Inglehart and Baker 2000, p.22). Consequently, cultural diversity comes to be seen less as a threat to the certainties of tradition and more as a source of intellectual stimulation and enjoyment (Inglehart and Baker 2000, p.28). Second, with the growth of the service and knowledge sectors, routine forms of work are gradually replaced with roles that require individuals to exercise increased discretion in their daily tasks (Inglehart and Welzel 2005, p.28). This is accompanied by a general rise in education levels among the population, meaning individuals are increasingly equipped with the cognitive skills to think and act independently (Inglehart and Welzel 2005, pp.28-9). Finally, as previously explained, the division of labour and globalisation bring individuals from various backgrounds into contact with one another, helping to destabilise rigid boundaries between in- and outgroups (Inglehart and Welzel 2005, p.24).

In Inglehart and Welzel's (2005) framework, therefore, material security provides the bedrock for general trust as it lessens the perceived threat of outgroups and creates more opportunities for encountering different worldviews and beliefs. This not only inclines the individual to become more tolerant of cultural diversity; it grants them more autonomy from their ingroup by enabling them to challenge its traditions and form social relationships outside it (Inglehart and Welzel 2005, pp.28-29). Stack and Kposowa (2016a, pp.284-6) observe that Inglehart and Welzel's description of self-expression values resembles Durkheim's treatment of egoistic suicide. As explained in Chapter 2, a key condition for egoistic suicide is a diminished sense of group attachment that results from the weakened authority of shared beliefs and practices. This provides the individual with greater scope to question group traditions, inclining them to tolerate competing opinions and prioritise personal over collective goals (Durkheim 2002, pp.112-3, 167-8).

Thus, both self-expression values and egoism imply individual autonomy and heightened tolerance, meaning they may promote a more approving attitude toward suicide. This argument also seems to cohere with existing knowledge on general trust. For example, it was noted above that general trust has been connected to the personality trait of openness, which is characterised by a greater tolerance for novel ideas and experiences (Freitag and Bauer 2016). However, despite these synergies between the constructs of egoism and self-expression values, it should be noted that they also exhibit inconsistencies. For example, egoism, in Durkheim's view, engenders feelings of sadness and a perception of life as meaningless whereas Inglehart and Baker (2000, pp.24-5) explicitly link self-expression

values to feelings of happiness. Furthermore, in synthesising modernisation and Durkheimian theory, Stack and Kposowa (2016a) seem to imply that poverty lowers suicide risk by fostering group cohesion, an argument that has largely been refuted by recent research (Platt 2016).

Nevertheless, Stack and Kposowa (2011a; 2016a) hypothesised that self-expression values would be positively associated with suicide approval both at the individual- and country-level. Using data from wave 4 of the WVS covering 3580 black individuals across 10 countries, Stack and Kposowa (2011a) measured self-expression values based on a 5-item index proposed by Inglehart and Baker (2000), covering areas such as feelings of happiness, tolerance of homosexuality and trust in most people. In partial support of their hypotheses, the researchers found that individual endorsement of self-expression values was associated with more approving attitudes toward suicide. While country levels of self-expression values were unrelated to suicide approval, the researchers nevertheless identified a cross-level interaction, such that the positive effect of individual-level self-expression values became stronger in more self-expressionist cultures. Subsequent analyses based on the WVS (Boyd and Chung 2012; Stack and Kposowa 2016a) have confirmed that these findings hold when extending the sample to a broader range of countries and ethnic groups, suggesting they have some applicability across contexts.

Research into self-expression values therefore raises the possibility that general trust promotes a more approving attitude toward suicide as it implies weaker group attachments and heightened tolerance for various ideas and practices, including suicide. However, it remains to be seen whether such an association holds when treating general trust as a separate variable to self-expression values.

General Trust and Suicide

While the above perspectives point toward a positive association between general trust and suicide approval, there are also grounds to doubt this conclusion. Specifically, it would seem to conflict with arguments that general trust develops from an optimistic worldview (Yamagishi and Yamagishi 1994; Uslaner 2002; Sturgis *et al.* 2010) and affords a sense of ontological security (Giddens 1991). In other words, general trust is typically seen as a sign of emotional wellbeing and might therefore offer some immunity against suicidal thoughts. To develop this line of argument, we can relate general trust to Agnew's GST as outlined in Chapter 2. According to Agnew (2014, p.1894), the more an individual perceives a situation as a threat to their expectations or desires, the more likely it is they will experience negative emotions such as anger and depression. Thus, the individual's subjective interpretation of events is central to the experience of strain (Agnew 2014, p.1894). A belief that most people can be trusted not to cause harm and provide assistance if needed may foster a more benign view of the world, thereby reducing the individual's exposure to strain and lowering their suicide risk.

Alternatively, some researchers have attempted to connect general trust with suicide using Durkheim's concept of social integration (Stolz *et al.* 2016; Bränström *et al.* 2020). For instance, Bränström *et al.* (2020, p.91) suggest that a lack of general trust represents a barrier to social integration, meaning general trust is negatively associated with suicide risk. While Bränström *et al.* (2020) do not elaborate on how general trust promotes social integration, we

can perhaps see how such an argument might be advanced. Thus, if general trust facilitates interactions between strangers (Paxton 2007; Torche and Valenzuela 2011) and implies an agreeable personality (Sturgis *et al.* 2010; Freitag and Bauer 2016), then it may encourage individuals to engage with others and establish more amicable, stable relationships. This interpretation is also somewhat consistent with Durkheim's own writings; as explained in Chapter 2, Durkheim maintained that social integration is bolstered by frequent interactions among group members. However, it could also be countered that general trust is a feature of organic solidarity and weak ties, implying it cannot establish the kind of shared culture Durkheim viewed as necessary for social integration.

While available evidence on the association of general trust with suicidal thoughts and behaviours does not allow us to arbitrate between GST or Durkheimian theory, it is nevertheless consistent with both perspectives. Thus, studies have reported that trust in 'most people' is negatively associated with suicidal ideation among Japanese (Yamamura 2015), South Korean (Kim *et al.* 2017) and Greek samples (Economou *et al.* 2013). Similarly, Bränström *et al.* (2020) found that low general trust among lesbian, gay and bisexual groups' helped to explain their heightened risks of contemplating and attempting suicide among a sample of 57,840 Swedish adults. While these findings point toward a negative association between general trust and suicide risk, it should be noted Yamamura (2015) and Kim *et al.* (2017) were unable to control for depression, potentially biasing their findings.

In line with findings from individual-level studies, a number of aggregate-level studies have found that group levels of general trust are negatively associated with suicide rates (Helliwell 2007; Kelly *et al.* 2009; Okamoto *et al.* 2013). However, not only are these studies based on small samples (n = 11-50) and are unable to control for confounders such as depression; it cannot be assumed that associations recorded at the aggregate-level will hold among individuals (Snijders and Bosker 2012, pp.15-6). Thus, we should be cautious in using these findings to infer that individuals who are more trusting of people in general are less likely to die by suicide.

Overall, therefore, existing evidence suggests that general trust is a protective factor for suicidal thoughts and behaviours. While the mechanisms linking general trust to suicidal thoughts and behaviour are unclear, two possibilities seem plausible: (1) general trust level may increase social integration by facilitating interactions between individuals, and (2) general trust may form part of an optimistic worldview that insulates people against strains. This, in turn, suggest that general trust may be negatively associated with suicide approval, a conclusion that clashes with research into self-expression values and suicide approval.

Particular Trust and Suicide

Given the existing knowledge base on particular trust, several mechanisms linking it to suicide risk seem plausible. First, it is possible that particular trust is associated with suicide risk through its direct effects on the individual's social bonds and emotions. Thus, particular trust is understood to signal stronger emotional connections with others (Lewis and Weigert 1985; Burke and Stets 1999), helping to reduce feelings of loneliness (Rotenberg *et al.* 2010) and reinforce group norms (Newton 1997; Uslaner 2002). Under a Durkheimian lens, particular trust may therefore contribute to feelings of group attachment and commitment, sustaining a sense of purpose in life and guarding against egoistic suicide. Alternatively,

drawing upon the Interpersonal-Psychological Theory (IPT) of suicide, particular trust might be said to help in fulfilling the need to belong, which is thwarted when the individual experiences intense feelings of loneliness as well as an absence of reciprocal support. In turn, it was previously noted that trust may form part of a secure attachment orientation, thereby helping to undergird emotional wellbeing and minimise the chances that individuals will experience adverse reactions to relationship crises (Bowlby 1980; Adam 1994).

Quantitative studies lend some credence to these arguments. For instance, trust in neighbours has been found to lower the odds of contemplating and attempting suicide in Stockholm (Dykxhoorn *et al.* 2021) while trust in classmates has been shown to protect against these outcomes among school pupils in Nova Scotia (Langille *et al.* 2012). In an analysis of trust and suicidal ideation among adolescent psychiatric patients, Hill *et al.* (2019) produced evidence that appears to offer stronger support to attachment theory. Hill *et al.* (2019) found that adolescents' trust in selected groups was only associated with suicidal ideation through perceived burdensomeness; while trust was also related to thwarted belongingness, the latter did not exhibit a statistically significant relationship with suicidal ideation. Consistent with the notion that trust signifies a secure attachment, the researchers speculate that trust may undergird a sense of self-worth that protects against perceived burdensomeness.

On the other hand, qualitative evidence suggests feelings of belongingness and purpose in life may be implicated in the relationship between particular trust and suicide. Ozawa-de Silva (2008) used online ethnography to understand what motivated Japanese youth to visit internet chatrooms around suicide with the intention of ending their lives. A recurrent theme across chatroom conversations was a profound sense of loneliness that was not only emotionally distressing for users but was often accompanied by a view of life as meaningless (Ozawa-de Silva 2008, pp.528-9). For example, many users questioned why they were ever born and whether their life had any value. According to Ozawa-de Silva (2008, p.529), these distressing thoughts and feelings were partly connected to participants' low levels of trust in peers. Thus, some users anticipated rejection for expressing their actual thoughts and feelings in offline interactions, leading them to present a fabricated version of themselves they believed would please others (Ozawa-de Silva 2008, p.531). This led users to feel they were not genuinely accepted by their peers, even if they reported being embedded in extensive social networks.

Ozawa-de Silva's study therefore suggests that low particular trust may contribute to suicidal ideation by giving rise feelings of meaninglessness and loneliness. However, as Ozawa-De Silva (2010, pp.406-9) details elsewhere, there is a greater concern with presenting a socially acceptable self in Japan as the needs of the group are prioritised over those of the individual; this coincides with stronger fears of rejection as selfhood is primarily defined in terms of participation in and contribution to the group. Thus, it may be that particular trust has stronger effects on purpose in life and loneliness in countries such as Japan, where there is a greater emphasis on maintaining harmonious social relations.

Alternatively, particular trust may be linked to suicide risk through the provision of social support. Rational choice models highlight that our decision to trust specific others is based on our previous exchanges with them (Hardin 1993); if they have treated us kindly in the past, we will be more inclined to trust them in the future. Particular trust, on this account, therefore signals a history of positive treatment and greater willingness to rely upon selected others in

times of need. It was highlighted in Chapter 2 that network theory and GST both link suicide to social support processes; specifically, social networks may help the individual to cope with crises by providing them with valuable information or neutralizing negative emotions (Pescosolido and Georgianna 1989; Agnew 1998). In turn, the perception that social support is available, even if it is not utilised, may be enough to lower the perceived threat of strains (Cohen and Wills 1985, p.312). This could mean that, when particular trust is high, the individual is more likely to perceive social support as available or make use of it, thereby lowering the probability that their distress will escalate into suicidal ideation.

Some studies have provided evidence consistent with a social support perspective. Noguchi *et al.* (2017) analysed data on 10,094 people aged 65+ from Japan, finding that distrust in neighbours was positively associated with suicidal ideation but only for individuals experiencing psychological distress. This suggests that particular trust primarily acted as a coping resource, intervening to lessen the impact of psychological distress on suicidal ideation. Conceptualising particular trust as a feature of social support processes may also help to explain Hill *et al.'s* (2019) findings that adolescents' trust in selected groups protects against suicidal ideation by lowering perceived burdensomeness – i.e., heightened trust may encourage the individual to reach out for support, possibly helping them to challenge their self-critical perceptions by receiving reassurances about their personal worth.

Similar findings have been generated through qualitative research. Thus, based on semi-structured interviews with 54 people from the UK who attempted or were bereaved by suicide, Benson *et al.* (2016) found that feelings of inherent worthlessness and low interpersonal trust combined to create a situation in which individuals felt overwhelmed by negative events. Specifically, low trust in friends, colleagues and spouses seemed to exacerbate suicidal ideation in two ways: first, by contributing to the individual's social isolation and anxieties around rejection; and second, by leading them to hide their emotional distress in order to maintain a favourable image of themselves in the eyes of others. Benson *et al.'s* study therefore suggests that low particular trust not only erodes the individual's feelings of belongingness; it may also make it more difficult for them to cope with feelings of personal worthlessness by discouraging them from accessing social support.

Overall, therefore, previous research suggests individuals expressing higher levels of particular trust may be at lower risk of contemplating or attempting suicide. While the mechanisms underlying these associations are not entirely clear, a number of possibilities seem plausible. Specifically, particular trust may directly influence the individual's social bonds and emotions, contributing to feelings of purpose in life, belongingness or secure attachments. Alternatively, particular trust may reinforce perceptions that social support is available and motivate individuals to utilise this support for coping with crises. Thus, assuming that suicide approval is influenced through similar processes to suicidal thoughts and behaviours, we might expect particular trust to be negatively associated with suicide approval.

Conclusion

This chapter has highlighted three points of contention regarding our understanding of trust and its consequences for suicide risk. First, there is debate as to what constitutes trust. Competing perspectives depict trust as a rational expectation based on experience, an

emotional investment in social relationships, and as a personality trait shaped by genetics. While there is evidence to support each interpretation, indicating that trust is a multifaceted construct, it would also seem that the type of relationship in which trust is embedded has a bearing on how it is experienced. Researchers seem to concur in viewing particular trust as a product of personal experience that characterises strong ties, implying it has consequences for the individual's emotional wellbeing. Conversely, there is more disagreement around general trust, with researchers debating whether it is contingent on or immune to experience, whether it is relatively devoid of emotion or intertwined with feelings of optimism, and whether it is even possible in the first place.

Second, there are questions around the number of dimensions to social trust and their interrelationships. While the weight of evidence points toward two positively correlated dimensions of particular and general trust, this latent structure is more evident in certain contexts (e.g., the USA) than others (e.g., China). Specifically, it seems that trust in family may represent a separate facet of trust, suggesting a 3-dimensinal model may be preferable. It is notable in this regard that, even where studies have produced evidence for a 2-dimensional model of trust, trust in family does not always fit comfortably into these models. In turn, some perspectives hold that particular trust impedes the formation of general trust while others view the two as compatible.

Finally, there is conflicting evidence as to how particular and general trust may be implicated in suicide risk. From the perspective of modernisation theory, general trust forms part of a self-expression value orientation that champions tolerance of cultural diversity and the rights of individuals to shape their own lives. These features of general trust have been theorised to promote an approving attitude toward suicide, although this association has not been tested outside of research into self-expression values. While this suggests general trust may elevate suicide risk via suicide approval, available evidence on suicidal thoughts and behaviours points to the opposite conclusion – general trust at the individual- and aggregate-level appears to be negatively associated suicidal thoughts and behaviours. As for particular trust, while no research has considered its relationship with suicide approval, studies of suicidal thoughts and behaviours are almost unanimous in concluding that it constitutes a protective factor.

For the purposes of studying how trust beliefs are associated with suicide approval, it is the latter two issues that require attention – that is, in order to determine how different types of trust are linked to this outcome, we first need to understand how to best measure trust. This points toward two research questions to be analysed in the coming chapters:

1. What latent structure is exhibited by expressions of trust in different groups?
2. How are expressions of trust in different groups associated with suicide approval?

Chapter 5 – Methodology

The previous chapter clarified the main research questions for this PhD; first, to understand the latent structure of trust with the aim of constructing adequate measures of this construct; and second, to use the resulting measures to determine how trust expressions are associated with suicide approval. The goal of this chapter is to detail and justify the methods that will be used for addressing these questions. The chapter begins by outlining the data that form the backbone of the project, describing how participants were sampled and which observations were selected for analysis. The specific variables and methods used to address each research question are then described before potential issues with the proposed analysis strategy are considered. The chapter concludes with a summary of the methods and the next steps for the analysis.

Data and Sample

The present analysis is based on data from the World Values Survey (WVS). The WVS is an international survey of cultural values and social attitudes that was founded in 1981 by Robert Inglehart and has been conducted at various intervals since. As the WVS has expanded in scope and reach, it has come to collect data from individuals in over 100 countries around the world, which contain around 90% of the global population (WVS 2020).

For the purposes of this PhD, the WVS has two advantages over competing surveys. First, since its inception, the WVS has regularly inquired into attitudes around the justifiability of suicide, with previous studies having used the WVS and its European counterpart – the European Values Study (EVS) – to examine suicide approval both as an outcome (Stack and Kposowa 2016b) and as a predictor of suicidal thoughts (Stolz *et al.* 2016). Thus, using the WVS to study suicide approval is not without precedent and allows findings from the present analysis to be compared with existing research. Second, beginning with its fifth wave in 2005-9, the WVS has included questions on trust in six distinct groups (Welzel 2010, p.162). This makes the WVS ideal for addressing the current research questions as few surveys include items on suicide risk and trust in various groups (see Chapter 8).

Sample

The present analysis is based on waves 6 (Inglehart *et al.* 2018) and 7 (EVS/WVS 2022b) of the WVS, which cover the years 2010-15 and 2017-2022, respectively. The analysis was restricted to these two waves given evidence that suicide attitudes may have shifted within the last few decades for certain countries (Renberg and Jacobsson 2003; Witte *et al.* 2010; Tong and Phillips 2018; Lee *et al.* 2023). It therefore seemed more appropriate to analyse suicide approval within a shorter timeframe to ensure attitudes are comparable over time. For wave 7, it was possible to download a joint data file that included information from the EVS; the joint files were used to ensure adequate representation of European countries in the sample.

The WVS recruits participants through a mixture of single-stage and multi-staged full-probability sampling procedures (EVS/WVS 2022a, p.11), helping to produce samples that are broadly reflective of the populations under study. Principal investigators and research organisations within each country are tasked with recruiting a minimum of 1200 participants

aged 18+, although these limits may be adjusted in certain cases (WVS 2020). For example, some countries are permitted to collect smaller samples and include participants as young as 15. Data are collected through structured interviews conducted either in the participant's place of residence or over the phone. As the timescale for wave 7 overlapped with the onset of the COVID-19 pandemic, these procedures had to be adjusted for some countries (e.g., the UK), meaning participants were on occasion sampled at disparate times (EVS/WVS 2022a, p.6). In accordance with general ethical standards, all data are anonymised before being submitted to the WVS.

The WVS therefore provides high-quality data for drawing inferences in a global context, making it a suitable evidence base for addressing the previously stated research questions.

Observations

Figure 5.1 provides a breakdown of the number of observations and countries available at each stage of the analysis. Prior to listwise deletion[5] of cases with missing values on relevant variables, the total sample consisted of 243281 individuals nested in 102 countries.

For stage 2, the sample was limited to individuals with full information on the trust variables. The stage 2 sample therefore contains a larger number of observations and countries than were available for stage 3. This decision seemed appropriate for two reasons. First, it allowed for estimating the latent structure of trust expressions using the largest possible sample with the widest geographical coverage, thereby helping to build confidence in results. Second, results were essentially identical when using all available observations/countries and when limiting the sample to those included in stage 3.

The number of observations at stage 2 consisted of 221265 individuals across 102 countries. This represents 90.95% of the initial sample, with each country losing 8.18% of participants on average. While this suggests that few participants were lost due to missing responses, four countries recorded rates of missingness above 25%: China[6] (27.1%), Japan (48.31%), Lithuania (33.7%) and New Zealand (60.1%). In the case of New Zealand, the high rate of missingness is due to the relevant trust questions not being asked in wave 6.

For the final stage of the analysis, the number of cases dropped further to 185459 individuals across 99 countries, which represents 76.23% of the original sample. The primary reason for this decrease is the introduction of additional variables with higher rates of missing values, such as religiousness and self-expression values (see 'Control Variables' for more information). Significance tests pointed toward a number of demographic differences

[5] Listwise deletion is likely to bias estimates of parameters, particularly when the pattern of missingness is not completely random (i.e., the probability of missing values depends either on the observed values or the missing values) (Levy and Mislevy 2016, pp.300-1). Multiple imputation provides one means of addressing this issue by fitting a probability model to fill in the missing values based on the observed data; this yields a distribution of plausible values for each missing data point which may then be used for conducting analyses (Levy and Mislevey 2016, pp.308-9). However, given the volume of data in the WVS/EVS, multiple imputation could not be performed due to computational limitations.

[6] The low response rate to the trust questions among Chinese participants was previously noted by Delhey *et al.* (2011) for wave 5 of the WVS. This could reflect issues with question wording or the cultural dynamics of trust in certain segments of Chinese society. For example, breaking down the rates of missingness by trust item, it is apparent that Chinese participants were less likely to respond to questions on trust in religious outgroups (23.82%) and national outgroups (21.55%) (see 'Focal Predictors' for more details).

between individuals with missing and complete information. Specifically, missing cases tended to be older (t = -29.902, df = 90511, $p < 0.001$), have lower levels of education (χ^2 = 636.02, df = 3, $p < 0.001$) and include more women (χ^2 = 42.396, df = 1, $p < 0.001$). Thus, the sample may be less representative of these groups.

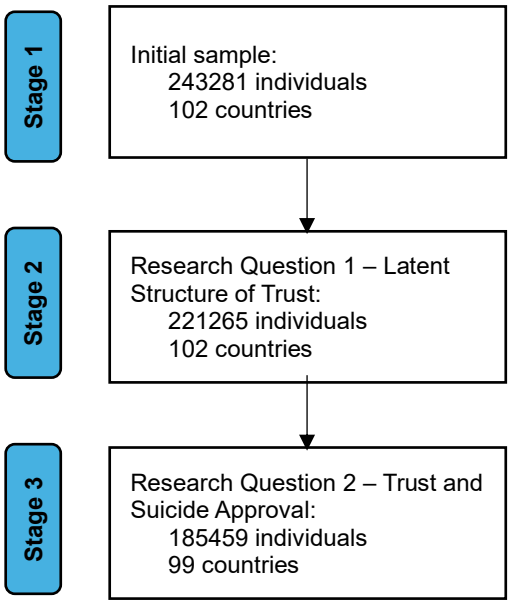


Figure 5.1: Flow Chart of Sample Attrition

Variables

Outcome Variable

The main outcome variable under analysis is suicide approval. As previously noted, suicide approval is understood as the extent to which the individual views suicide as a legitimate course of action, either in the abstract or in response to specific situations (Phillips and Luth 2020: 415; Stack 1998: 509). In line with previous research, the following question is used to gauge levels of suicide approval:

> Please tell me for each of the following whether you think it can always be justified, never be justified, or something in between: suicide
> (EVS/WVS 2022a, p.258)

The question therefore measures the extent to which the participant views suicide as a legitimate option in general; that is, it asks whether suicide could be justifiable for anyone, not just the participant. Responses to this question are measured on a 10-point scale, such that 1 = never justifiable and 10 = always justifiable. This means the question comprises an ordinal variable, although it contains enough response categories to be treated as approximately continuous (Mair 2018, pp.21-2).

There are limitations with this question that will be considered in greater detail in Chapter 7. For the moment, it is important to highlight that responses to this question are often highly

skewed, which can undermine the validity of inferences when assuming normal distributions. While researchers have attempted to remedy this issue by applying various transformations to the suicide approval item, these solutions tend to introduce new problems, such as increasing model complexity without actually removing skewness (Stack 1998; Stack and Kposowa 2011b) or obscuring important differences in participants' responses (Neeleman *et al.* 1997).

Given the problems with existing solutions, no transformations were applied to the suicide approval item in the present analysis; instead, the item was kept on its original scale and treated as a continuous variable. This decision seemed defensible for two reasons. First, as will be elaborated below, multilevel regression was used to analyse this outcome. Simulation studies have indicated that simple and multilevel regression methods are relatively robust to assumption violations, including highly skewed data (Schmidt and Finan 2018; Schielzeth *et al.* 2020). Second, while skewness can bias standard errors in small samples, Schmidt and Finan (2018) demonstrate that such bias is negligible with larger samples (e.g., $n > 100$). As the present analysis uses a sample of over 180,000 observations, skewness is unlikely to give drastically different estimates of uncertainty and statistical significance than would have been obtained when using more technically appropriate methods.

Of course, this does not mean multilevel modelling guarantees robust estimates or that it excuses the researcher from checking the integrity of model assumptions. Nonetheless, it does suggest that analysing the suicide approval item on its original scale allows for more interpretable results with minimal losses in model validity (Schielzeth *et al.* 2020, p.1149).

Focal Predictors

The predictors that form the main focus of the analysis are expressions of trust in different groups. As previously noted, the fifth wave of the WVS introduced a series of items asking participants about their trust in six groups. These items are worded as follows:

> I would like to ask you how much you trust people from various groups. Could you tell me for each whether you trust people from this group completely, somewhat, not very much or not at all?
>
> 1. Your family
> 2. People in your neighbourhood
> 3. People you know personally
> 4. People you meet for the first time
> 5. People of another religion
> 6. People of another nationality
>
> (EVS/WVS 2022a, pp.142-7)

These six groups are intended to reflect different facets of particular and general trust (Welzel 2010, p.162). Thus, items 1 to 3 represent groups with whom the individual is likely to be more familiar, interact with more frequently and possibly have more in common with. Trust in these groups is therefore thought to gauge particular trust. Conversely, items 4 to 6 cover groups the individual has little knowledge of (strangers) and who may differ quite substantially in their social background and worldview (religious and national outgroups). A tendency to trust such groups is therefore considered to be reflective of general trust.

Participants can select one of four possible responses to these questions. The responses were recoded so that higher values indicate more trust:

1. Do not trust at all
2. Do not trust very much
3. Trust somewhat
4. Trust completely

Each item is therefore measured at the ordinal level, meaning they are made up of multiple ranked categories.

Rather than examine how each trust item is associated with suicide approval, this PhD aims to construct a smaller number of indexes from these items by means of exploratory factor analysis (see 'Developing Trust Indexes – Latent Variable Modelling') and use them as predictors. This seems the most defensible option, given that previous research has indicated that the WVS trust items can be reduced to at least two dimensions of particular and general trust (e.g., Delhey *et al.* 2011). Thus, by adopting this approach, it may be possible to construct more theoretically meaningful measures of trust and examine their associations with suicide approval; this, in turn, could help to ensure that findings from the analysis contribute to the literature on trust and wellbeing.

The decision to construct indexes was taken as this is common practice among researchers and has the advantage of facilitating more intuitive interpretations of the resulting trust variables (Newton and Zmerli 2011, p.179; Steinhardt and Delhey 2020). Furthermore, findings from the factor analysis indicated that these indexes were highly correlated with the model estimated factor scores ($r > 0.96$ for all relevant pairs of factor scores and index scores). Thus, using indexes entailed little loss of information while yielding gains in interpretability. The indexes were constructed by summing scores across relevant sets of items and dividing by the number of items used in the index's construction.

Control Variables

Alongside expressions of trust, several control variables were used to model suicide approval, the coding schemes for which are presented in Appendix 5A.

Family Ties: Marital Status and Children

It was highlighted in the literature review that supportive family ties have been theorised to lower suicide risk by engendering feelings of purpose (Durkheim 2002), belongingness (Van Orden *et al.* 2010; Benson *et al.* 2016) or forming part of a secure attachment (Adam 1994; Fincham *et al.* 2011). As the systematic review demonstrated, two measures of family ties that have frequently been used to model suicide approval are marital status and number of children. While most studies found number of children to be associated with suicide approval, the evidence was less convincing for marital status. Nonetheless, marital status remains a theoretically important variable and may be linked to suicide approval in certain contexts, thereby warranting its inclusion.

In the present analysis, marital status was coded as a nominal variable with four categories: married/living together as married, divorced/separated, widowed and single. Married/living

together formed the reference category. Number of children, on the other hand, was treated as an ordinal variable with six categories: 0, 1, 2, 3, 4 and 5+ children.

Religiosity: Church Attendance and Religiousness

Network perspectives further highlight that ties to religion may reduce suicide approval by providing the individual with a source of social support or teaching them to endorse religious prohibitions against suicide (Pescosolido and Georgianna 1989; Jung and Olson 2014). Two variables were used to gauge religious ties and beliefs. First, frequency of church attendance was included as an ordinal variable to account for the individual's degree of participation in religious networks. Church attendance seemed particularly important to include given that it was one of the most reliable predictors of suicide approval in the systematic review. Church attendance contained eight categories, where 1 = 'Never, practically never' and 8 = 'more than once a week'.

Second, a control was included for whether the participant described themselves as religious or not religious/an atheist. The religiousness variable was measured at the nominal level with not religious/an atheist as the reference category[7].

Psychological Wellbeing: Life Satisfaction and Perceived Control

While no measures for stress or depression are available in the WVS, two controls were included for emotional and psychological wellbeing more broadly. The first item assesses participant's satisfaction with their life as a whole; this is a common indicator of emotional wellbeing (Ryff 1989) and has previously been found to negatively relate to suicide approval (Stack and Kposowa 2016b). The second item asks participants how much freedom and control they have over their life. Perceived control over one's life shares affinities with the concept of environmental self-mastery in Ryff's (1989) Psychological Wellbeing Scale and has been found to protect against suicidal ideation among selected populations (Stolz *et al.* 2016), suggesting it may also lower suicide approval.

Both life satisfaction and perceived control are measured on a 10-point scale. Since they possess over 7 categories, they are treated as approximately continuous variables in the present analysis. This approach seemed more parsimonious than estimating 9 separate dummy coefficients for each of these variables. In turn, it avoided the loss of information that would have been incurred from collapsing them into a smaller number of categories.

Self-Expression Values

Another key variable that has been linked to suicide approval is self-expression values (Boyd and Chung 2012; Stack and Kposowa 2016a), understood as values espousing individualism and openness to diverse worldviews. It was explained in the literature review that self-expression values have traditionally been measured in part using the standard trust question, meaning this measure would be inherently confounded with the trust variables. To avoid this

[7] Based on results from Chapter 3, it would have been preferable to control for religious denomination. However, inspection of the wave 6 data revealed the religious denomination variable (V144G) contained numerous coding errors. For instance, in Egypt, 100% of observations were coded as unaffiliated when the majority of the population are Muslim. Likewise, the majority of Swedish participants were coded as belonging to other religions in wave 6 but as Protestants in wave 7. As the extent of these coding errors was unclear, the religious denomination variable was deemed unsuitable for analysis.

issue, the present analysis utilises a self-expression value index proposed by Welzel (2010, pp.157-8) that does not include items on trust. This index divides self-expression values into three domains of sexual liberty, gender equality and personal autonomy. Nine of the items detailed by Welzel (2010) were employed:

- Sexual liberty – 2 items on whether abortion and divorce can be justified
- Gender equality – 3 items on whether men should have priority in employment (reverse coded), whether men make better political leaders (reverse coded) and whether it is more important for men to attend university (reverse coded)
- Personal autonomy – 4 items on whether imagination, independence, obedience (reverse coded) and religious faith (reverse coded) should be encouraged among children

The procedures for combining these items are detailed in Appendix 5B[8]. In the present analysis, the self-expression value index took on 501 unique values between 0-3, with higher scores indicating stronger endorsement of these values. As such, the self-expression value index is treated as a continuous variable in the present analysis.

Socio-Demographics: Age, Sex and Education

Finally, controls are included for basic socio-demographics. Older individuals have been found to report less approving attitudes toward suicide (Stack and Kposowa 2016b); as such, the model controls for age in years. Self-reported sex is also included as men are known to have higher suicide rates than women in most countries for which data are available (Klonsky *et al.* 2016, p.311; WHO 2021). The reference category was set to male in the current analysis[9].

A control for education level is also included as more educated individuals have been found to express higher levels of suicide approval (Stack and Kposowa 2016b). The measurement of education is complicated by the fact that the WVS adopted the ISCED-11 for coding education levels in wave 7, having previously used a CASMIN-style system. While both coding schemes assign rankings based on the highest qualification attained, CASMIN distinguishes between vocational and non-vocational qualifications while ISCED-11 allows for finer-grained distinctions at the tertiary level (Connelly *et al.* 2016). To make these measures more comparable, it was necessary to recode education levels into broader categories that had a degree of overlap across waves. The following categories were constructed: less than primary-level education, less than secondary-level education, less than university-level education, and university-level education or above.

Despite these attempts to make the education variables comparable across waves, it remains unclear whether the derived categories are practically meaningful and preserve key

[8] Welzel's original index also included items on the acceptability of single-parenthood and homosexuality. However, the item on single-parenthood was not available for waves 6 and 7. Moreover, the homosexuality item was not asked in two countries and was therefore excluded to retain more observations. This yielded a 9-item index that had a correlation of 0.989 with Welzel's original version, suggesting that the removal of the homosexuality item did not dramatically alter scores.

[9] Given evidence that sexual and gender minorities are at elevated risk of suicidal thoughts and behaviours (McDaniel *et al.* 2001; Silenzio *et al.* 2007), it would have been desirable to control for LGBTQ+ status. Unfortunately, the WVS does not allow for a more detailed examination of gender and sexuality.

differences in education experiences. Thus, to avoid presupposing that each category reflects a reliable increase in education level, the variable was treated as nominal. The reference category was set to less than university-level education as it was the most frequently observed category.

Developing Trust Indexes: Latent Variable Modelling

Analysis Methods

To determine whether the six trust items could be treated as indicators for underlying trust dimensions, exploratory factor analysis (EFA) was applied to the WVS data. EFA is a method for determining whether a set of observed variables can be explained by a smaller number of unobserved or latent factors (Joliffe and Morgan 1992, p.76). These latent factors are assumed to be continuous, meaning individuals can have higher or lower scores on the latent factors (Bartholomew *et al.* 2011, p.178). According to Bartholomew *et al.* (2011, pp.175, 200), EFA is a "model-based" approach to multivariate analysis. This means that, instead of merely describing the sample data, it makes a number of assumptions about how variables are distributed in the population. As such, EFA can be used to test hypotheses regarding the underlying structure of variables and draw inferences about the population from which the data were sampled.

According to Bartholomew *et al.* (2011, p.179), EFA can be understood as an inversion of the classical regression formula. In regression, the goal is to model a single outcome variable as a function of one or more explanatory variables; both the outcome and explanatory variables are observable, with the problem being to determine the coefficients relating them to one another. With EFA, however, the goal is to relate a number of observed outcome variables to a smaller set of unobserved factors (Bartholomew *et al.* 2011, p.176). Congdon (2006, p.427) describes this situation as involving "doubly missing data"; we do not know the individual's scores on the latent factors or the coefficients relating these scores to the observed variables.

To express these ideas in formal notation, let x stand for the trust items, containing $i = 1, 2 \ldots, 6$ unique items. In turn, let f represent the latent factors, ranging from $j = 1, 2, 3$. Following Bartholomew *et al.* (2011, p.180), the factor analysis model can be specified as:

$$x_i = \alpha_{i0} + \alpha_{i1} f_1 + \alpha_{i2} f_2 + \alpha_{i3} f_3 + e_i \qquad (1)$$

where

x_i = trust item i
f_j = latent factor j
α_{ij} = the association between a given x and a given f
e_i = the residuals for trust item i

Equation 2 therefore states that a person's scores on the trust items are determined by their scores on the latent factors plus random variation. According to Park *et al.* (2002, p.563), the factor analysis model can be understood as an attempt to separate the variance that is common to the observed items through the latent factors ($\alpha_{ij} f_j$) from the variance that is

specific to the observed items (e_i). The α's are referred to as factor loadings and can be interpreted as the extent to which a given trust item serves as a reliable indicator for the factor in question. The model assumes the e_i are uncorrelated with one another and the f_j (Bartholomew *et al.* 2011, p.181). While the f_j are also assumed to be uncorrelated with one another, this assumption may be relaxed by applying various rotations (Bartholomew *et al.* 2011, pp.188-9).

The model degrees of freedom are calculated as $((p - q)^2 - (p + q))/2$, where p and q represent the observed items and latent factors, respectively. As this formula implies, the degrees of freedom are 0 when using 3 factors to model 6 items. This means it is not possible to fit more than 3 latent factors for modelling the trust items as adding further factors results in negative degrees of freedom.

EFA has been an indispensable tool in psychometric research, where it has been used to assess the underlying structure of constructs such as suicide attitudes (Renberg and Jacobsson 2003) and trust (Yamagishi and Yamagishi 1994). For the purposes of the present research, a key advantage of EFA is its flexibility; EFA allows the researcher to specify how many factors to use for representing a set of observed items and their relationships to one another (Bartholomew *et al.* 2011, p.187). EFA can therefore be used to test competing theoretical perspectives as different models can be fitted to the data and compared against each other to determine their adequacy. For example, a 2-factor solution may be fitted to determine whether the trust items load on to two dimensions of particular and general trust. Alternatively, a 3-factor solution can be implemented to assess whether any of the trust items (e.g., family trust) are better represented with a third dimension.

Modelling Approach

Estimation

EFA was applied to the trust items under a frequentist framework by means of maximum likelihood estimation (MLE). As noted above, the problem posed by EFA is to estimate two missing quantities: the latent factors and their relationships to the observed variables. In frequentist statistics, this problem is addressed by analysing the correlation matrix of the observed variables, with the goal of making the correlation matrix predicted by the model as close as possible to the observed correlation matrix (Bartholomew *et al.* 2011, p.183). MLE attempts to accomplish this by locating the values of the model parameters (e.g., f_j, α_{jj}) at which the probability of the observed data is greatest. Analyses were performed in R statistical software using the *psych* package (Revelle 2024).

Exploratory and Confirmatory

In EFA, the researcher does not know in advance how many latent factors are needed to represent the data and which observed variables load on to them; rather, the goal is to investigate how the data are structured and determine the optimal number of factors for modelling them. For this reason, EFA allows all observed variables to load on each factor. This feature distinguishes EFA from confirmatory factor analysis (CFA), where the researcher approaches the analysis with a predefined model that specifies the exact number of factors and which observed items serve as indicators for them (Bartholomew *et al.* 2011, pp.289-90).

In CFA, this usually takes the form of constraining selected factor loadings to zero and excluding cross-loadings with the aim of producing simple structure.

The decision was made to use EFA in the current analysis as CFA is more restrictive and has received criticism for producing misleading estimates of model parameters that almost guarantee poor fit to the data (Muthén and Asparouhov 2012; Marsh *et al.* 2014). Thus, Marsh *et al.* (2014, pp.87-8) argue that fixing certain loadings to zero and excluding cross-loadings ignores important sources of covariation in the data that can often be anticipated by existing theory. Similarly, Muthén and Asparouhov (2012, p.332) highlight that excluding cross-loadings simply means their influence is expressed elsewhere; specifically, the model attempts to account for these sources of covariation by inflating the inter-factor correlations, resulting in a poor fitting model with poorly distinguished factors. Using EFA allows us to avoid these problems. Indeed, it seems important to be open to the possibility of unanticipated findings that do not fit with a clear-cut split between particular and general trust, given that recent studies have highlighted limitations with this model (Delhey *et al.* 2011; Hu 2020; Steinhardt and Delhey 2020)

Metrical and Ordinal

Although the trust items technically constitute ordinal variables, analyses were conducted under the assumption that the observed items are continuous. This assumption has typically been made in previous analyses of the WVS trust items (Delhey *et al.* 2011; Newton and Zmerli 2011; Steinhardt and Delhey 2020). The main motivations for utilising continuous methods are twofold; they are more straightforward to interpret and are less prone to convergence errors. Nonetheless, some have warned that treating ordinal data as continuous may yield misleading estimates, especially when the number of categories is fewer than 7 (Liddell and Kruschke 2018; Watkins 2018, pp.224-5).

In these situations, it is generally recommended to analyse polychoric correlations, which are used as part of the underlying variable (UV) approach to factor analysis (Bartholomew *et al.* 2011, pp.225-6; Lorenzo-Seva and Ferrando 2021). The intuition behind the polychoric correlation is that an observed ordinal variable x_i can be seen as a function of some underlying continuous variable x_i^* that is assumed to be normally distributed. For example, take the case of the observed item for family trust. This item does not directly gauge cognitive and emotional levels of trust in family; nonetheless, we can assume that individuals who experience higher levels of this trust will be more likely to select a higher category (e.g., trust completely) on the observed item.

Thus, the key insight behind the UV approach is that it is possible to estimate the underlying continuous variable from participants' responses to the observed ordinal item. This involves estimating a series of threshold parameters τ_k that partition the underlying variable into the observed categories. For instance, consider Figure 5.2. The figure shows that, as the underlying variable for family trust increases beyond τ_1, the probability that an individual will select a response of 'do not trust very much' on the observed item increases. Likewise, before an individual is likely to select a response of 'trust completely', they must possess enough of the underlying variable to surpass τ_3.

Once the underlying continuous variables have been estimated through these procedures, it is then possible to measure their degree of association for deriving the polychoric correlations

(Bartholomew *et al.* 2011, pp.255-6; Lorenzo-Seva and Ferrando 2021). This means the polychoric correlation does not directly measure the association between the observed items; rather, it does so indirectly by measuring the association between the continuous variables that are estimated from the observed items.

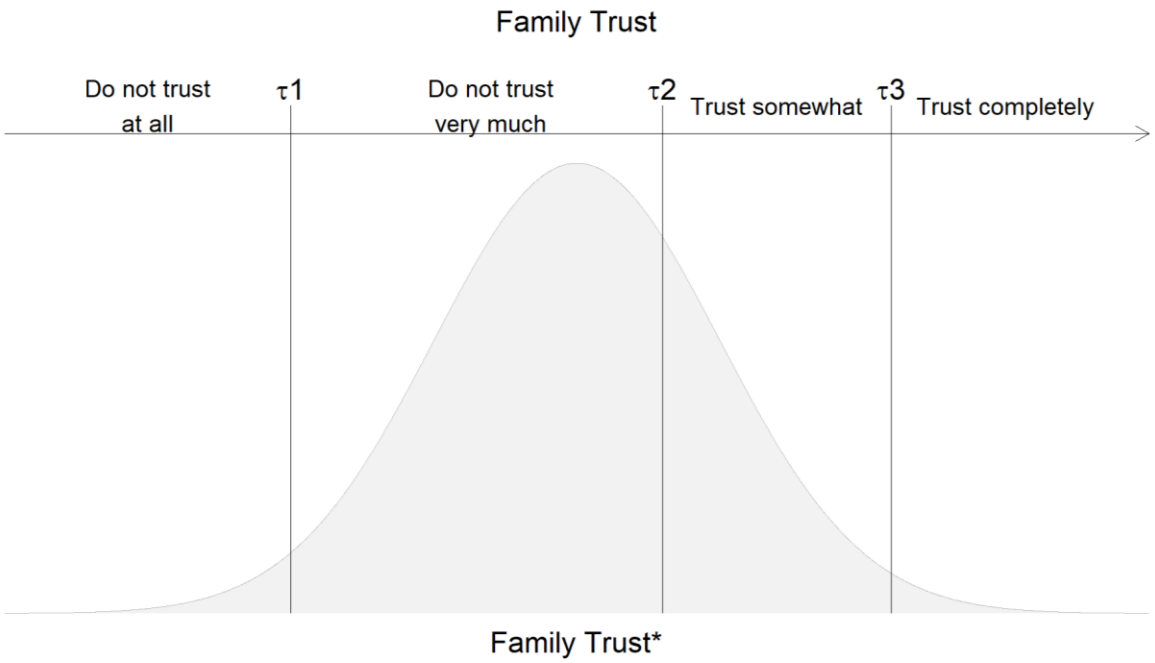


Figure 5.2: Illustration of UV Approach, adapted from Mair (2018, p.19)

Given the additional complexities in interpretation that result from using polychoric correlations, the decision was made to run the analysis in two forms; first using Pearson correlations; and second, using polychoric correlations as a robustness check. The results of these analyses were largely identical in terms of factor structure, fit indices and estimated factor scores. Thus, the decision was made to present findings from the metrical analyses given that they allow for a simpler interpretation of results and are more familiar to social scientists.

Model Evaluation and Interpretation

When conducting factor analysis, it is recommended to run a series of models with varying numbers of factors and evaluate their adequacy in terms of model fit and interpretability. For evaluating overall model fit, models were assessed in terms of the Root Mean Square Residual (RMSR), Root Mean Square Error of Approximation (RMSEA) and Tucker-Lewis Index (TLI). The RMSEA and TLI were utilised as they are commonly applied in EFA studies (Finch 2020) and are more suitable than other standard measures of model fit (e.g., χ^2) when analysing large samples (Bartholomew *et al.* 2011, pp.186-7).

The RMSR measures how well the correlation matrix predicted by the model matches the observed correlation matrix, with lower values indicating less deviation from the observed correlation matrix (Mair 2018, p.33). The RMSEA, on the other hand, involves comparing the fitted model to a hypothetical model with perfect fit to the data. This is measured in terms

of the χ^2 statistic, which should equal the model degrees of freedom when assuming perfect fit in the population (Finch 2020, pp.221-2). Thus, larger discrepancies between χ^2 and the degrees of freedom imply worse fit to the data. The RMSEA is conventionally interpreted using the following cutoffs: values below 0.05 indicate good fit, values between 0.05 and 0.1 indicate acceptable fit, and values above 0.1 indicate poor fit (Lai and Green 2016, p.220). The TLI assess model fit by comparing the fitted model to a baseline model that assumes no underlying factor structure (Mair 2018, p.34); in particular, the TLI takes account of the baseline model degrees of freedom and thereby gives additional weight to more parsimonious models (Finch 2020, p.222). TLI values above 0.9 are generally considered evidence of good fit.

In turn, the adequacy of a model was assessed based on its ability to explain variance in the trust items, both individually and as a group. For individual items, this was evaluated using the item communalities (h^2). The communality for a given trust item shows the proportion of variance in that item that can be attributed to the common factors. Thus, the closer h^2 is to 1, the greater the share of variance that is explained by the model (Bartholomew *et al.* 2011, p.185). According to MacCallum *et al.* (1999, p.91), communalities of 0.6 upwards can be considered high while those between 0.2-0.5 are low. In turn, the percentage of variance in the trust items explained by each individual factor was inspected for evaluating overall model fit to the data.

For the purposes of determining which items are salient to a given factor, an absolute cut-off of |0.3| or |0.4| is typically applied to the factor loadings (Watkins 2018, p.234). The present analysis utilised the |0.3| threshold as a rough guide for identifying salient items. Finally, where models included multiple factors, an OBLIMIN rotation was applied as standard to allow for the possibility of inter-factor correlations (Bartholomew *et al.* 2011, p.206). This seemed the most theoretically defensible option, given that previous studies have reported moderate correlations between particular and general trust.

Predicting Suicide Approval: Multilevel Analysis

Analysis Methods

To determine how suicide approval is associated with trust expressions, multilevel modelling was applied to the WVS data. Multilevel regression is an extension of the basic regression formula, meaning it is used to understand how a given outcome variable (e.g., depressive symptoms) is related to a set of predictor variables (e.g., personality traits, social support). As with standard regression, these relationships are expressed through a probability model that allows us to characterise our uncertainty regarding the magnitude of effects and thereby draw inferences to the wider population (Snijders and Bosker 2012, pp.2-3). However, where multilevel regression differs from standard regression is in allowing the researcher to account for the nesting of observations in groups and incorporate this information into the estimation of group-specific effects.

There are two reasons for using multilevel modelling in the current analysis. First, the WVS constitutes nested data, where individuals form the lowest level of the nesting structure (level 1) and countries represent the highest level (level 2) (Finch *et al.* 2014, p.23). For the purposes of modelling associations between variables, it is imperative to take account of

nesting structures as individuals belonging to the same group are likely to share more similarities with one another than those belonging to other groups (Finch *et al.* 2014, p.28). This undermines a core assumption of regression modelling – that the errors are independent from one another. When this assumption is violated, the standard errors of regression coefficients are likely to be underestimated, meaning effects are more likely to be inappropriately recorded as statistically significant (Snijders and Bosker 2012, p.17; Finch *et al.* 2014, p.28). In other words, we are more likely to conclude that an association exists where there is none. As noted above, multilevel modelling can be used to account for nesting structures, making it more suitable for the current analysis.

Second, as Bell *et al.* (2019) highlight, researchers estimating level 1 relationships from nested data typically assume these relationships are constant across groups. This assumption may not only mask important sources of variation in the data; it can result in the underestimation of standard errors, increasing the chances that an effect will be inappropriately recorded as statistically significant. Indeed, based on the literature covered in Chapter 4, we might expect the effects of trust on suicide approval to vary across countries. For example, it was highlighted that trust in others may have unique consequences for feelings of belongingness and purpose in life in countries that place greater emphasis on maintaining harmonious relationships (Ozawa-de Silva 2008; Ozawa-De Silva 2010). Likewise, Stack and Kposowa (2011a; 2016a) demonstrated that the effect of self-expression values on suicide approval becomes stronger in more self-expressionist countries. As their measure of self-expression values was constructed in part using the standard trust question, it is possible that general trust could exhibit similar cross-national variation in its association with suicide approval.

It is therefore important to check whether associations vary across groups to yield accurate estimates of their magnitude and uncertainty. Multilevel models provide an elegant solution to this problem as level 1 effects can be permitted to vary across groups by assigning them their own probability distribution. These are conventionally referred to as random effects in the multilevel modelling literature.

To formalise these ideas, we can outline a basic multilevel model with random effects using notation from Snijders and Bosker (2012, p.44). Assume we are predicting suicide approval from family trust. In turn, let i = individuals and j = countries. This gives us equation 2:

$$y_{ij} = \beta_{0j} + \beta_{1j}x_{ij} + e_{ij} \qquad (2)$$

where

y_{ij} = the suicide approval score for individual i in country j
x_{ij} = the family trust score for individual i in country j
β_{0j} = the intercept, where $\beta_{0j} \sim N(0, \tau_0^2)$
β_{1j} = the effect of family trust on suicide approval, where $\beta_{1j} \sim N(0, \tau_1^2)$
e_{ij} = the residual for individual i in country j, where $e_{ij} \sim N(0, \sigma^2)$

The intercept β_0 represents the average value of suicide approval for a score of 0 on family trust. The *j* subscript attached to this term indicates that the intercept is allowed to vary across countries, meaning the average value of suicide approval differs for each country. In multilevel regression, this is accomplished by modelling the country-specific intercepts using a normal distribution that is centred around 0 with a variance τ_0^2 to be estimated from the data (Snijders and Bosker 2012, pp.45-6). Each country-specific intercept is therefore conceptualised as a deviation (denoted as u_{0j}) from the global average of suicide approval.

On the other hand, the coefficient β_1 indicates how the expected score of suicide approval changes with a 1-unit increase in family trust (Snijders and Bosker 2012, p.51). Importantly, the model assumes that the predictors share linear associations with suicide approval. This implies that increasing levels of family trust lead suicide approval to change at a constant rate. The *j* subscript indicates that the value of this coefficient is permitted to vary across countries. As with the intercept, the country-specific coefficients are modelled as random departures from the global average and are denoted as u_{1j}. In turn, they are assumed to follow a normal distribution centred around 0 with a variance τ_1^2 to be estimated from the data (Snijders and Bosker 2012, p.75).

Based on the values of β_{0j}, β_{1j} and x_{ij}, we can form expectations about an individual's likely score on suicide approval, given their standing on the family trust variable and country of residence. Discrepancies between an individual's expected value of suicide approval and their observed score are reflected in the error term e_{ij}. These errors are assumed to follow a normal distribution centred at 0 with a variance σ^2 to be estimated from the data. Furthermore, they are assumed to have constant variance across the range of model fitted values (homoscedasticity).

Multilevel modelling therefore appears to be a suitable method for addressing the second research question as it allows us to test how suicide approval is associated with the trust variables while accounting for the nested structure of the WVS data and allowing for the possibility of random effects.

Modelling Approach

Centring of Predictors

For the purposes of aiding interpretation of the intercept term and easing model convergence, centring was applied to all predictors measured at the ordinal or continuous level. Grand mean-centring was applied to properly and approximately continuous variables such as the trust indexes, age and life satisfaction. For ordinal variables, on the other hand, the global median was subtracted from responses so that a value of 0 represented the median response. Following these adjustments, the intercept can be interpreted as the average value of suicide approval for a male who is married/living together as married, not religious/an atheist, with less than university level education and average scores on all other variables.

Statistical Framework

All multilevel models were fitted under a Bayesian framework. According to Kruschke and Liddell (2018, p.156), Bayesian statistics can be seen as an intuitive approach to probability that involves stating our initial beliefs around the plausibility of our model, examining the

evidence for our model, and revising our beliefs in light of this evidence. The Bayesian perspective therefore understands probability as a subjective belief; it reflects how confident we are that a certain outcome will come to pass.

In Bayesian statistics, our initial beliefs are expressed through a prior distribution, which indicates the range of plausible values for our model parameters (e.g., β_{0j}, e_{ij}) before having analysed the data. By combining the prior distribution with a likelihood function for the data, a posterior distribution is generated that indicates the values for our model parameters that are most plausible after the data have been analysed. Thus, the goal of Bayesian statistics is to derive the posterior distribution for our model and summarise its relevant features (Kruschke and Liddell 2018, p.158).

There are conceptual and theoretical reasons for preferring a Bayesian approach to the analysis that will be discussed in greater detail below. From a practical standpoint, conducting multilevel modelling under a Bayesian framework offers two advantages relative to a frequentist approach. First, Bayesian methods facilitate a more straightforward interpretation of uncertainty estimates as they allow us to directly quantify and make statements about the plausible values for our model parameters (Kruschke and Liddell 2018, p.158). Second, there is debate around the appropriate degrees of freedom for evaluating statistical significance in frequentist multilevel models as it is unclear how parameters should be counted for models with multiple levels (Luke 2017, p.1494). Adopting a Bayesian approach circumvents this issue as statistical significance is assessed by summarising the posterior distribution, meaning it does not depend on degrees of freedom calculations (Luke 2017, p.1494).

Estimation

Model fitting was performed in R statistical software using the package *MCMCglmm* (Hadfield 2024). The decision was made to use *MCMCglmm* as it allows for fitting a variety of Bayesian models to large datasets of over 20,000 observations (Hadfield 2024, p.3). Given that the current sample contains around 200,000 observations, *MCMCglmm* appeared better suited for handling the volume of data to be analysed.

It was noted above that the goal of Bayesian inference is to derive the posterior distribution of the model parameters. To estimate the posterior distribution, *MCMCglmm* relies on a mixture of Metropolis-Hastings and Gibbs sampling (Hadfield 2010, p.4), both of which constitute Monte Carlo Markov Chain (MCMC) sampling algorithms. MCMC is a means of empirically approximating the posterior distribution through random sampling; plausible values for the model parameters are drawn by recording the current location of the sampler, proposing a new location in the distribution, and applying some rule to determine whether the sampler should move to this new location (Lambert 2018, p.279). In turn, this means MCMC is a form of dependent sampling; each successive draw from the distribution depends only on the previously sampled value but is otherwise random (Levy and Mislevy 2016, p.94). The end result of MCMC sampling is a sequence of draws from the posterior distribution, referred to as a Markov chain.

In the case of Metropolis-Hastings, sampling is accomplished by drawing values from a proposal distribution that is intended to approximate the target distribution (Lynch 2007, pp.108-9). An accept-reject rule is then applied to determine whether the candidate value can

be treated as a valid draw from the target distribution. Specifically, if the probability density of the candidate value is greater than that of the current value, then the candidate value is accepted as a valid draw from the target distribution; otherwise, a ratio of the densities is formed to probabilistically determine whether to accept the candidate value (Lynch 2007, pp.112-3).

Gibbs sampling, on the other hand, is designed to sample from complex multivariate distributions with many unknown parameters (Lynch 2007, p.88). This is accomplished by breaking the distribution down into its constituent parts and sampling each unknown one at a time, conditional on the state of current values for all other unknowns (Lynch 2007, pp.88-9). For instance, a new value for the first parameter is sampled by conditioning on the current values for all other parameters; by conditioning on this newly sampled value and the remaining current values, a value for the second parameter can then be sampled, and so on until we have updated every parameter. By repeating this process many times, the Gibbs sampler is able to locate the region in posterior space where the parameters have a higher probability of occurrence and map out its features (Lynch 2007, pp.95-7).

Prior Distributions

As explained above, Bayesian statistics requires the researcher to supply a prior distribution that encapsulates their initial beliefs concerning model parameters. Weakly informative prior distributions were used for all slope coefficients and intercept terms; these distributions assume little prior certainty regarding the magnitude and direction of effects sizes, thereby giving more weight to the data in shaping the posterior (Levy and Mislevy 2016, pp.45-8). All regression coefficients were assigned normal prior distributions centred at 0 with a variance of 100. This implies that all effect sizes are expected to be 0 but with a wide margin of error; specifically, there is a prior expectation that 99% of effect sizes are between -30 and 30. Given that the suicide approval scale only ranges from 1 to 10, this prior distribution is more than sufficient to encapsulate prior uncertainty as it is practically impossible for any coefficient to exceed -10 or 10. The same prior variance was adopted for the intercept, although the prior expected value was set to 2.604 based on findings from previous research (Stack and Kposowa 2008; Boyd and Chung 2012).

For models excluding random trust effects, variance terms for the residuals at the individual and country level were parameterised using inverse-gamma distributions with shape and scale parameters set to 0.001. According to Hadfield (2017, p.13), setting the shape and scale parameters to these values allows for a proper prior distribution that is highly uninformative and commonly used for variance components. On the other hand, models including random trust effects utilised inverse-Wishart distributions for the residual variance terms at the country level. The inverse-Wishart has two key parameters: v, a square matrix with variances along the diagonal and covariances in the upper and lower triangles; and nu, a degree of belief parameter with larger values reflecting greater certainty regarding the entries of v.

As will be made clear in Chapter 7, v took the form of a 4×4 matrix in the present analysis, consisting of the intercept and 3 trust effects (see Table 5.1). Prior expectations for the intercept and slope variance were set to 0.403 and 0.05, respectively, as similar levels of cross-national variation for these terms have been observed in previous analyses of suicide approval (Stack and Kposowa 2008; Boyd and Chung 2012). In turn, the prior expected covariances were set to 0 as it was unclear whether the random effects would be associated

with one another. Based on this specification, *nu* was set to 4 to allow for a proper prior distribution that is relatively uninformative (Hadfield 2017, pp.11-3)[10].

Table 5.1: Prior Covariance Matrix for Random Effects

	Intercept	**Slope 1**	**Slope 2**	**Slope 3**
Intercept	0.403			
Slope 1	0	0.05		
Slope 2	0	0	0.05	
Slope 3	0	0	0	0.05

Convergence Diagnostics

In order for us to have confidence in estimates from an MCMC algorithm, it is important to check that the algorithm is sampling from a stationery distribution. This means that, first, the sampling algorithm needs to be able to explore all points of the target distribution in relative frequency to their density; in other words, the sampler should cover both typical and extreme values, sampling the former at a higher rate than the latter (Lambert 2018, p.299). Second, it means that the sampler should randomly move about this posterior space, without giving signs that is trending in an upward or downward direction (Finch *et al.* 2014, p.172). Gelman and Hill (2007, pp.356, 358) recommend running the MCMC sampler multiple times from different starting points to confirm that the Markov chains have converged on the same distribution. While *MCMCglmm* does not allow for multiple chains, extending the software to accommodate this functionality is relatively straightforward. Thus, to comply with best practice guidelines in Bayesian modelling, a set of functions were developed for running *MCMCglmm* with multiple chains, drawing inferences from these models and diagnosing their convergence properties.

Using these functions, models were estimated with 5 chains for a total of 15,000 iterations per chain. In turn, models were run with a burn-in of 7500 iterations. The burn-in refers to MCMC samples that are discarded as they are assumed to have been drawn prior to model convergence, meaning they do not provide a valid basis for drawing inferences (Gill 2013, p.418). Thus, inferences were made using (15,000 – 7500) × 5 = 37,500 simulated draws from the posterior distribution.

Convergence was then assessed using two diagnostics. First, $\hat{R}$ values were calculated for parameters across models. $\hat{R}$ is used to evaluate whether the MCMC chains are sampling from the same distribution. It involves forming a ratio of the within-chain variance and the total chain variance, which should be approximately 1 if the chains have converged (Gill 2013, pp.435-6). According to Gelman and Hill (2007, p.352), a model can be said to have converged when $\hat{R}$ is less than 1.1 for all model parameters, including fixed and random effects. It is important to note that, for this diagnostic to be accurate, the MCMC chains should be initialised from dispersed starting locations. Unfortunately, *MCMCglmm* does not

[10] Technically, all residual terms in MCMCglmm are parameterised using an inverse-Wishart distribution as it is a multivariate extension of the inverse-gamma. When $v = 1$, the inverse-Wishart simplifies to an inverse-gamma with shape and scale parameters of *nu*/2. Thus, for models excluding random trust effects, *nu* was set to 0.002 to give 0.001 for the shape and scale parameters (see Hadfield 2017, p.12)

allow the user to specify starting values for regression coefficients (only residual terms and covariances), meaning the power of $\hat{R}$ to detect non-convergence is limited in the present analysis.

Second, the behaviour of the MCMC chains was visually inspected using trace plots. This is a standard means of assessing MCMC convergence as it provides information on whether the chains are mixing (i.e., exploring all points of the distribution), sampling from the same region of posterior space and are not trending. A given parameter can be said to have converged when the separate chains overlap with one another, making the chains largely indistinguishable (Lambert 2018, p.314), and when the local mean of the chains does not appear to systematically increase or decrease across iterations of the sampler (Finch *et al.* 2014, p.172).

Model Comparison

For the purposes of assessing model fit to the data, changes in the residual variance across models were considered as well as the deviance and deviance information criterion (DIC). The deviance is a measure of model fit based on the log-likelihood and the posterior estimates of the model parameters at a given iteration of the MCMC sampler. Lower values of the deviance indicate better fit – that is, less deviance from what is expected under the model. The deviance is defined as $-2 \times \log(f(y|\theta))$, where $f(y|\theta)$ represents the probability of the data, given the model parameters (Gill 2013, p.230).

The DIC, on the other hand, can be understood as a measure of out-of-sample predictive error that adjusts the deviance for the number of effective parameters in the model (Gelman and Hill 2007, p.525). The DIC is therefore analogous to fit indices such as adjusted-R^2; it evaluates model fit while applying a penalty for increases in model complexity. The DIC is calculated by summing the posterior mean of the deviance ($\overline{D}$) and the number of effective parameters in the model (pD). The number of effective parameters is based on the deviance evaluated at the posterior means of the model parameters ($\widehat{D}$). As implemented in the present analysis, the DIC is based on an approximation outlined by Spiegelhalter *et al.* (2002, p.488): $DIC = \overline{D} + 0.5 \times var(D)$, where $var(D)$ represents the variance in the deviance. This approximation is implemented as standard in Bayesian software such as JAGS. According to Spiegelhalter *et al.* (2002, p.613), a 3-7-unit decrease in the DIC can be taken as evidence for a meaningful improvement in model fit.

General Aspects of the Analyses

Statistical Significance

Throughout the analyses, the α level used for judging statistical significance was set to 0.05. This means that, for the factor analysis, 95% confidence intervals were used for evaluating the reliability of RMSEA values. Likewise, in the Bayesian analyses, 95% credible intervals were computed for assessing the probability that a given effect size is plausibly different from 0.

Software and Code

All analyses were performed in R statistical software (R Core Team 2024). The code for reproducing the analysis in its entirety can be viewed and downloaded from the following GitHub repository: https://github.com/are016/Trust-Perceptions-and-Suicide-Approval

Compatibility of Bayesian and Frequentist Statistics

It will be noted that the proposed analysis strategy entails fitting models under different statistical frameworks: Bayesian and frequentist. This decision arose due to a tension in the analysis – the ambition to use more theoretically defensible methods and the practical constraints of implementing them.

Thus, from a sociological and statistical standpoint, frequentism has been criticised for implying a deterministic worldview and fostering the illusion of scientific objectivity. Under a frequentist framework, probability is conceptualised as an objective property of the variables being studied (Levy and Mislevy 2016, p.14); it governs their behaviour and can be measured by counting the number of times an outcome occurs over repeated trials (e.g., counting the number of heads from a series of coin flips). On this basis, different types of model parameters are assumed to have a true value that is fixed in the population, with variation around the true value attributed to factors such as sampling error and measurement error (Levy and Mislevy 2016, pp.25-6; Lambert 2018, pp.17-8). For Byrne (2012, p.19), this means frequentism reduces human behaviour to an effect of decontextualised scientific laws, which specify in probabilistic terms how individuals and groups are impacted by selected variables. This sentiment is echoed by Greenland (2006, p.768), who states that "Frequentist methods pretend that the models are laws of chance in the real world…" and only have a tenuous claim to objectivity.

Given these conceptual problems with frequentism, a Bayesian perspective seems preferable for entertaining a view of probability as a subjective belief. Indeed, a subjective view of probability not only acknowledges the active role played by the researcher in generating their results (Greenland 2006, p.766; Levy and Mislevy 2016, pp.67-8); it avoids treating model parameters as objectively real quantities and instead locates them in the mind of the researcher (Greenland 2006, p.768; Levy and Mislevy 2016, pp.14-5). Thus, for the Bayesian, the posterior distribution of a given parameter does not represent actual values of a real quantity; it only tells us how we ought to update our beliefs about the parameter after analysing the data. In other words, it is possible under a Bayesian framework to treat parameters merely as a useful device for summarising our current state of knowledge on a problem, not as "real immutable constants" (Lambert 2018, p.19). Using Bayesian methods, we can therefore grant that human behaviour is patterned and subject to causal influences without presupposing it is governed by static universal laws.

Despite these conceptual advantages, it remains that Bayesian methods are more computationally intensive due to their reliance on MCMC sampling for model estimation. This is less of an issue when fitting simple models to small or moderately sized samples but can create problems as model complexity and/or sample size increases. For these reasons, it was not possible to apply Bayesian factor analysis to the WVS data; the number of quantities to estimate (e.g., factor loadings and correlations, error terms, participant scores on the latent

variables) coupled with the volume of data meant that even relatively simple confirmatory models could not be fitted. A frequentist approach to the factor analysis was therefore adopted as the only available alternative.

This raises a point of contention regarding the proposed analysis strategy: given their conceptual differences and varying implications for parameter interpretation, is it legitimate to combine Bayesian and frequentist methods in a single analysis? The position adopted in this PhD is that, while it is important to recognise the differences between these frameworks, there are grounds for using frequentist results to inform Bayesian analyses where necessary. The reasons for this position are threefold.

First, when similar models are specified, results from Bayesian and frequentist analyses are often virtually indistinguishable, only differing in interpretation (Levy and Mislevy 2016, pp.54-5). According to Levy and Mislevy (2016, pp.54-5), results from Bayesian MCMC tend to be equivalent to frequentist MLE when uninformative prior distributions are utilised or when the sample size is so large as to outweigh the information contained in the prior. Thus, it is unlikely that the use of frequentist methods would have led to substantively different conclusions in the present analysis, especially given that the sample under analysis contains over 180,000 observations.

Second, following on from the previous point, frequentist models can be understood as a special case of Bayesian models. Specifically, model estimation under a frequentist framework is akin to a Bayesian analysis that only allows for two types of prior distributions; either a parameter is estimated assuming maximal prior uncertainty or is constrained to zero (i.e., excluded from the model), meaning it is estimated with complete prior certainty (Levy and Mislevy 2016, p.66). What distinguishes Bayesian methods is that, as well as being able to model these two scenarios, it remains possible to specify prior distributions in between these extremes. Thus, despite their differing ontological assumptions and modelling practices, it remains possible to make sense of frequentist results through a Bayesian lens.

Finally, at a broader level, it should be noted that all statistical models – Bayesian or frequentist – are simply abstractions, or what Levy and Mislevy (2016, p.232) describe as "convenient fictions". In other words, a statistical model is always an oversimplified representation of how variables tend to behave and relate to one another; as such, it is necessarily incorrect but may nevertheless draw attention to important trends in the data and thereby help us to make inferences about the world (Levy and Mislevy 2016, p.232). Thus, both Bayesian and frequentist methods are ultimately artificial devices for making sense of complex social and psychological processes; it is simply that the Bayesian perspective is more upfront in acknowledging the artificial nature and limits of statistical modelling (Greenland 2006, p.768).

It is in this spirit that the current analysis will employ EFA from a frequentist perspective; that is, results from the model are treated only as a rough guide on how expressions of trust relate to one another, not as revealing the truth behind the underlying structure of trust expressions. Based on this guide, trust indexes may then be created and used as predictors for modelling suicide approval.

Conclusion

Two main research questions have been posed for this PhD:

1. What latent structure is exhibited by expressions of trust in different groups?
2. How are expressions of trust in different groups associated with suicide approval?

The present chapter detailed the methods that will be used for addressing these questions. Specifically, the PhD adopts a quantitative approach using survey data from the WVS. To address the first question, EFA will be applied to six items from the WVS that gauge trust in different groups. Given the computational challenges of applying Bayesian factor analysis to the WVS data, the EFA will be conducted under a frequentist framework. Using findings from the EFA models, indexes of trust can then be constructed and used as explanatory variables for modelling suicide approval.

This links into the second research question. To determine how trust expressions are associated with suicide approval, multilevel modelling will be applied to a single-item measure on the justifiability of suicide, controlling for a range of social, cultural, psychological and demographic factors. In adopting a multilevel approach, the analysis intends to account for the nested structure of the WVS data and allow for the possibility that the effects of trust may vary across countries. The multilevel models will be implemented under a Bayesian framework to give greater recognition to the role of subjectivity in quantitative analyses and avoid the deterministic implications of frequentism.

The next chapters are therefore concerned with addressing these questions in turn.

Chapter 6 – Factor Analysis of Trust Items

The literature review highlighted that social trust is a complex construct that is informed by various factors, including experience, emotions and genetics. It was noted that many researchers regard trust as comprising two distinct components (Newton 1997; Uslaner 2002): trust in those we know well and who are likely to share certain social characteristics with us, known as particular trust; and trust in those we are unfamiliar with and who may differ from us in terms of social background and worldview, referred to as general trust. These two dimensions of trust are believed to correlate with one another but there is debate around whether this correlation is positive or negative, and which trust expressions (e.g., trust in neighbours, trust in strangers) best characterise these latent dimensions. In turn, the validity of a 2-dimensional model is questionable, with some studies indicating that trust in family is relatively distinct from particular trust in non-kin relations (Fukuyama 1995; Steinhardt and Delhey 2020).

The purpose of the present chapter is to examine these issues in greater detail. Specifically, the chapter sets out to answer the following research questions:

1. What latent structure is exhibited by expressions of trust in different groups?

a) How many dimensions are needed to adequately capture the variation in trust expressions?

b) What trust expressions characterise these latent dimensions?

To address these questions, exploratory factor analysis (EFA) will be applied to data on 221265 individuals across 102 countries. The analysis begins by summarising the distributions of the trust items and assessing their bivariate associations to determine their scalability. A Principal Components Analysis is then conducted to narrow down the number of dimensions needed for representing the trust items. Having laid the groundwork for the EFA, the remainder of the analysis fits a series of factor analysis models to ascertain how the trust items may best be represented, what this can tell us about the latent structure of trust, and how reliable these findings are across contexts and modelling specifications. The chapter concludes with a review of findings in light of the above research questions and discusses their implications for existing research around trust.

Descriptive Analyses

Summary of Trust Items

Figure 6.1 plots the distribution of responses to the trust items. Over 150,000 respondents selected a value of 4 for family trust, meaning the majority (81.38%) claimed to completely trust this group. The distribution for trust in family is negatively skewed, with only 0.71% of participants reporting no trust at all and 2.48% reporting not trusting their family very much. Thus, participants were almost unanimous in expressing high levels of trust in their family, with only a small fraction reporting some level of distrust.

Around 100,000 respondents claimed to somewhat trust neighbours, with a similar amount stating they somewhat trust personal acquaintances. The number of respondents expressing

complete trust in neighbours (20.27%) and personal acquaintances (26.81%) is much lower compared to family. In turn, relative to the family trust item, more participants reported not trusting neighbours and personal acquaintances very much or at all. Thus, although participants typically expressed moderate amounts of trust in neighbours and personal acquaintances, they were more mixed about trusting these groups.

The distribution for stranger trust shows an opposite pattern to the above items, having a slight positive skew. Only a very small number of respondents expressed complete trust in strangers (2.84%), with most claiming they do not trust this group very much (42.74%) and a large portion stating they do not trust strangers at all (28.27%). A sizable majority of respondents therefore expressed some level of distrust in strangers.

By contrast, participants seemed to hold more favourable attitudes toward religious and national outgroups than strangers. For example, just over a third of participants claimed to somewhat trust religious outgroups (40.39%) and national outgroups (37.92%). However, few participants reported complete trust in these groups and larger numbers reported not trusting them at all or somewhat. Thus, while participants were more trusting of religious and national outgroups compared to strangers, they were mostly hesitant to trust these groups. For descriptive statistics on the trust items and socio-demographics, please consult appendix 6A.

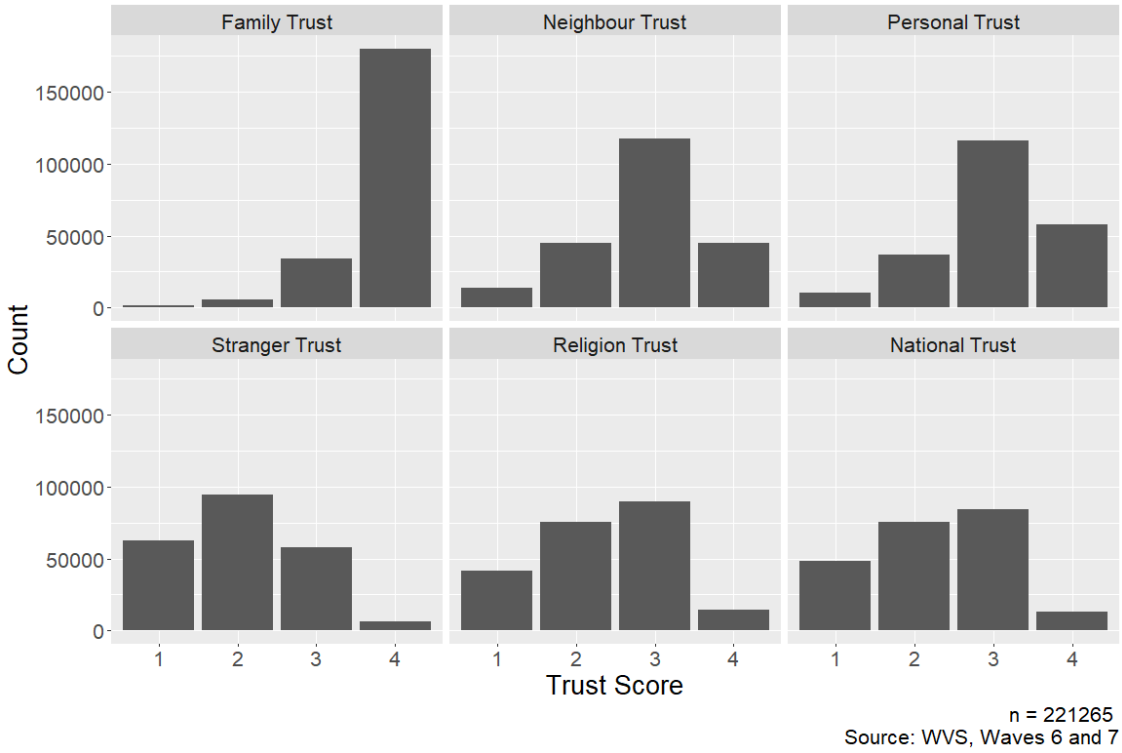


Figure 6.1: Distribution of Trust Items

Before calculating Pearson correlations between the trust variables, it should be emphasised that Pearson's *r* is only appropriate if the associations between variables are linear. To inspect this assumption, Figure 6.2 plots the bivariate distributions of the trust variables. For each pair of variables, it shows how the proportion of participants selecting a given response

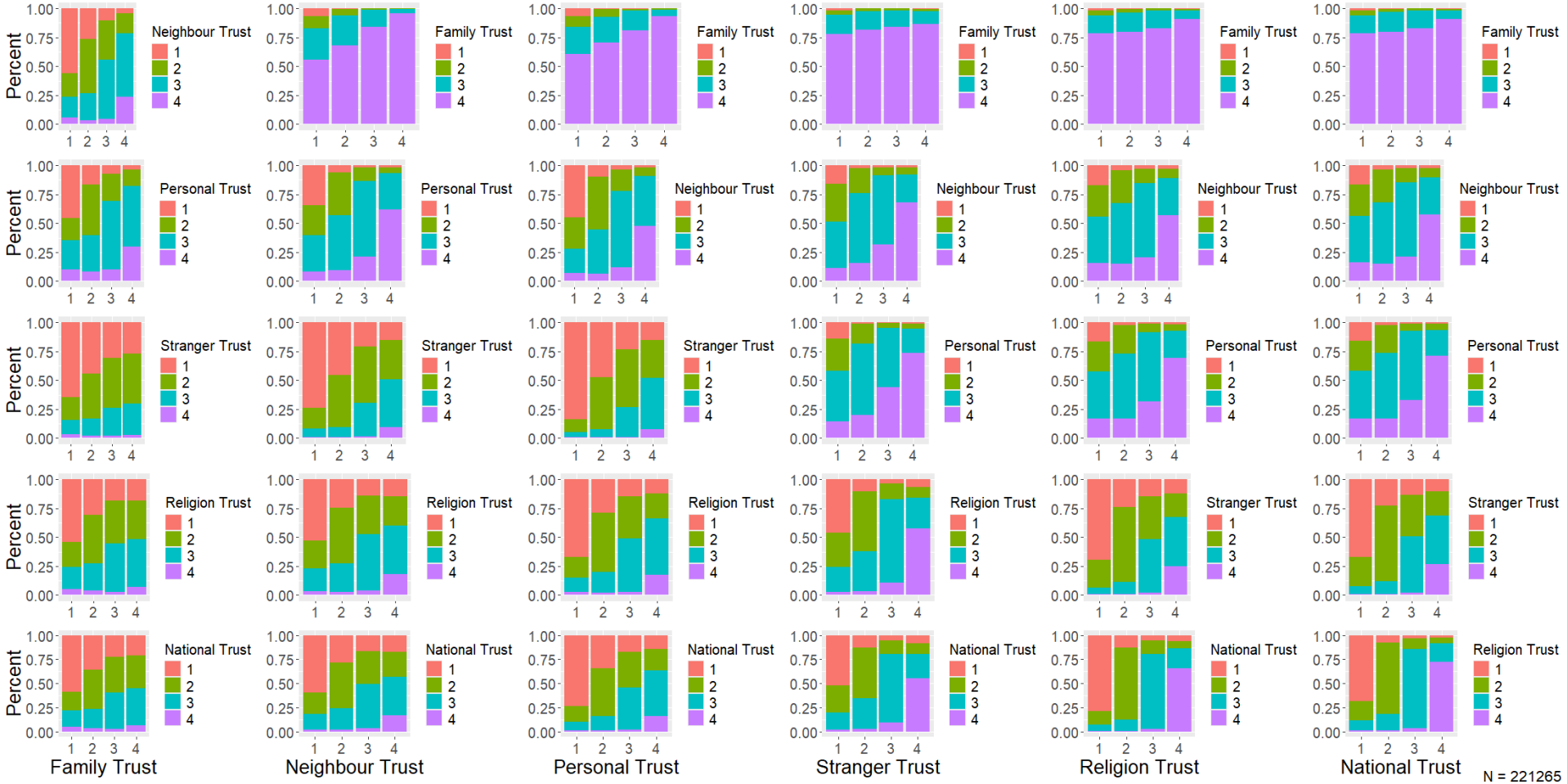


Figure 6.2: Bivariate Distributions of Trust Items

category for one variable changes across the categories of the other variable.

It can be seen that, for most variable pairs, increasing trust scores on one variable correspond with increasing scores on the other variable. For example, take trust in neighbours and personal acquaintances (column 2, row 2). As we move from a score of 1 (do not trust at all) to 4 (trust completely) for trust in neighbours, the proportion of participants selecting a score of 4 for trust in personal acquaintances regularly increases from 8.479%, 9.630%, 21.123% and 61.937%, respectively; likewise, the proportion selecting a score of 1 decreases from 34.645%, 6.216%, 1.901% and 1.586%, respectively. In some cases, these positive associations are particularly strong. Thus, consider trust in religious and national outgroups (column 5, row 5). We can see that, at a given level of trust in religious outgroups, the majority of participants report the same level of trust in national outgroups – e.g., 74.334% who report a score of 2 on trust in religious outgroups also score 2 on trust in national outgroups.

There do not appear to be many instances where increasing scores for one trust variable result in declining levels of trust on another variable. The only detectable exception to this pattern pertains to trust in family. For example, take trust in family and neighbours (column 1, row 1). The plot shows that the proportion of participants reporting a score of 4 for trust in neighbours decreases from 5.619% to 3.396% as trust in family increases from 1 to 2. Yet, even this decline is offset by increasing proportions of participants selecting a score of 3 for trust in neighbours (17.992% to 23.211%). This provides some reassurance that the trust variables share at least monotonic associations with each other, with most associations appearing to be roughly linear. It therefore seems appropriate to proceed with fitting Pearson correlations to the trust items.

Associations between Trust Items

Table 6.1 provides information on the bivariate associations between the trust items, calculated using Pearson's *r*. We can see that all trust items are positively correlated with one another to varying degrees. The largest correlation is between trust in religious and national outgroups, which at 0.725 is fairly strong. In turn, trust in strangers has moderate correlations with trust in religious and national outgroups, as evidenced by both correlations being greater than 0.5. This suggests that trust in strangers, religious outgroups and national outgroups form a distinct set of interrelated items.

In contrast, family trust has very weak associations with trust in strangers, religious outgroups and national outgroups, with all *r* values being lower than 0.1. While trust in family exhibits stronger correlations with trust in neighbours and personal acquaintances, these associations are also fairly weak as they range from 0.244 to 0.304. Family trust therefore has little association with the other trust items and may be less amenable to factor analysis.

The correlation between trust in neighbours and personal acquaintances, on the other hand, is positive and moderate at 0.473. Both items also exhibit weak correlations with trust in religious outgroups and national outgroups, with all *r* values being less than to 0.4. The only other item to exhibit a moderate correlation with trust in personal acquaintances is trust in strangers ($r = 0.401$). Thus, there is some suggestion that trust in neighbours and personal

acquaintances may constitute a separate dimension of trust, although it is unclear whether this dimension would also include trust in strangers.

Table 6.1: Correlation Matrix of Trust Items

Trust Item	**1.**	**2.**	**3.**	**4.**	**5.**	**6.**
1. Family	1					
2. Neighbours	0.303	1				
3. Personal	0.244	0.473	1			
4. Strangers	0.083	0.381	0.401	1		
5. Religious Outgroups	0.089	0.284	0.36	0.507	1	
6. National Outgroups	0.093	0.289	0.374	0.521	0.725	1

Notes: Correlations calculated using Pearson's *r*
N = 221265

To further examine the scalability of the trust items, Cronbach's α was applied to the data. The purpose of Cronbach's α is to test whether a set of items provide a reliable measure of a presumed underlying construct, although it should not be taken as evidence for a unidimensional solution (Vaske *et al.* 2016, pp.164-5). The σ coefficient indicates whether the observed items are sufficiently correlated to form a scale and is bounded between 0 and 1, with values 0.7-0.95 constituting evidence of acceptable internal consistency. The results from the alpha test are presented in Table 6.2.

The table shows the raw α is 0.757, suggesting the trust items have a minimally acceptable level of internal consistency and therefore correlate as a group. The second column of Table 6.2 shows how each item correlates with the scale after it has been excluded from the scale. Most items are moderately correlated with the scale as the coefficients are typically in the range of 0.5 and 0.6, giving some evidence that they are tapping into similar constructs. However, trust in family is only weakly correlated with the scale ($r = 0.22$), suggesting it may not measure the same constructs as the rest of the items.

Table 6.2: Cronbach's α for Trust Items

Trust Item	**Correlation with Scale**	**α after Dropping Item**
Family	0.22	0.791
Neighbours	0.504	0.72
Personal	0.545	0.709
Strangers	0.559	0.705
Religious Outgroups	0.584	0.698
National Outgroups	0.597	0.694
Raw α = 0.757		

Notes: *N* = 221265

The third column of Table 6.2 shows how the α coefficient changes when individual items are excluded from the scale. Consistent with the item-scale correlations, we can see that excluding any of the trust items besides family trust causes the α to fall below 0.757; the

decrease is most pronounced when dropping trust in religious outgroups or national outgroups, which leads to a borderline unacceptable α. This means that each of the trust items other than family trust helps to increase the internal consistency of the scale. However, excluding trust in family causes the α to increase to 0.791, meaning it is not consistent with the other items in the scale. It therefore seems that all items apart from family trust are tapping into similar underlying constructs.

Principal Components Analysis

Based on the above analyses, the majority of the trust items seem to be scalable, although it remains to be seen whether they are best represented by a single latent dimension or multiple latent dimensions. Bartholomew *et al.* (2011, p.187) argue that PCA is helpful as a first step toward analysing dimensionality as it tends to yield similar results to EFA without requiring the researcher to choose the number of latent dimensions in advance of fitting the model. Indeed, one advantage of PCA is that it is possible to conduct a series of tests to understand whether adding further components may help to explain meaningful variation in the trust items or random error. To this end, Mair (2018, p.30) cautions that "we should not rely on a single criterion but rather consider multiple criteria in conjunction with the interpretability of the solution". Watkins (2018, pp.230-1) likewise recommends the use of multiple tests, noting that no single method for factor retention is reliable in all situations.

Thus, to narrow down the number of latent factors needed for modelling trust, PCA was applied to the Pearson correlation matrix of the trust items. The results are presented in Table 6.3.

Table 6.3: Principal Components Analysis of Trust Items

	Component					
Fit Indices	**1**	**2**	**3**	**4**	**5**	**6**
% Var. Explained	0.468	0.195	0.121	0.089	0.081	0.046
% Cumulative	0.468	0.663	0.784	0.873	0.954	1

Notes: PCA applied to Pearson correlation matrix
N = 221265

Bartholomew *et al.* (2011, p.124) recommend retaining enough components to account for 70-80% of the variance in the original items, although this is not a strict criterion[11]. From Table 6.3, we can see that the first component accounts for 46.8% of the variance in the trust items; the second and third components capture an additional 19.5% and 12.1% of the variance, respectively. We can interpret these findings as pointing toward either a 2- or 3-dimensional solution – with only 2 dimensions we are able to account for around two thirds (66.3%) of the variance in the trust items, but adding a third dimension allows us to capture a larger share of the variance (78.4%).

Another strategy for determining the number of factors is to inspect eigen values from the principal components. According to Lorenzo-Seva and Ferrando (2021, p.139), eigen values indicate the amount of variance in the observed data that is explained by the respective

[11] Indeed, researchers often settle for explaining a smaller amount of variance so long as the retained components are theoretically meaningful (e.g., Newton and Zmerli 2011; VanSickle *et al.* 2016).

component. An established criterion for selecting components is Kaiser's rule, which recommends only retaining components with an eigen value greater than 1. The reason for this cutoff is that, when the correlation matrix is analysed, any component with an eigen value below 1 explains less variance in the observed data than one of the original items (Bartholomew *et al.* 2011, p.124); this would mean the component contributes less information than one of the trust items[12]. A scree plot of the eigen values is presented in Figure 6.3, with the dashed line indicating Kaiser's cutoff point. The figure shows that only the first two components have eigen values above 1, thereby pointing toward a 2-dimensional solution.

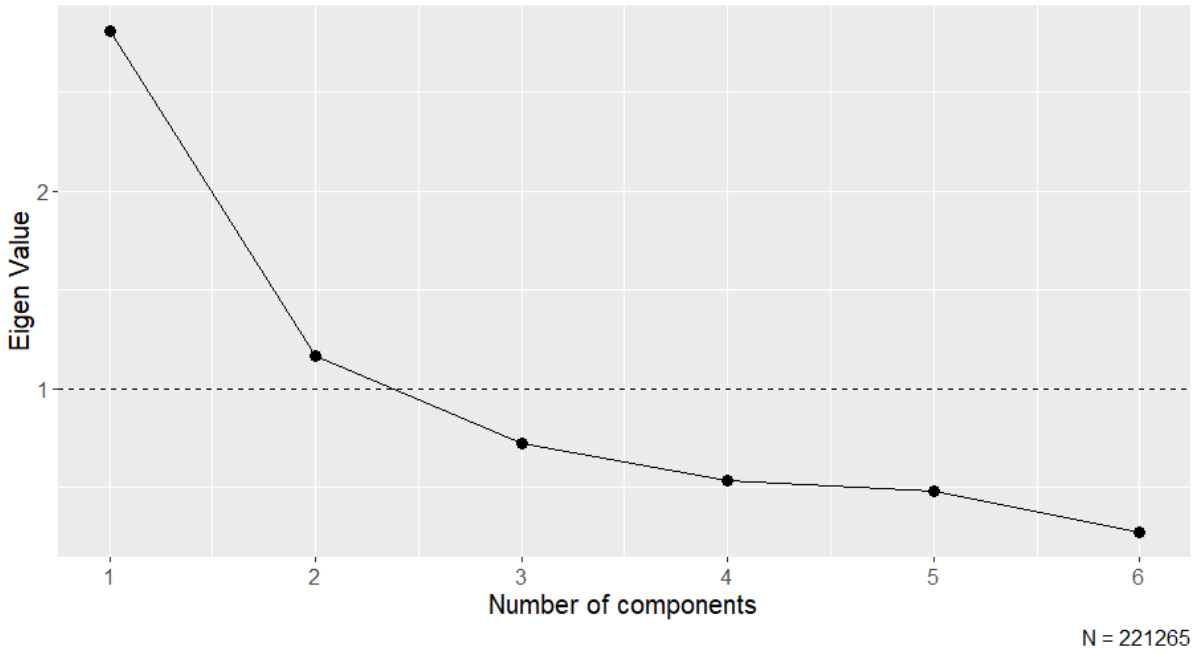


Figure 6.3: Scree Plot of Trust Items

It is also advised to inspect the scree plot for an elbow point beyond which decreases in the eigen values begin to level off (Bartholomew *et al.* 2011, p.124; Mair 2018, p.30). The rationale for this diagnostic is that components beyond this point contribute little additional information and are likely to be explaining random variation in the observed variables. Returning to Figure 6.3, it seems as though the eigen values begin to stabilise after the third component, suggesting a 3-dimensional solution may be preferable.

A final test to narrow down the requisite number of factors is to calculate Minimum Average Partial (MAP) values. The test involves extracting the loadings matrix $\mathbf{A}_{\boldsymbol{m}}$ for a given number of principal components, where *m* denotes the number of components. $\mathbf{A}_{\boldsymbol{m}}$ is then successively removed from the observed correlation matrix **R**, producing a series of partial correlation matrices $\mathbf{R}^{*}_{\boldsymbol{m}}$. Calculating the average of the squared partial correlations in $\mathbf{R}^{*}_{\boldsymbol{m}}$

[12] Kaiser's rule has been criticised for tending to overestimate the number of factors, although this problem is more pronounced in smaller samples where there is greater risk of components capitalizing on random variation in the observed data (Hayton *et al.* 2004, p.194). Thus, given that the present analysis is based on a large sample of over 200,000 observations, Kaiser's rule is an adequate criterion for component selection.

produces the MAP for a given number of components (Caron 2019, pp.2111-2). The logic behind the MAP test is that, when a given number of components captures shared variance in the observed items, removing this shared variance will result in smaller partial correlations. Thus, when all of the common variance has been accounted for, the MAP criterion reaches a minimum (Mair 2018, p.33; Watkins 2018, p.230). Extracting further principal components causes the MAP to rise, indicating that additional components are likely capturing random variation in the observed items (Watkins 2018, p.230). Although the MAP has been described as a more accurate method for selecting the number of factors (Watkins 2018), simulation studies have indicated it may perform poorly for moderately correlated factors with smaller item loadings (Caron 2019).

Results from the MAP tests are presented in Table 6.4. It can be seen that the MAP reaches a minimum with one component; including a second component leads to a slight increase in the MAP while adding a third component leads to a larger increase. This suggests that a 1-dimensional solution could also be plausible.

Table 6.4: MAP Values for Trust Items

Number of Factors	MAP
1	0.085
2	0.123
3	0.218

N = 221265

Factor Analysis Models

The analysis up to this point indicates either 1, 2 or 3 dimensions are needed to adequately represent the trust items. The next step for determining the number of dimensions is to fit a series factor analysis models and evaluate their interpretability and fit indices. As explained in Chapter 5, model fit will be evaluated in terms of the root mean square residual (RMSR), root mean square error of approximation (RMSEA) and Tucker-Lewis Index (TLI). In turn, models will be evaluated in terms of the proportion of variance they explain in the trust items, both individually and as a group. Factor loadings of |0.3| or above are treated as salient for the interpretation of a given factor.

Model 1: 1-Factor Solution

To begin, a 1-factor model was applied to the Pearson correlation matrix of the trust items. The results are presented in Table 6.5 under Model 1. It can be seen that trust in religious outgroups and national outgroups have communalities (h^2) above 0.6, suggesting the model is able to explain a sizable share of their variance. While the communalities for trust in personal acquaintances and strangers are low, they are at least greater than 0.2, suggesting the single common factor explains some of their variability. In contrast, the communalities for trust in family and neighbours are below 0.2, meaning these items are poorly explained by Model 1. The communality for family trust is especially concerning as it implies Model 1 is largely unable to explain any of the variance in this item. This finding is perhaps unsurprising as Cronbach's α highlighted that family trust does not scale well with the other items.

As there is only a single factor, the loadings can be interpreted as the correlations between the trust items and the latent factor (Watkins 2018, p.233). Inspection of the factor loadings shows that almost all items have moderate or strong positive loadings on this factor, the only exception being trust in family. Factor 1 therefore seems to tap into an overall trusting disposition; individuals who score higher on this factor are more inclined to trust all groups, regardless of their degree of familiarity or social characteristics. The factor accounts for a modest 37.4% of the variance in the trust items.

Turning to the fit indices, the RMSEA is reliably above 0.1 (95% CI = 0.179, 0.182) and the TLI is far below 0.90, indicating that Model 1 has poor fit to the data. In confirmation of these results, the RMSR is 0.113, indicating that Model 1 is unable to adequately reproduce the correlations among the trust items. Thus, in contrast to findings from the MAP tests, a 1-factor solution appears to be unsatisfactory for representing the trust items. This suggests additional factors are needed.

Table 6.5: Factor Analysis of Trust Items – Model 1

Trust Item	**Factor 1**	h^2
Family	0.156	0.024
Neighbours	0.419	0.175
Personal	0.497	0.247
Strangers	0.642	0.412
Religious Outgroups	0.824	**0.679**
National Outgroups	0.839	**0.704**
% Var Explained	0.374	
Fit Indices		
RMSEA (95% CI)	0.181 (0.179, 0.182)	
TLI	0.724	
RSMR	0.113	

Notes:
EFA applied to Pearson correlation matrix
Good fitting items emboldened
N = 221265

Model 2: 2-Factor Solution

Next, a 2-Factor model allowing for inter-factor correlations was fitted. The results are presented in Table 6.6 under Model 2. Adding a second factor leads to an appreciable improvement in model fit as the communalities have risen for all items. For instance, trust in neighbours now exhibits a communality above 0.5 while trust in personal acquaintances and strangers have communalities above 0.4. Although these communalities can only be considered low to moderate, they nevertheless suggest Model 2 is able to account for some of the variability in these items. The two items most effectively explained by the model continue to be trust in religious and national outgroups, which now both have communalities above

0.7. In contrast, the communality for family trust remains poor (less than 0.2), meaning the addition of a second factor has contributed little to explaining this item.

Table 6.6: Factor Analysis of Trust Items – Model 2

Trust Item	**Factor 1**	**Factor 2**	h^2
Family	-0.108	0.433	0.154
Neighbours	-0.033	0.781	0.586
Personal	0.173	0.552	0.427
Strangers	0.479	0.269	0.427
Religious Outgroups	0.845	-0.013	**0.703**
National Outgroups	0.871	-0.015	**0.745**
% Var Explained	0.301	0.206	
Correlations			
Factor 1	1		
Factor 2	0.486	1	
Fit Indices			
RMSEA (95% CI)	0.058 (0.056, 0.060)		
TLI	0.972		
RSMR	0.02		

Notes:
EFA with OBLIMIN rotation applied to Pearson correlation matrix
Good fitting items emboldened
N = 221265

It can be seen that the latent factors are positively and moderately correlated with one another ($r = 0.486$), meaning scores tend to increase on the first factor as they increase on the second. Before interpreting the factor loadings, it is important to emphasise that the loadings no longer measure the correlation between the trust items and the latent factors; rather, each loading indicates the standardised effect of a given factor on each trust item after accounting for the correlation between factors (Watkins 2018, p.233).

Inspection of the factor loadings shows that an interpretable solution is identifiable for Model 2. Factor 1 explains the greatest amount of variance in the trust items (30.1%) and is primarily defined by moderate to strong positive loadings for trust in strangers, religious outgroups and national outgroups. Conversely, the loadings for trust in family, neighbours and personal acquaintances are close to 0, meaning they have less relevance to this factor. Thus, individuals who score higher on Factor 1 are more trusting of people they have never met before or who they may perceive as socially dissimilar to themselves. This matches the concept of general trust described in Chapter 4, meaning Factor 1 can be treated as a measure of this construct.

In contrast, Factor 2 explains 20.6% of the variance and is characterised by moderate to strong positive loadings for trust in family, neighbours and personal acquaintances. Trust in strangers also exhibits a weak positive loading on this factor, although it is below the 0.3 cut-off. By contrast, trust in religious and national outgroups have little relevance to Factor 2 as

their loadings are close to 0. Individuals who score higher on Factor 2 therefore place more trust in known groups who may be perceived as socially similar. As this interpretation is consistent with the definition of particular trust discussed in Chapter 4, we can treat Factor 2 as a measure of this construct.

Turning to the fit indices, the RMSEA for Model 2 is reliably below 0.1 (95% CI = 0.058, 0.061), although it remains greater than 0.05. This indicates that Model 2 has an acceptable fit to the data. The TLI also points toward acceptable model fit as it is greater than 0.90. This observation is confirmed by the RMSR, which at 0.02 suggests there is little difference between the model predicted and observed correlations. Finally, Model 2 accounts for just over half the variance in the trust items (50.7%), meaning it performs better than Model 1. Thus, a 2-factor solution appears to provide an acceptable representation of the data, aside from the low communality for family trust.

Given the low communality for trust in family and modest value for the RMSEA, it seems Model 2 can be refined to better capture the variation in the trust items. There are at least two possibilities for achieving better fit. First, as is apparent from the communalities, trust in family is not well explained by the common factors and could therefore be dropped to enhance model fit – this approach was adopted by Steinhardt and Delhey (2020) in their confirmatory analysis of trust beliefs in China. Second, a 3-factor model could be constructed to see whether an additional dimension improves model fit. Both of these solutions will now be examined in turn.

Model 3: Reduced 2-Factor Solution

Results from the reduced 2-factor model are presented in Table 6.7 under Model 3. The pattern of loadings in Model 3 has similar structure as found in Model 2, with the first factor measuring general trust and the second factor gauging particular trust. However, trust in strangers has a salient and positive loading on Factor 2. Thus, individuals who score higher on the second factor are more inclined to trust known others as well as being slightly more likely to trust people they have never met before. This finding is intriguing as it suggests that trust in strangers is more ambiguous – that is, it may coincide with trust in those we are familiar with as well as those we perceive as socially distinct. This issue will be considered in more detail in the discussion section. For the moment, we can conclude that Factor 2 is broadly consistent with the concept of particular trust aside from the moderate loading for trust in strangers.

The fit indices for Model 3 are also encouraging. The RMSEA is 0.008, which suggests a very good fit to the data. Likewise, the TLI in Model 3 is approximately 1, far above the 0.9 threshold for determining adequate fit. While trust in religious and national outgroups are the only items to exhibit communalities above 0.6, it should be noted that none of the remaining items have communalities below 0.2. Finally, model 3 is able to explain a moderate share of the variance in the included trust items (57.3%), with the first factor accounting for 35.2% of the variance and the second explaining 22.1%. Model 3 therefore represents another potential solution for representing the trust items.

Table 6.7: Factor Analysis of Trust Items – Model 3

Trust Item	**Factor 1**	**Factor 2**	h^2
Neighbours	-0.059	0.756	0.528
Personal	0.12	0.595	0.445
Strangers	0.437	0.319	0.441
Religious Outgroups	0.842	-0.008	**0.702**
National Outgroups	0.872	-0.013	**0.749**
% Var Explained	0.352	0.221	
Correlations			
Factor 1	1	0.531	
Factor 2	0.531	1	
Fit Indices			
RMSEA (95% CI)	0.008 (0.004, 0.012)		
TLI	1		
RSMR	0.001		

Notes:
EFA with OBLIMIN rotation applied to Pearson correlation matrix
Good fitting items emboldened
N = 221265

Model 4: 3-Factor Solution

The final model to be considered is a 3-factor solution, the results from which are presented in Table 6.8 under Model 4. As noted in Chapter 5, the degrees of freedom are 0 with three factors, meaning it is not possible to compute the RMSEA or TLI for Model 4. Nonetheless, the RMSR is approximately 0 in Model 4, meaning there is only minimal deviation between the model predicted and observed correlation matrix. This suggests Model 4 has good fit to the data.

Comparing Model 4 to Model 2 gives mixed results regarding improvements in explained variance. While Model 4 accounts for a larger share of the total variance in the trust items (54.6%), adding a third factor has only helped to explain an additional 3.9% of the variance in the trust items. Indeed, the communality for family trust is still rather low at 0.221, although it is at least greater than 0.2. Thus, adding a third factor has only slightly improved our ability to capture the variation in family trust. The most notable change pertains to trust in strangers; the communality for this item has risen above 0.6, suggesting it is better explained in Model 4. For all other items, the communalities are largely unchanged from Model 2.

Looking at the loadings for Model 4, it can be seen that Factor 2 has a virtually identical structure to that recorded in Model 2. Thus, as previously suggested, we can treat Factor 2 as measuring particular trust. The factor explains 18.3% of the variance in the trust items.

By contrast, Factor 1 now explains a smaller share of the variance (25.6%) and no longer appears to measure general trust. While trust in religious and national outgroups continue to have sizable loadings on this factor, the loading for trust in strangers is now approximately 0.

Thus, Factor 1 seems to specifically measure trust in cultural outgroups rather than trust in people generally.

Table 6.8: Factor Analysis of Trust Items – Model 4

Trust Item	**Factor 1**	**Factor 2**	**Factor 3**	h^2
Family	0.052	0.535	-0.246	0.221
Neighbours	-0.045	0.696	0.115	0.548
Personal	0.128	0.518	0.113	0.434
Strangers	0.082	0.069	0.689	**0.62**
Religious Outgroups	0.792	0.003	0.041	**0.677**
National Outgroups	0.895	-0.004	-0.015	**0.779**
% Var Explained	0.256	0.183	0.107	
Correlations				
Factor 1	1			
Factor 2	0.427	1		
Factor 3	0.706	0.512	1	
Fit Indices				
RMSEA (95% CI)	NA			
TLI	NA			
RSMR	0			

Notes:
EFA with OBLIMIN rotation applied to Pearson correlation matrix
Good fitting items emboldened
N = 221265

Factor 3, on the other hand, explains the smallest share of variance out of the three factors (10.7%). It is characterised by a single strong and positive loading for trust in strangers. Trust in family also has a weak negative loading on this factor, although it is below the 0.3 cutoff. Thus, Factor 3 is largely dedicated to measuring trust in strangers.

Model 4 therefore suggests that trust in strangers is somewhat distinctive from trust in cultural outgroups, raising doubts about its suitability as an indicator of general trust. Nonetheless, even if Model 4 provides grounds for treating stranger trust as a distinct factor, it remains closely related to trust in cultural outgroups. For instance, the correlation between Factor 1 and Factor 3 is 0.706, meaning trust in strangers and cultural outgroups tend to coincide with one another. Indeed, this is the strongest inter-factor correlation in Model 4 – while Factor 2 is also positively correlated with Factor 1 (r = 0.427) and Factor 3 (r = 0.512), these correlations are only moderate.

Model Selection

We are now in a position to decide upon a model for representing the trust items, the options for which are summarised in Table 6.9. Based on the above findings, Model 3 appears to be preferable for several reasons. First, Model 1 is not defensible given the poor communalities for trust in family and neighbours as well as its poor fit indices. Second, we can reject Model

2 for similar reasons. While trust in neighbours and personal acquaintances were better explained in Model 2, family trust continued to exhibit a low communality, suggesting it was not adequately explained by the model. In turn, the RMSEA only indicated acceptable fit for Model 2 but provided evidence of good fit for Model 3.

Table 6.9: Model Summaries

Model	Number of Factors	Excluded Items	Fit Indices	Rotation
1	1	None	Poor	None
2	2	None	Acceptable	OBLIMIN
3	2	Family Trust	Good	OBLIMIN
4	3	None	Good	OBLIMIN

Notes: All models fitted to Pearson correlation matrix using MLE

Third, although Model 4 may have yielded improved model fit while allowing us to retain trust in family, there are reasons to be cautious of adding a third factor. Thus, there were signs from the PCA that adding a third factor may simply capture random variation in the trust items; only the first two principal components had eigen values above 1 and the MAP criterion was largest with three components. In turn, while Model 4 highlighted intriguing dynamics regarding trust in strangers, there is a stronger theoretical precedent for accepting Model 3. For instance, a 2-Factor model excluding family trust has previously been utilised for studying trust beliefs in China (Steinhardt and Delhey 2020) and coheres with previous research suggesting that trust and ties with family may constitute a distinct domain of social relationships (Fukuyama 1995; Rhee *et al.* 1996; Realo and Allik 1999).

Finally, these conclusions are backed up by findings from the inter-item correlations and Cronbach's σ; in all of these analyses, trust in family was found to have the weakest associations with the other trust items and demonstrated poor scalability. It therefore seems wiser to treat family trust as distinct and only model those items that demonstrate clear scalability. Model 3 affords this possibility while yielding interpretable factors roughly congruent with general and particular trust. It is for these reasons that Model 3 is tentatively accepted as a valid representation of trust expressions.

Robustness Checks

Having selected Model 3 as the most defensible representation of the trust items, it is important to verify that this solution is reliable across contexts and model specifications. Three robustness checks were therefore conducted to further interrogate the suitability of Model 3:

1. Checking that results hold when assuming ordinal data
2. Accounting for potential autocorrelation among participants' responses
3. Assessing reliability of the factor structure across countries

Ordinal Analyses

As explained in Chapter 5, it is important to verify the results of the above analyses using polychoric correlations, which are technically more appropriate for analysing ordinal data.

Results from the ordinal analyses were largely identical to the continuous analyses for all but one model; while Model 2 obtained an acceptable fit in the continuous analyses, the fit was borderline unacceptable in the ordinal analyses (RMSEA = 0.103, 95% CI = [0.100, 0.105]). In other words, the ordinal analyses provided stronger grounds for rejecting Model 2. This gives some reassurance that the decision to use Model 3 as a basis for representing trust expressions is justified. For details on overall model fit and communalities from the ordinal analyses, see appendix 6B.

Autocorrelation in Participants' Responses

Up to this point, all models have been fitted to the data on a global level, disregarding the fact that observations are nested in different countries. This raises two potential issues. First, as noted in Chapter 5 when discussing multilevel modelling, the nesting of participants in countries may exaggerate correlations between variables, thereby biasing findings from the factor analysis. To address this issue, the analysis was rerun in its entirety after centring the trust items around their country means[13]. This adjustment accounts for the nesting of observations by removing variation in the trust items that is driven by country effects (Realo and Allik 1999, p.136; Huang and Cornell 2015, p.5). Rerunning the analyses on the group-mean centred data gave virtually identical results to those presented above; the only change was that the factor loadings and inter-factor correlations were slightly lower in the group-centred analyses. See Appendix 6C for details on how group-centring impacted estimates from Model 3.

Variation in Factor Structure Across Countries

A second issue with analysing the trust items at a global level concerns the applicability of findings to specific countries. In other words, it is doubtful that the factor structure depicted in Model 3 would hold universally, presenting identically within each country. To assess the applicability of Model 3 to specific countries, the following procedure was undertaken. First, Model 3 was refitted on a country-by-country basis. Second, the country-specific results were compared to the factor structure outlined in Model 3 to determine the number of matching cases. A country-specific model was classed as a match to Model 3 if it met two conditions:

- One factor defined by salient loadings for trust in strangers, national outgroups and religious outgroups
- One factor defined by salient loadings for trust in neighbours, personal acquaintances and strangers.

For the purposes of classifying country-specific models as a match to Model 3, the loadings only needed to exceed 0.3 in absolute magnitude and exhibit the same direction for relevant items; thus, even if loadings were stronger or weaker in certain countries, they would be classed as a match so long as the overall pattern of loadings was consistent with Model 3. Furthermore, country-specific models were counted as a match if they were identical to Model 3 but with the factors reversed – that is, Factor 1 measuring particular trust and Factor 2 measuring general trust.

[13] Unfortunately, it is not possible to implement a similar adjustment when using polychoric correlations, meaning the group-mean centred analyses could only be run assuming continuous data.

The results of these robustness checks indicated that the factor structure outlined in Model 3 was discernible in 37 out of the 102 countries included in the analysis[14]. Among countries where the factor structure was not observed, a higher proportion were from Latin America (e.g., Mexico, Brazil, Trinidad and Tobago, Nicaragua, Argentina, Puerto Rico, Chile, Ecuador, Bolivia, Guatemala, Peru and Venezuela), suggesting Model 3 may be less representative of trust beliefs in these countries. Interestingly, in 35 countries where the factor structure was not observed, the only major difference was that trust in strangers did not load on same factor as trust in neighbours and personal acquaintances – that is, the loading for trust in strangers did not surpass the 0.3 cut-off. This further highlights the ambiguous nature of trust in strangers as a facet of particular trust; in some countries it may be linked to trust in familiar and socially similar groups, whereas in others it is more decisively connected with trust in unknown and socially dissimilar groups.

Overall, the country-specific analyses provide more qualified support for Model 3. The latent structure of Model 3 is only discernible in around a third of the countries, with trust in strangers not consistently loading on the particular trust factor.

Discussion

In this chapter, EFA was applied to the WVS trust items in order to develop a clearer understanding of how trust expressions relate to one another and their latent structure. The main question guiding the analysis was – what latent structure is exhibited by expressions of trust in different groups? In turn, two follow-up questions were posed: a) how many latent dimensions are needed to adequately capture trust beliefs? b) what trust expressions characterise these latent dimensions? In concluding the present chapter, each of these questions will be addressed and examined in light of existing research on trust.

The Dimensionality of Trust

Beginning with question 1a, it was argued that Model 3 provides the best representation of the trust items – this constitutes a 2-factor solution excluding family trust. There were three main reasons for accepting Model 3: it has promising fit indices, is less likely to be capturing random error in the trust items and is consistent with evidence that family trust is not scalable with other trust expressions. Thus, the first conclusion that can be drawn from the preceding analysis is that trust appears to have a multidimensional latent structure.

Nonetheless, the analysis has not enabled us to conclude whether this includes two or more dimensions. While a 2-factor solution was ultimately selected, family trust did not form part of this model due to its poor scalability with the other trust items. This could mean that family trust comprises a distinct latent factor that would have been discernible had there been more items for distinguishing between different family members (e.g., parents, spouses,

[14] Results from the ordinal models offered stronger support for Model 3, with the factor structure being observed in 49 countries.

relatives). The most that can be concluded from the analysis, therefore, is that there are *at least* two latent dimensions to trust[15].

Structure of Trust Expressions

In terms of question 1b, the first dimension of this model was mainly defined by high loadings for trust in religious and national outgroups alongside a moderate loading for trust in strangers. By contrast, trust in neighbours and personal acquaintances did not load on this factor. Thus, the first dimension appears to measure trust in people who are relatively unknown to us or who may differ from us in terms of cultural background and worldview. This matches the concept of general trust, defined as a trusting disposition that spans group boundaries and is not predicated on personal knowledge of another's trustworthiness (Yamagishi and Yamagishi 1994; Uslaner 2002). In line with previous studies, findings from the preceding analysis therefore suggest that a unique dimension of general trust is discernible in a cross-national setting (Yamagishi and Yamagishi 1994; Uslaner 2002; Delhey *et al.* 2011; Steinhardt and Delhey 2020).

In contrast, the second dimension was characterised by moderate to high loadings for trust in personal acquaintances and neighbours. Trust in strangers also had a small loading on this factor whereas trust in religious and national outgroups both had loadings close to 0. Thus, we can tentatively interpret the second factor as measuring trust in people who are relatively well-known to us or who form regular features of our social environment. To some extent, the second dimension matches the theoretical definition of particular trust as a tendency to trust those we are familiar with and who may share certain social features with us (Uslaner 2002; Newton and Zmerli 2011).

Some may object to this interpretation, given the small loading for trust in strangers. Indeed, trust in strangers is often regarded as the quintessential feature of general trust as it indicates a willingness to trust without need for knowledge of the other person (Uslaner 2002). Furthermore, previous factor analytic studies have found that stranger trust does not load on to a particular trust factor (Yamagishi and Yamagishi 1994; Uslaner 2002; Delhey *et al.* 2011; Steinhardt and Delhey 2020), making the current finding especially curious. The positive loading for stranger trust therefore seems to work against interpreting Factor 2 as a measure of particular trust.

Nonetheless, there are two points to keep in mind when interpreting this finding. First, after excluding family trust, only two items out of the whole item pool could be treated as measuring trust in more familiar groups: trust in neighbours and personal acquaintances. Watkins (2018, p.222) argues that there should ideally be three or more observed items per factor to yield more precise estimates of latent structure. Thus, even if a distinct dimension of particular trust informed participants' responses, this may have been less detectable with only two theoretically relevant items. It is notable in this regard that a factor resembling particular trust was more clearly in evidence when including family trust, although findings from this model are more doubtful given the poor scalability of family trust. We might therefore expect

[15] In terms of the observed data, it could be argued that family trust represents a separate dimension of trust. However, as used here, the word 'dimension' is specifically intended to refer to latent dimensions as pulled out by the factor analysis models.

that stranger trust would not load on Factor 2 when including additional items on trust in known groups, such as friends or work colleagues.

Second, this unanticipated result may highlight that stranger trust is not as closely aligned with general trust as previously supposed. In linking general trust to trust in strangers, previous researchers could be said to have employed a definition of strangers as somewhat mysterious, being unknown and radically different from us. Yet, as researchers since Goffman (1990, p.12) have pointed out, in everyday interactions the stranger is made into something potentially knowable and predictable through processes of social categorisation (Hogg 2010, p.58). In other words, when we encounter someone new, we search for clues as to what kind of person they might be based on how they present themselves, including their physical appearance and mannerisms. It is for this reason that Hogg (2010, p.58) argues shared social identity "provides a basis for trust among strangers simply because they are categorised as fellow in-group members". This observation appears to clash with the arguments of Uslaner (2002) and those adopting a modernisation perspective (Inglehart and Welzel 2005; Torche and Valenzuela 2011), who maintain that engagement with familiar groups cannot provide a basis for trust in strangers. Rather, it may be that trust in strangers also develops from perceived familiarity. To this extent, trust in strangers can therefore be said to share affinities with particular trust.

The Uniqueness of Family Trust

Another key finding from the research is that trust in family was poorly explained by the 1- and 2-factor solution, prompting its exclusion from Model 3. This finding seems roughly consistent with previous work on trust discussed in Chapter 4. Thus, in his EFA of the 1996 Pew Philadelphia survey, Uslaner (2002) found family trust to have one of the weakest loadings on his particular trust factor. Steinhardt and Delhey (2020) tested whether a 2-factor model of particular and general trust could be verified in China, finding that family trust had poor scalability and needed to be excluded to achieve good model fit. Indeed, the distinctiveness of family trust in the current analysis is perhaps unsurprising; as the summary statistics for the trust items highlighted, very few respondents expressed complete or moderate distrust in family even though they offered more varying opinions about other groups. Findings from the present analysis therefore support the view that family trust is distinct from other trust expressions and may represent a separate dimension of trust.

One perspective that may help to account for this finding is attachment theory. According to Bowlby, our inclination to trust others is rooted in the working models of self and other we develop in childhood through interactions with caregivers. Bowlby (1970, pp.81-2) argued that the collection of expectations that make up these working models gradually solidify as they are reaffirmed through repeated experiences of support or neglect, meaning they become a stable lens through which we approach social interaction. For example, Bowlby (1980, p.208) maintained that a positive working model of others provides us with an inner sense of security, giving us a foundation from which to reach out to others and form social connections. Thus, it may be that trust in family is unique as it is relatively immune to subsequent experiences and forms the basis from which trust in other, non-kin groups becomes possible.

Cultural factors are also likely to play a role in maintaining higher levels of trust in family compared to other groups. Thus, as explained in Chapter 4, familism as an ideology that espouses the importance of kinship ties and obligations has been argued to concentrate trust within the family (Fukuyama 1995). While familism is not a universal cultural orientation, it is claimed to have a greater influence in countries such as China, Italy and South Korea. For instance, Hu and Scott (2014) report evidence from the 2006 China General Social Survey showing that the traditional value of familial piety continues to be widely endorsed in China. As Fukuyama (1995) argues, such cultural values may incline individuals to trust family out of a sense of loyalty or obligation, thereby promoting a higher level of family trust.

Inter-relationships Between Types of Trust

Findings from the above analysis also allow us to comment on existing debates around the association between particular and general trust. While some studies have indicated that particular and general trust are mutually exclusive (Uslaner and Brown 2005; Ystanes 2016), others have reported positive correlations between the two (Yamagishi and Yamagishi 1994; Uslaner 2002; Newton and Zmerli 2011), with researchers suggesting that particular trust forms a necessary condition for the development of general trust. Furthermore, it was discussed in Chapter 4 how particular and general trust have been linked to Durkheim's concepts of mechanical and organic solidarity (Newton 1997). This conceptual scheme implies that particular and general trust are hostile forces as they represent fundamentally incompatible relationship structures. The evidence presented above challenges the view that particular and general trust are incompatible and instead suggests the two may occur alongside one another.

The first piece of evidence for this conclusion is the bivariate correlations between the trust items, which indicated that all items are positively associated with one another. Trust in family is perhaps a slight exception to this pattern since its correlations with trust in strangers, religious outgroups and national outgroups were close to zero. Nonetheless, this only means that family trust is irrelevant to trust in strangers and cultural outgroups, not that it actively inhibits their development. Indeed, following Newton and Zmerli (2011), trust in family could provide the basis for trust in groups such as friends and neighbours, with these latter two types of trust acting as a platform for developing trust in strangers and cultural outgroups. This interpretation seems to fit with the data as family trust had weak correlations with trust in personal acquaintances, which in turn were weakly correlated with trust in strangers, religious outgroups and national outgroups. Further research would be needed to confirm whether trust is built up in such layers, beginning in the family and gradually extending to newer and more socially distant groups.

Findings from the factor analysis models also support the notion of a positive correlation between particular and general trust. In the 2-factor models with and without family trust, two factors resembling general and particular trust were observed and found to be positively correlated with one another to a moderate degree. Similar results were derived from the 3-factor model, which showed that both trust in cultural outgroups (Factor 1) and trust in strangers (Factor 3) were positively correlated with trust in familiar groups (Factor 2). The positive correlations between these latent dimensions therefore imply that individuals who place more trust in familiar groups are also more trusting of unfamiliar groups.

Based on these findings, it would therefore be misguided to view particular and general trust as the subjective counterparts of mechanical and organic solidarity, respectively. If notions of trust are to be incorporated into Durkheimian theory, we need to revise our understanding of how relationships rooted in cultural uniformity may coexist with relationships that allow for extensive differences in social backgrounds.

Limitations

While the current analysis has provided tentative evidence for a 2-dimensional model of trust excluding trust in family, theoretical and methodological limitations should give us pause in drawing firm conclusions. First, it needs to be remembered that participants do not necessarily interpret survey questions in the same manner as the researcher. We therefore need to consider how participants understand groups such as family, neighbours and religious outgroups to verify the above interpretations of the latent factors. For instance, religious and national outgroups may not be viewed as unfamiliar or socially distinct in all contexts. In line with Welzel and Ingelhart's (2005) modernisation theory, we might expect that post-industrial societies are more diverse in ethnic and religious composition and necessitate frequent contact between culturally different groups. Under such circumstances, friendship, work and residential networks are likely to include greater numbers of people with different nationalities and religions, meaning trust in such groups may gauge particular trust as much as general trust.

Similar points can be raised concerning the family. In his work on modernisation, Beck (1992, pp.110-1, 115-8) observes that Western societies such as the USA and UK have witnessed profound changes in family structure that began taking shape near the end of the 20th century. Whereas the nuclear family constituted the dominant model of family life under industrial capitalism and was defined by the heterosexual married couple with their biological children, a number of processes – e.g., changing divorce laws, the availability of contraceptives, rising female employment, economic pressures for geographic mobility – have gradually destabilised the nuclear family and enabled individuals to exercise more choice regarding the formation and dissolution of family ties. DePaulo and Morris (2005) observe that the nuclear family remains a powerful ideal against which other family forms are judged and devalued, but it is now overshadowed by the increasing numbers of single, single-parent and cohabitating households. Thus, it is likely that participants included different groups of people in their definition of family, which may have influenced their responses to the question on family trust.

Second, while attempts were made to verify that results were not unduly influenced by the nesting of observations in countries, it was not possible to apply this check while treating the data as ordinal. This is unfortunate given that the ordinal analyses yielded different results regarding fit indices for selected models (Model 2). Nonetheless, it seems unlikely that accounting for country effects while modelling the data as ordinal would have produced drastically different results. As highlighted in footnote 12 (page 115), the factor structure of Model 3 was observed more frequently in individual countries when assuming ordinal data, suggesting it is fairly applicable across contexts.

Summary

Overall, therefore, the EFA has produced findings that are largely in line with previous research. Trust appears to be a multidimensional construct, with one dimension tapping trust in unknown and culturally diverse groups and another measuring trust in known figures and those living in close proximity to the individual. We can view these factors as measuring general and particular trust, respectively, although issues around item wording and interpretation cast some doubt on this conclusion. Both dimensions are positively correlated, suggesting that the two tend to coincide rather than repel each other. Only trust in family does not appear to constitute a clear indicator for any of these dimensions as it does not correlate strongly with any of the other trust items and was poorly explained across various factor solutions.

Based on the results of the factor analysis, it seems appropriate to construct indexes of general and particular trust from the WVS trust items. To measure general trust, responses to the items on trust in strangers, religious outgroups and national outgroups will be summed. Likewise, particular trust will be measured by summing responses to the items on trust in neighbours and personal acquaintances. By contrast, trust in family will be included as a standalone item given its poor scalability. The correlation between the general trust factor and index was 0.980 whereas the correlation between the particular trust factor and index was 0.961, suggesting these indexes reflect most of the variation in the latent factors.

The decision to use stranger trust as part of a general trust index may seem questionable given that this item also had a small loading on the particular trust factor and was flagged as unique in the 3-factor model. Nonetheless, this decision seems justified for four reasons. First, while trust in strangers loaded on both factors, its highest loading was on the general trust factor, suggesting it is more closely related to this construct. Second, as previously discussed, the small loading of stranger trust on the particular trust factor may have been due to the lack of suitable items for gauging particular trust; we therefore cannot be confident that stranger trust is or is not part of this latent factor. Third, the robustness checks highlighted that trust in strangers did not consistently load on to the particular trust factor; specifically, in 37 countries the loading surpassed the 0.3 threshold while in 35 countries it was below this value. This further confirms that stranger trust is less reliable an indicator of particular trust than it is of general trust. Finally, while there is at least one study to have suggested that stranger trust is linked to particular trust (Hu 2020), most research has found stranger trust to be a facet of general trust (Uslaner 2002; Newton and Zmerli 2011; Steinhardt and Delhey 2020) or at least more highly correlated with measures of trust in broader groups (Bauer and Freitag 2018, pp.26-9). Indeed, trust in strangers has often been theorised as the defining element of general trust since strangers are largely unknown to us, meaning our trust in them cannot be based on familiarity with their moral character (Uslaner 2002). Thus, there is a stronger theoretical precedent for regarding stranger trust as part of general trust, even if it shares some overlap with trust in known groups.

The next stage of the analysis will involve using these trust items in a series of multilevel models to explain variations in suicide approval.

Chapter 7 – Multilevel Analysis of Suicide Approval

The previous chapter utilised exploratory factor analysis to establish three measures of trust: family trust, particular trust and general trust. The purpose of this chapter is to use these newly derived trust measures as explanatory variables for modelling suicide approval. Specifically, the chapter seeks to address the following question:

1. How are expressions of trust in different groups associated with suicide approval?

To answer this question, Bayesian multilevel modelling is applied to data on 185459 individuals across 99 countries from waves 6 and 7 of the WVS. As explained in Chapter 5, a key reason for adopting a multilevel approach is to account for the possibility that the trust effects may vary in magnitude across countries (Bell *et al.* 2019). The chapter begins by outlining the hypotheses guiding the analysis and links these back to theoretical and empirical work discussed in earlier chapters. After inspecting the distribution of suicide approval, a series of multilevel models are then fitted to the WVS data to understand how the trust variables are associated with this outcome, how these associations vary across countries, and whether they are attenuated by other factors. To verify the integrity of these models, a number of robustness checks are then conducted. The chapter concludes by discussing the theoretical implications of findings, limitations with the analysis and avenues for future research.

Hypotheses

Based on the literature covered in Chapters 2 and 4, several hypotheses can be formulated regarding how each type of trust relates to suicide approval. Beginning with family trust, it was explained in Chapter 4 that the trust placed in family may form part of an emotional attachment (Lewis and Weigert 1985; Rothbard and Shaver 1994) and strong social ties (Newton 1997). Such bonds may protect against suicide by sustaining a sense of purpose in life (Durkheim 2002), contributing to feelings of belongingness (Van Orden *et al.* 2010) or undergirding secure attachments (Adam 1994). In addition, trust in family may signify that a key channel of social support is in place (Benson *et al.* 2016), potentially helping the individual to cope with crises (Pescosolido and Georgianna 1989; Agnew 1998). This leads to the following hypothesis:

> *Hypothesis 1: Individuals who place greater trust in their family will express a less approving attitude toward suicide.*

To some extent, similar arguments may be put forward concerning particular trust. As discussed in Chapter 4, empirical studies have demonstrated that trust in groups such as school peers, neighbours and friends tends to be negatively associated with suicidal ideation (e.g., Langille *et al.* 2012; Noguchi *et al.* 2017; Hill *et al.* 2019). Qualitative studies have further highlighted that the mechanisms underpinning these associations are likely similar to those outlined above (Ozawa-de Silva 2008; Benson *et al.* 2016). Thus, assuming that approving attitudes toward suicide can be explained through comparable processes to suicidal ideation, the following hypotheses can be stated:

Hypothesis 2. Individuals reporting higher levels of particular trust will express less approving attitudes toward suicide.

What is less clear is whether particular trust will have as large an association with suicide approval as family trust, given provisional evidence that parents and spouses may play a more important role in recovery from mental health crises and lowering suicide risk (de Jong 1992; Sheftall *et al.* 2013; Perry and Pescosolido 2015).

Finally, general trust could be viewed as having a positive or negative association with suicide approval, depending on the perspective taken. It was explained in Chapter 4 that general trust has been conceptualised as a symptom of weaker social ties, heightened tolerance and individualism (Inglehart and Welzel 2005); these socio-cultural features are thought to foster a greater openness to novel practices and beliefs, including suicide (Stack and Kposowa 2011a; 2016a). In turn, it was noted that such an association may be plausible based on available evidence (Boyd and Chung 2012; Stack and Kposowa 2016a). From these considerations, the following hypothesis can be put forward:

Hypothesis 3. Individuals reporting higher levels of general trust will express more approving attitudes toward suicide.

In contrast to hypothesis 3, Chapter 4 also highlighted that quantitative studies have typically found general trust to exhibit negative associations with suicidal ideation (Economou *et al.* 2013; Yamamura 2015; Kim *et al.* 2017) and suicide rates (Helliwell 2007; Kelly *et al.* 2009; Okamoto *et al.* 2013). It was suggested that general trust may produce these effects by enabling the individual to broaden their social networks (Bränström *et al.* 2020) or by forming part of an optimistic worldview that helps to ward off anxieties (Giddens 1991; Uslaner 2002). This provides a last hypothesis to be tested in this chapter:

Hypothesis 4. Individuals reporting higher levels of general trust will express less approving attitudes toward suicide.

Having outlined the main hypotheses and the rationale behind them, these will now be tested through an analysis of the WVS data.

Descriptive Analyses

Within the present sample, the mean score on the suicide approval scale is 2.546, implying participants were largely disapproving of suicide on average. This finding is confirmed by Figure 7.1, which plots the distribution of suicide approval scores. We can see that the variable is highly positively skewed, with 59.3% of respondents selecting the lowest possible score of 1 (never justifiable). By contrast, 21.2% of participants selected a response option in the range of 5 to 10 (always justifiable). If we assume that category 5 represents a neutral attitude, this suggests that almost a fifth of participants held neutral to completely approving views of suicide. Thus, while the overwhelming majority of participants expressed disapproving attitudes toward suicide, a sizable share endorsed more approving views.

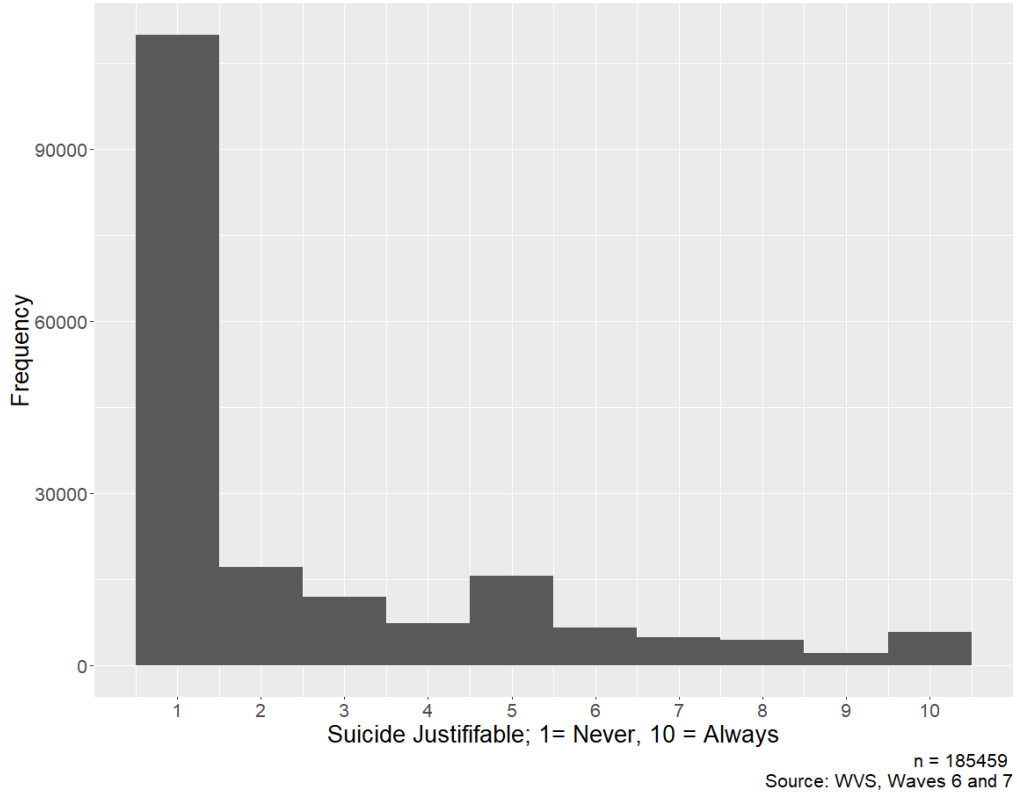


Figure 7.1: Distribution of Suicide Approval

It is also important to inspect how the distribution of suicide approval changes with varying levels of the predictors. A key assumption of the multilevel model outlined in Chapter 5 is that the associations between the predictors and outcome variable are linear. Thus, to check whether the linearity assumption is appropriate, Figures 7.2-3 use boxplots and scatterplots to visualise associations between the predictors and suicide approval. For the boxplots, the mean of suicide approval is superimposed as a red diamond to show how suicide approval changes with increasing values of the predictors. The scatterplots, on the other hand, use locally estimated scatterplot smoothing (LOESS) to track changes in average levels of suicide approval.

Based on Figure 7.2, we can see that some associations are not strictly linear. For example, with increasing levels of general trust, the mean of suicide approval rises steadily before increasing more rapidly when general trust reaches a value of 2.333. A similar pattern can be observed for church attendance, only the mean of suicide approval decreases with more frequent church attendance and the decline is steeper at the lowest levels of church attendance.

The strongest evidence of a non-linear association concerns self-expression values (see Figure 7.3). The LOESS smoother demonstrates a positive association between self-expression values and suicide approval that follows a clear upwards arc. Specifically, as scores on the self-expression value index increase above 1, average levels of suicide approval increase at a much higher rate.

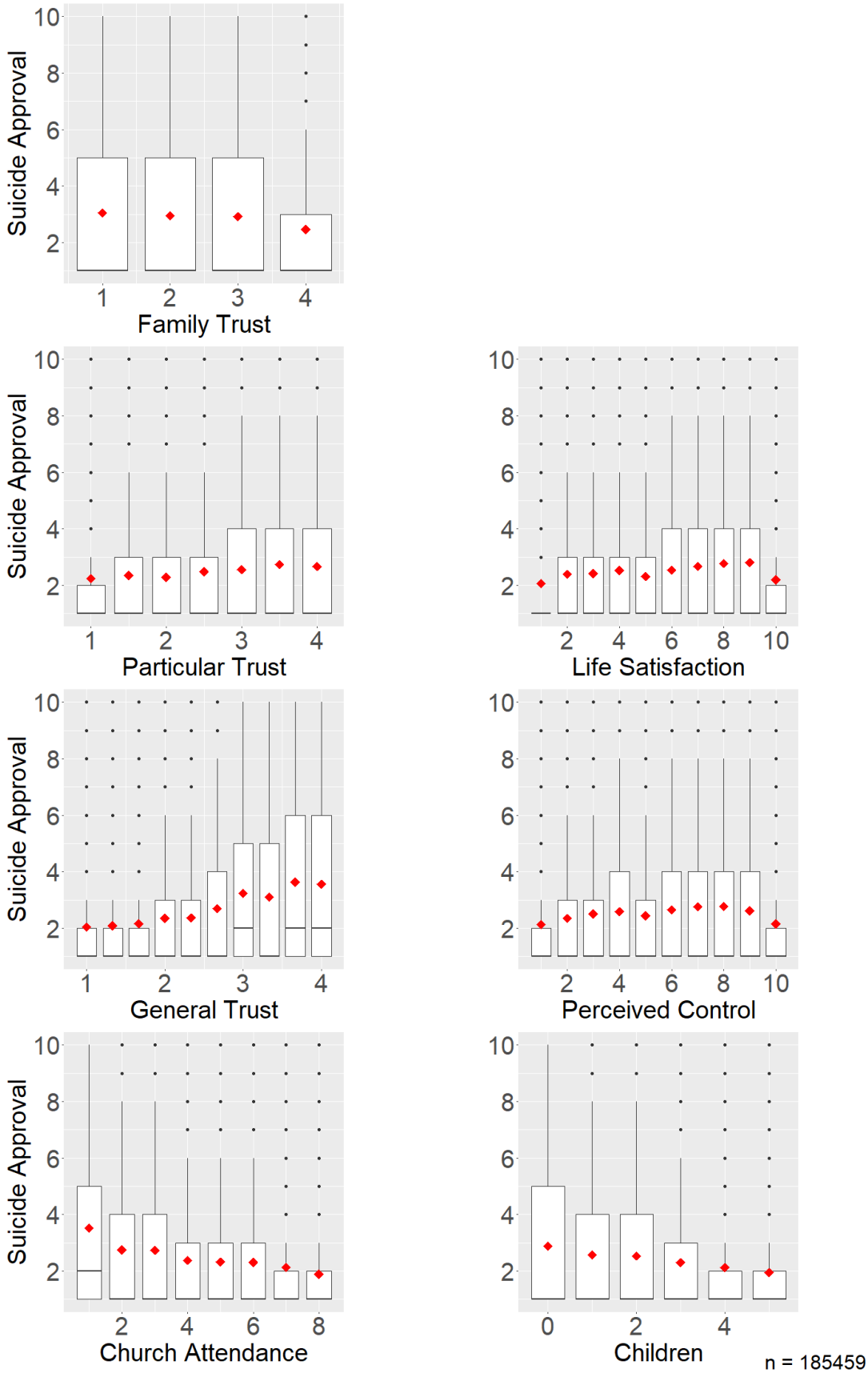


Figure 7.2: Boxplots of Suicide Approval by Selected Predictors
Red diamond = mean

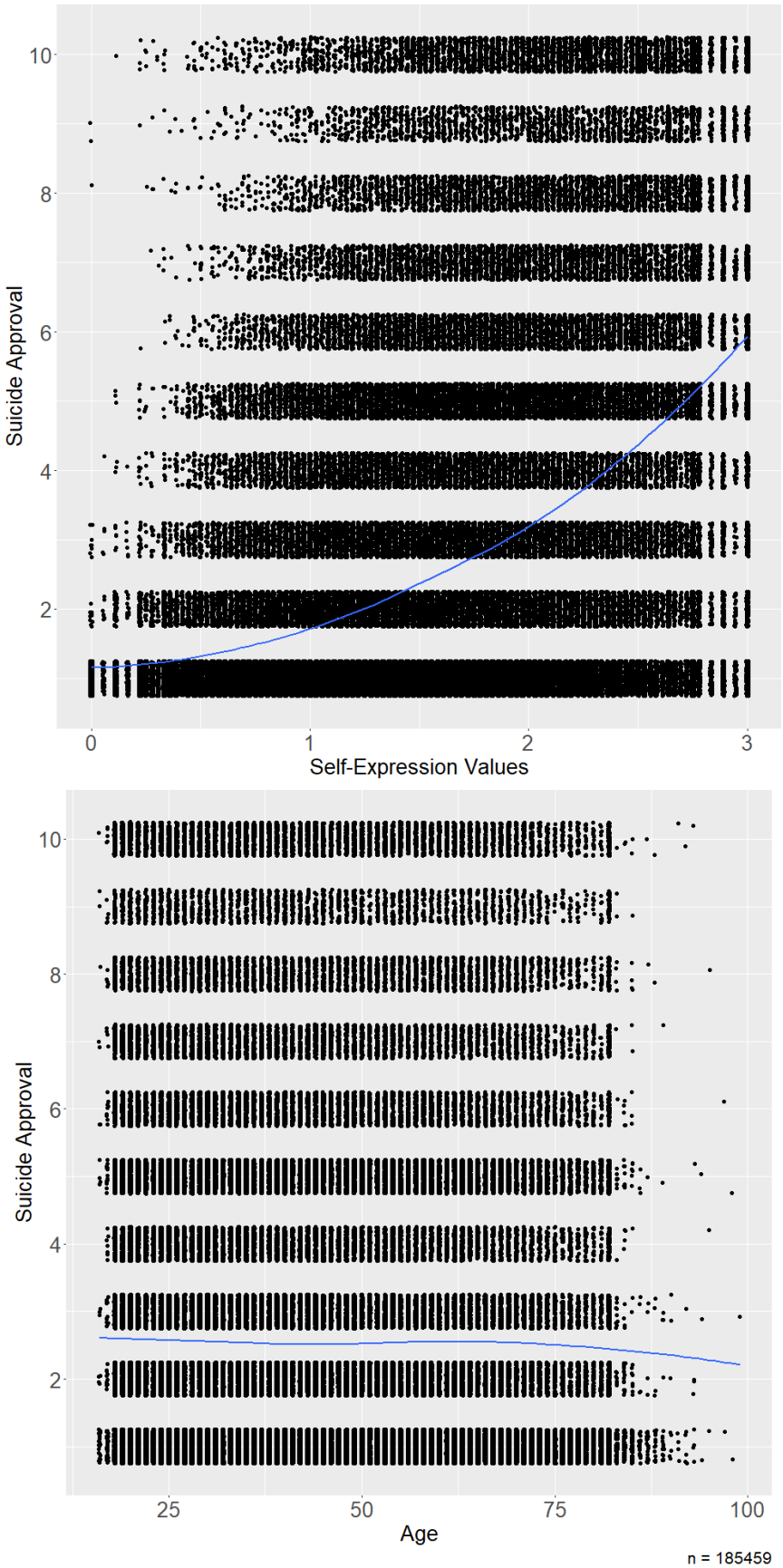


Figure 7.3: Scatterplots of Suicide Approval by Selected Predictors
Blue line = LOESS smoother
Jittering applied to data points

These patterns are intriguing as there has been little to suggest from previous research that general trust, church attendance and self-expression values share curvilinear associations with suicide approval; indeed, most studies that have examined these variables in relation to suicide approval or suicidal ideation have assumed linear associations (e.g., Boyd and Chung 2012; Economou *et al.* 2013; Stack and Kposowa 2016b). Thus, rather than respecifying the model to optimise its fit to the current sample data, the analysis will proceed with fitting linear associations as this is in greater alignment with prior expectations. Nonethless, it should be noted that this may bias the regression coefficients. As such, functional form diagnostics will be discussed below to evaluate the degree of model misspecification.

As a final word of caution, we should be wary about inferring the direction of associations between variables based on Figures 7.2-3; as Snijders and Bosker (2012, pp.15-6) demonstrate, an association may appear positive or negative when evaluating the pooled data, but may change direction when accounting for clustering effects. For descriptive statistics on all variables included in the analysis, please consult Appendix 7A.

Multilevel Models

Three Bayesian multilevel models were fitted to the suicide approval item, the results of which are presented in Table 7.1. Model 1 is a random-intercept model; it contains no predictors and only indicates the variability in suicide approval across countries. The three trust variables – family trust, particular trust, general trust – are introduced in Model 2 to assess their associations with suicide approval in the absence of standard controls. These associations are treated as random effects, thereby allowing them to vary across countries. Model 3 then adds control variables (e.g., church attendance, life satisfaction, self-expression values), allowing us to determine whether the associations between the trust variables and suicide approval are attenuated when accounting for established predictors.

Trace plots for model parameters indicated good mixture of the MCMC chains and no clear signs of trending (see Appendix 7B), with all $\hat{R}$ values well below 1.1 (see Appendix 7C). This suggests that each parameter has converged on its stationery distribution. Although this indicates that models are suitable for drawing inferences from a convergence perspective, we still need to exercise caution when generalising results to the wider population. Specifically, the multilevel models fitted in the present analysis assume normality of the level 1 and 2 residuals, constant variance of the residuals (homoscedasticity), and linear associations between the predictors and outcome (correct functional form). As will be discussed in greater detail below, these assumptions were undermined in the present analysis (see 'Diagnostics'). As such, estimates of associations and their 95% credible intervals are likely to be biased, meaning they may not accurately capture expected associations in the wider population and the degree of uncertainty around their magnitude.

Model 1: Intercept-Only

Model 1 serves two purposes. First, it provides a baseline for evaluating subsequent models. Second, it enables us to determine whether a multilevel modelling approach is appropriate and quantify how much of the variation in suicide approval is attributable to differences between countries.

Model 1 shows the posterior mean of the intercept is 2.459 – this is the expected value of suicide approval in the wider population, conditional on the data and model specification. The 95% credible interval indicates there is a considerable degree of certainty around this value, with 95% of the posterior distribution being located between 2.268 and 2.651. This means that, after having viewed the data, there is a 95% probability that the mean value of suicide approval is between these bounds. We can therefore expect people to hold disapproving attitudes toward suicide on average.

Turning to the variance terms, the level 1 and 2 residuals indicate the variation in suicide approval that is attributable to individuals and countries, respectively. The larger residual variance for level 1 relative to level 2 highlights that the majority of the variation in suicide approval is attributable to individual-level factors. Specifically, differences between individuals are expected to account for 83.9% of the variance in suicide approval, whereas 16.1% of the variance is connected to differences between countries.

Despite this finding, it would be wrong to conclude that the country-level variation in suicide approval is unimportant. For instance, multilevel analyses of suicide approval based on previous waves of the WVS have reported that around 7.4% to 16.7% of the variance in suicide approval is connected to differences between countries (Stack and Kposowa 2008; Boyd and Chung 2012; Stack and Kposowa 2016a). Thus, the present estimate of 16.1% can be taken as evidence for a moderate amount of country-level variation. Furthermore, as Table 7.1 shows, there is a 95% probability that the country-level variance in suicide approval is between 0.710 and 1.248. In other words, it seems plausible that suicide approval differs between countries, suggesting it is important to take account of country effects in the model. This provides some confirmation that a multilevel approach is warranted.

To further understand how average levels of suicide approval vary across countries, Figure 7.4 plots intercepts with 95% credible intervals from Model 1. The figure presents some intriguing differences compared with past studies. Some studies have reported that East Asian countries such as Japan, Taiwan and China tend to be more approving of suicide than the USA (Domino and Takahashi 1991; Domino *et al.* 2000; Eskin *et al.* 2016). However, in the current sample, mean levels of suicide approval are lower in Japan, Taiwan and China; indeed, the USA is ranked fairly high in terms of suicide approval (78/99). This finding could reflect changing attitudes toward suicide in USA, with one study suggesting that the US population has become more approving of suicide over time (Tong and Phillips 2018).

Figure 7.4 also shows that average levels of suicide approval reach their lowest in Egypt, followed by Albania and Georgia. Aside from Georgia where Orthodox Christianity is the dominant faith, one feature of these countries that may explain their lower levels of suicide approval is that the majority of their populations adhere to various sects of Islam. Suicide is expressly forbidden under Islamic law, and previous research has suggested that Muslims may hold more condemnatory attitudes toward suicide compared with members of other denominations (Stack and Kposowa 2011b; Eskin *et al.* 2019). Indeed, examination of Figure 7.4 indicates that many countries where Islam is the dominant faith are located toward the bottom of the y-axis, such as Azerbaijan, Tunisia and Jordan.

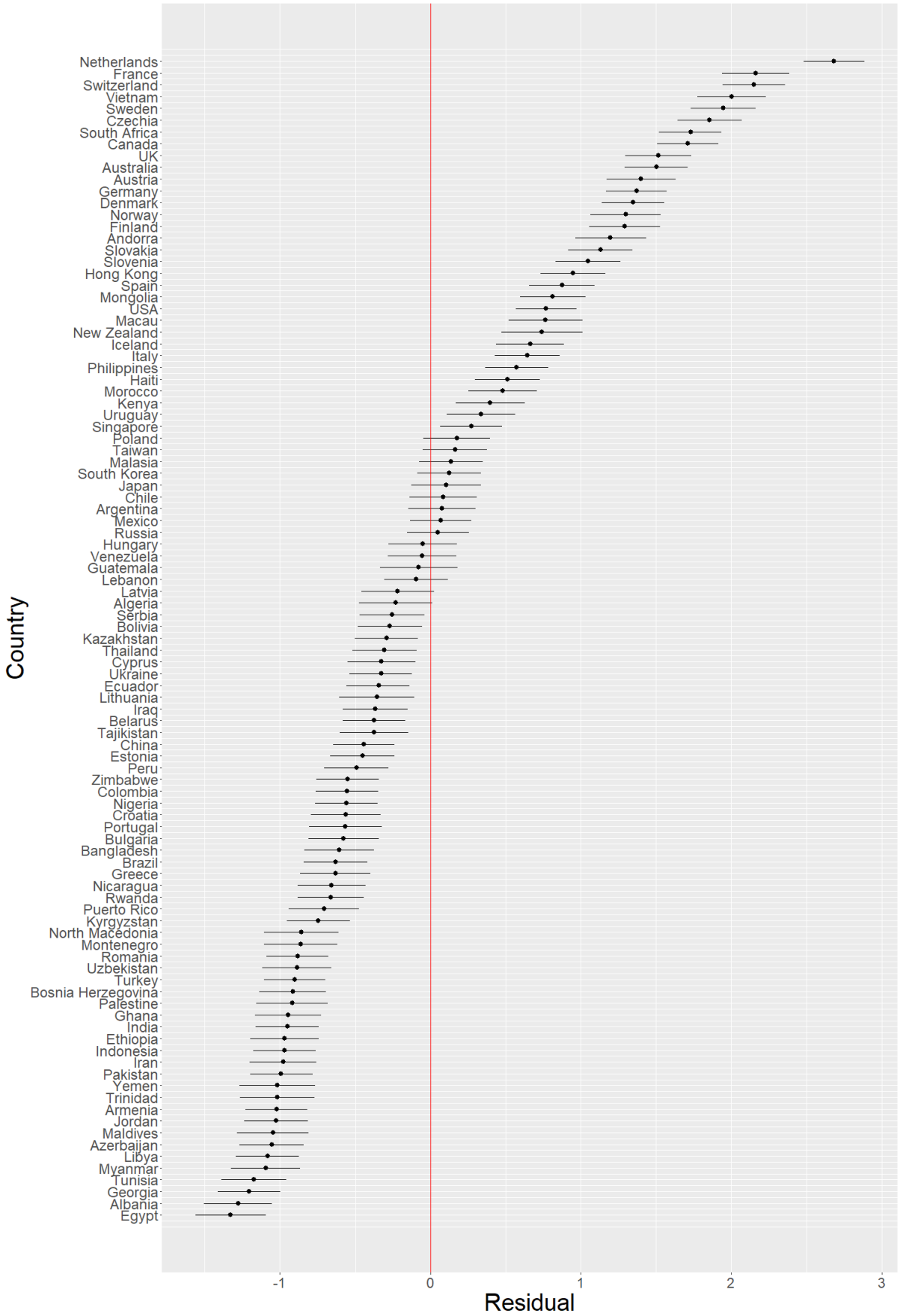


Figure 7.4: Distribution of Random Intercepts from Model 1

By contrast, levels of suicide approval are highest in the Netherlands, with France and Switzerland showing the second and third highest levels of approval, respectively. It is interesting that the Netherlands and Switzerland occupy some of the highest positions in terms of suicide approval, given that assisted suicide has been legal in these countries for some time now. Other countries where some form of assisted death has been legalized can also be found toward the higher end of the y-axis, such as Sweden (95/99), Canada (92/99) and Australia (90/99). These patterns are consistent with previous research, which has found attitudes toward euthanasia and suicide to share similar predictors (Stack and Kposowa 2008).

Model 2: Trust Variables

Model 2 adds the trust variables to aid in explaining suicide approval. Each coefficient represents the average effect of a given trust variable on suicide approval across countries; in other words, the coefficients indicate how each trust variable tends to associate with suicide approval globally. These effects will be examined in greater detail below. For the moment, we can get a sense of how the trust effects differ across countries by examining their variance terms. It can be seen that there is a modest amount of variability in the effects of family trust and general trust on suicide approval; by contrast, particular trust exhibits slightly less variation across countries.

To evaluate the performance of Model 2, we can compare variance terms and fit indices with Model 1. It can be seen that the residual variance for individuals and countries has decreased in Model 2. This suggests the trust variables have helped to account for some of the variation in suicide approval. This finding is confirmed by the deviance, which is lower for Model 2 compared to Model 1. Likewise, the DIC in Model 2 has decreased by a factor of 2708.305, suggesting that model fit has improved after including the trust variables. We can conclude that the inclusion of the trust variables has improved model fit.

Model 3: All Variables

Standard controls for suicide approval are included in Model 3, the full results of which are presented in Appendix 7C. The inclusion of standard controls leads to an appreciable improvement in model fit. For instance, the posterior mean of the deviance is considerably lower in Model 3 relative to Model 2. In turn, the DIC has decreased by 18169.23 units, indicating that the improvement in model fit is meaningful. Additional tests indicated that controlling for self-expression values alone accounted for a sizable reduction in the DIC (Δ = 13436.7). In other words, a value orientation that combines individualism with an openness to diverse ideas and practices makes the largest contribution to explaining suicide approval. This finding is consistent with prior research, which has found liberalism, tolerance and individualistic values to be some of the strongest predictors of suicide approval (Agnew 1998; Jukkala and Makinen 2011; Boyd and Chung 2012; Stack and Kposowa 2016a).

Alongside these improvements in the deviance and DIC, the variance terms for almost all of the trust variables have decreased in Model 3 relative to Model 2 – the only exception is trust in family, which is broadly identical to the previous model. This suggests that the inclusion of the level 1 controls also helps to account for some of the variability in the trust effects across countries.

Table 7.1: Bayesian Multilevel Modelling of Suicide Approval

	Model 1		**Model 2**		**Model 3***	
	Estimate	**95% CI**	**Estimate**	**95% CI**	**Estimate**	**95% CI**
Coefficients						
Intercept	2.459	[2.268, 2.651]	2.451	[2.271, 2.630]	2.628	[2.502, 2.753]
Family Trust			-0.299	[-0.352, -0.246]	-0.265	[-0.315, -0.214]
Particular Trust			-0.132	[-0.174, -0.091]	-0.039	[-0.075, -0.003]
General Trust			0.238	[0.183, 0.292]	0.127	[0.083, 0.171]
Variance Terms						
Level 1 Residuals	4.878	[4.847, 4.909]	4.800	[4.769, 4.831]	4.351	[4.323, 4.379]
Level 2 Residuals	0.943	[0.710, 1.248]	0.826	[0.621, 1.092]	0.387	[0.291, 0.512]
Family Trust			0.054	[0.037, 0.077]	0.050	[0.034, 0.070]
Particular Trust			0.033	[0.022, 0.048]	0.023	[0.015, 0.034]
General Trust			0.066	[0.047, 0.090]	0.041	[0.029, 0.056]
Fit Indices						
Deviance	820210.4		817201.1		799025.4	
DIC	820309.3		817601		799431.8	

Notes:
N = 185459 individuals, 99 countries
***** Adjusts for social, cultural, psychological and demographic factors (see Chapter 5)

Coefficient Interpretations

Having outlined the models that form the basis of the present analysis, the trust variables will now be examined in greater depth to determine how they associate with suicide approval. This will involve inspecting the average associations across countries and an illustrative set of country-specific associations for each trust variable. Country-specific intercepts and slopes were calculated by taking the global average parameter value (e.g., β_1) and adding the country-specific random departure (e.g., u_{1j}) to this average across MCMC iterations. For the purposes of plotting results, countries were selected by ranking associations from smallest to largest, with every 10th coefficient selected from the first to the last coefficient. These countries are therefore intended to highlight the full range of country-specific associations while covering the central bulk of the distribution. See Table 7.2 for counts of the country-specific associations in terms of their direction and statistical significance

Table 7.2: Counts for the Direction and Significance of Country-Specific Effects

	Positive Effect		**Negative Effect**	
Parameter	**Total**	***p* < 0.05**	**Total**	***p* < 0.05**
Family Trust	7	1	92	62
Particular Trust	39	4	60	14
General Trust	75	39	24	3

Notes:
N = 185459 individuals, 99 countries

Family Trust

Inspection of Model 2 shows that, in isolation from established controls, the average effect of family trust on suicide approval across countries is -0.299. When adjusting for the influence of other predictors in Model 3, this effect diminishes to -0.265. Nonetheless, the 95% credible interval for this effect ranges from -0.315 to -0.214, meaning there is a 95% chance that the effect of family trust on suicide approval is between these bounds. Since this interval does not include 0, it is plausible that family trust has some association with suicide approval, independent of other predictors.

Using Model 3 as a basis for inference, we can see that the average coefficient for family trust across countries is negative. This implies that individuals reporting higher levels of family trust are expected to report less approving attitudes toward suicide, on average. Specifically, for a 1-unit increase on the family trust index, participants are expected to score 0.265 points lower on the suicide approval scale. This finding is partially confirmed by Table 7.2, which shows that the country-specific effects are also negative in 92 of the countries under analysis. In turn, for 62 of these countries, the negative effect of family trust is plausibly different from 0 at the 95% level. Thus, findings from Model 3 offer moderate support to *Hypothesis* 1, lending credence to theories that regard social bonds as protective against suicide (Pescosolido and Georgianna 1989; Durkheim 2002; Van Orden *et al.* 2010).

The nature of the association between family trust and suicide approval is elaborated in Figure 7.5, which plots expected values of suicide approval conditional on family trust scores. For the purposes of easing interpretations, the family trust variable is presented on its original scale as opposed to being centred. Panel A shows the average association across countries (what is conventionally referred to as the fixed effect in frequentist analyses). It can be seen that, at the minimum value of the family trust index, suicide approval scores are expected to be 3.362. However, as scores on the family trust index increase to their maximum value, expected scores on the suicide approval scale decline to 2.567. In practical terms, this implies that the association between family trust and suicide approval is fairly small in magnitude; for example, the transition from the lowest to the highest possible value on the family trust index has the effect of lowering scores on suicide approval by 0.795 units. It should also be noted that the 95% credible intervals become wider at lower values of family trust, meaning there is greater uncertainty around the expected score of suicide approval at these points – this can be attributed to the smaller number of participants reporting lower trust in family (see Chapter 6, 'Summary of Trust Items').

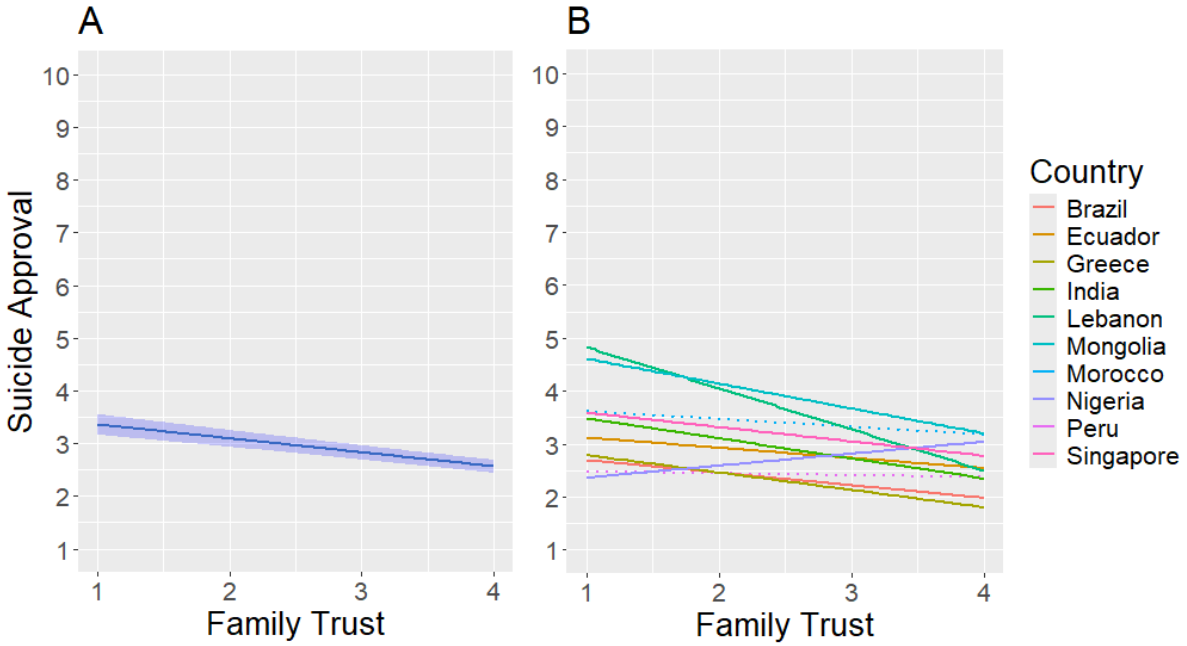


Figure 7.5: Association between Family Trust and Suicide Approval
Panel A: average association across countries with 95% credible intervals
Panel B: country-specific associations for 10 illustrative countries
Solid line = $p < 0.05$; dashed line = $p > 0.05$

Panel B elaborates on these findings by illustrating how the association between family trust and suicide approval varies across 10 illustrative countries. For most countries, we see the same trend observed in Panel A; that is, increasing levels of family trust coincide with decreasing scores on the suicide approval scale. However, for countries such as Lebanon and Mongolia, the prediction lines have much steeper slopes than observed in Panel A, suggesting that family trust exhibits a stronger association with suicide approval in these countries. On the other hand, the prediction line for Peru is almost completely flat, indicating that there is little association between family trust and suicide approval in this country. In addition, a

positive association between family trust and suicide approval can be observed for Nigeria, meaning higher levels of family trust are associated with a more approving attitude toward suicide. The features of countries departing from the global trend will be examined more thoroughly below (see 'Inspecting Discrepant Cases').

Overall, therefore, family trust appears to be negatively associated with suicide approval on average, although there are some countries that depart from this trend. We can be fairly confident in this conclusion as the average association is plausibly different form 0 across all models and can be observed in the majority of countries under analysis.

Particular Trust

Turning to particular trust, Model 2 shows that, in the absence of standard controls, the average effect of particular trust on suicide approval across countries is -0.132. When controlling for other predictors in Model 3, this association drops to -0.039. While this is the weakest trust effect recorded in Model 3, its 95% credible interval nevertheless ranges from -0.075 to -0.003, meaning it is just plausibly different from 0. Thus, based on the data and specification of Model 3, particular trust is likely to be associated with suicide approval, independently of established controls.

Interpreting this association based on Model 3, we can see that the average effect of particular trust on suicide approval across countries is negative. Specifically, for a 1-unit increase on the particular trust index, scores on the suicide approval scale are expected to decrease by 0.039 points. In line with this global trend, Table 7.2 shows that the country-specific effects for particular are negative in 60 countries. However, in only 14 countries was this effect plausibly different from 0 at the 95% level. Model 3 therefore offers more mixed support for hypothesis 2; while the association between particular trust and suicide approval is negative on average, it is small in magnitude and may not hold across many countries.

These reservations about the role of particular trust can be discerned more clearly in Figure 7.6. Panel A depicts the average association across countries and shows that, at the minimum value of particular trust, the expected score on the suicide approval scale is 2.703. As scores on the particular trust index increase toward its maximum value, the expected value of suicide approval decreases to 2.586. In other words, the shift from the lowest to the highest possible value on the particular trust index only reduces suicide approval scores by 0.117 points on average.

Panel B indicates how the effect of particular trust on suicide approval varies across 10 illustrative countries. We can see that most of the prediction lines are approximately flat, following the trend depicted in Panel A. However, in countries such as South Africa and New Zealand, the prediction lines show a steeper decline, implying a stronger negative association between particular trust and suicide approval. Conversely, the association between suicide approval and particular trust is positive in some countries, including Algeria and North Macedonia.

Thus, while the association between particular trust and suicide approval is negative on average, we should not grant too much practical importance to this finding. Not only is the average association across counties negligible in magnitude; the country-specific associations are also small and not plausibly different from 0 in many cases.

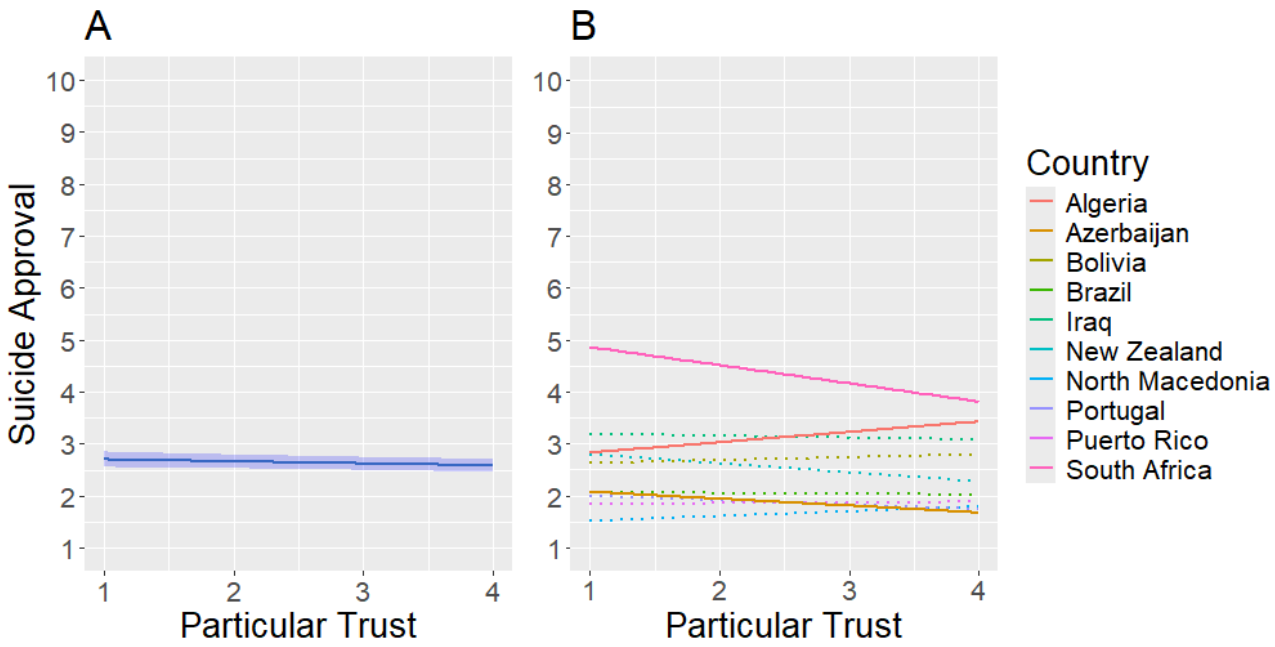


Figure 7.6: Association between Particular Trust and Suicide Approval
Panel A: average association across countries with 95% credible intervals
Panel B: country-specific associations for 10 illustrative countries
Solid line = $p < 0.05$; dashed line = $p > 0.05$

General Trust

Model 2 indicates that the average effect of general trust on suicide approval across countries is 0.238, in the absence of standard controls. When adjusting for other predictors in Model 3, the coefficient for general trust decreases to 0.127. Despite this drop in effect size, the 95% credible interval for the association between general trust and suicide approval does not contain 0. This means that, based on the data and specification of Model 3, it is plausible that general trust is independently associated with approving attitudes toward suicide.

Using Model 3 to interpret this association, it can be seen that the average coefficient for general trust across countries is positive. This means that individuals tend to express more approving attitudes toward suicide when they report higher levels of general trust. Specifically, for a 1-unit increase on the general trust index, suicide approval scores are expected to increase by 0.127 points. Table 7.2 indicates this pattern is broadly discernible across countries – the country-specific effects for general trust are positive in 75 countries, with 39 of these effects being plausibly different from 0. These findings are consistent with hypothesis 3 as they imply the association between general trust and suicide approval tends to be positive. Thus, Model 3 offers modest support for theories that regard general trust as signifying a looser network structure that accompanies heightened tolerance and individualism (Inglehart and Welzel 2005; Stack and Kposowa 2011a; 2016a).

Figure 7.7 gives a clearer picture of the association between general trust and suicide approval. Panel A depicts the average association across countries, highlighting that participants with the lowest possible value on the general trust index are expected to have a score of 2.472 on the suicide approval scale. As we move up the general trust index, the

expected score of suicide approval increases, reaching a height of 2.854 at the maximum value of general trust. Despite this positive effect, the association remains small in practical terms; for example, the shift from the lowest to the highest possible value on the general trust index has the effect of raising suicide approval scores by 0.382 units.

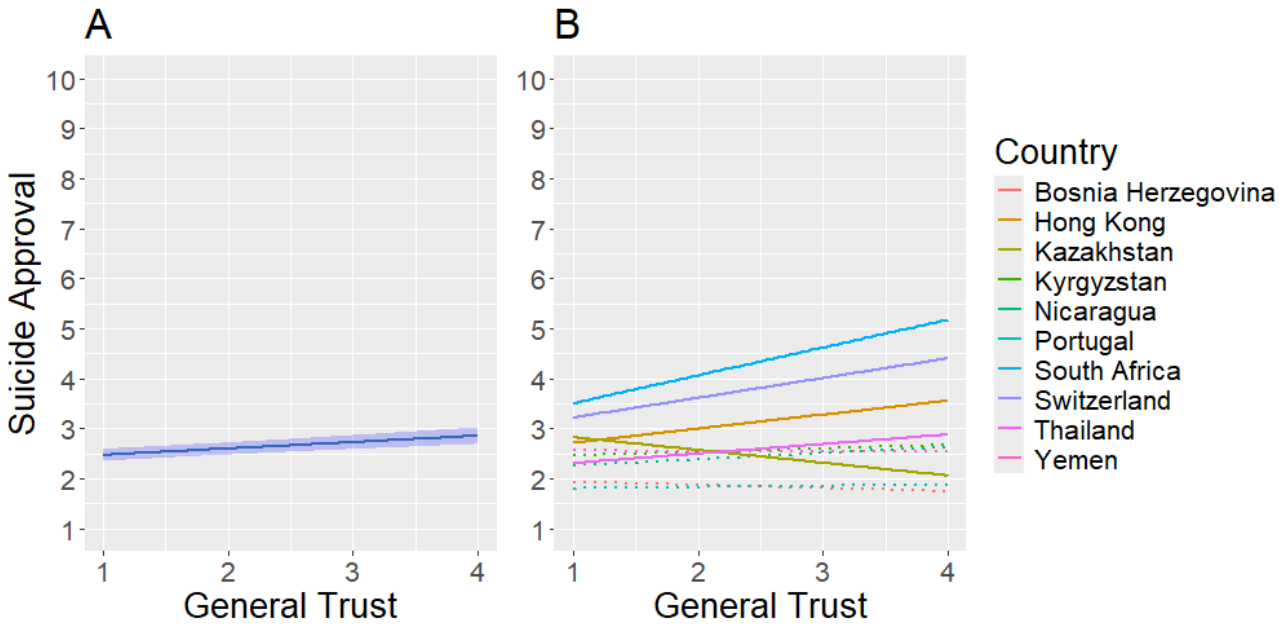


Figure 7.7: Association between General Trust and Suicide Approval
Panel A: average association across countries with 95% credible intervals
Panel B: country-specific associations for 10 illustrative countries
Solid line = $p < 0.05$; dashed line = $p > 0.05$

Panel B adds to this picture by plotting country-specific associations between general trust and suicide approval. We see that many countries follow the trend outlined in Panel A; increasing scores on general trust coincide with more approving attitudes toward suicide. In countries such as Switzerland and South Africa, this positive association is especially strong as suicide approval scores increase fairly rapidly as we move up the general trust index. In contrast, the prediction line is much flatter for countries such as Portugal and Yemen, suggesting there is little association between suicide approval and general trust. The prediction line for Kazakhstan also differs from the pattern observed in Panel A, with increases in general trust resulting in a less approving attitude toward suicide.

Thus, we can conclude that general trust has a positive association with suicide approval on average. While this association is discernible across a number of countries, there are nevertheless some countries in which the association appears to be absent or even negative.

Inspecting Discrepant Cases

As observed in Figures 7.5-7, some of the country-specific associations involving the trust variables depart from the average trends across countries. This raises the question of whether there are any characteristics of these countries that may be contributing to these discrepant effects. To examine this issue in greater detail, countries exhibiting discrepant trust effects at the 95% level of credibility were inspected for any unique features. This involved calculating

important dimensions of cross-cultural variation for these countries, namely average levels of self-expression values and the percentage of the population describing themselves as religious[16]. Using these country-level variables, *z*-scores were then calculated for discrepant cases to understand whether they exhibited more extreme levels of these characteristics. For details on all country-specific trust effects, please consult Appendix 7D.

Beginning with family trust, it was previously explained that this variable has a negative association with suicide approval on average. While seven countries depart from this trend and exhibit positive associations, only in Nigeria is the association plausibly different from 0 (β = 0.226, 95% CI = [0.093, 0.360]). In terms of variables included in the present analysis, Nigeria is distinguished by its higher share of religious participants (x = 95.32%, z = 1.301) and lower average levels of self-expression values (x = 0.807, z = -1.570). Nigeria is also one of the few countries in the sample where suicide is illegal, alongside Lebanon, Bangladesh, Kenya and (during the time of the survey) Ghana. Thus, it is possible that this mix of unique characteristics contributed to the positive association in Nigeria[17].

For particular trust, on the other hand, there does not appear to be much consistency among discrepant cases. As previously outlined, the average association between particular trust and suicide approval is negative, although a number of countries exhibit positive associations. Algeria provides the most notable example of this discrepancy (see Figure 7.6), with the positive effect of particular trust being plausibly different from 0 (β = 0.2, 95% CI = [0.041, 0.361]. Algeria is not unique in this regard as three other countries exhibit effects that are positive at the 95% level: Haiti, Uzbekistan and the UK. These countries differ quite substantially in terms of geography, variables included in the analysis and cultural traditions; for example, while Algeria is a Muslim majority country in Africa with a sizable share of participants describing themselves as religious (x = 84.22%, z = 0.795), the UK is a European country that is diverse in religious composition and has fewer religious participants (x = 34.82%, z = -1.457). Thus, it is unclear why the association between particular trust and suicide approval is reliably positive for these countries.

Likewise, there is little common ground among countries where the effect of general trust departed from the average trend. As discussed above, general trust has a positive association with suicide approval on average. However, in three countries, the association is both negative and plausibly different from 0 at the 95% level: Kazakhstan, Ecuador and Georgia. These countries are distributed across the Americas, Central Asia and Eastern Europe, having been shaped by diverse religious traditions – Islam, Catholicism and Orthodox Christianity, respectively. In turn, while levels of religiousness are above average in Georgia (x = 96.01%, z = 1.333), they are fairly typical for Kazakhstan (x = 0.741, z = 0.334) and Ecuador (x = 73.82%, z = 0.321). Thus, it is unclear why the association between general trust and suicide approval reliably departs from the average trend in these three countries.

[16] These two measures were selected as they approximate Inglehart and Baker's (2000) two axes of cross-cultural variation; traditional versus secular-rational values and survival versus self-expression values.
[17] It is unlikely that any of these characteristics taken individually are responsible for the discrepant effect in Nigeria. For example, as Figure 7.5 demonstrates, family trust has its strongest negative effect in Lebanon; this is also a Muslim majority country that criminalises suicide, although it is located in the Middle East and displays typical levels of religiousness (x = 61.97%, z = -0.219) and self-expression values (x = 1.317, z = -0.406).

Model Evaluation

Model Fit by Country

It is important to assess the effectiveness of Model 3 in explaining suicide approval within specific countries; if the model exhibits systematic misfit for selected countries, we may need to exercise additional caution in drawing inferences for these cases. To assess model fit for specific countries, the following procedure was adapted from Snijders and Bosker (2012, pp.109-13):

1. Using Model 1, residuals ($y_i - \hat{y}_i$) were calculated for each participant across MCMC iterations.
2. The residual variance was calculated per country across MCMC iterations. This provided, for each country, baseline estimates of the variance in suicide approval ($\hat{\sigma}_j^1$).
3. Steps 1-2 were repeated for Model 3. This provided, for each country, estimates of the variance in suicide approval after including all predictors ($\hat{\sigma}_j^2$).
4. The proportionate difference between the variance at baseline and after including predictors $\left(\frac{\hat{\sigma}_j^1 - \hat{\sigma}_j^2}{\hat{\sigma}_j^1}\right)$ was calculated for each country across iterations.

The proportion $\frac{\hat{\sigma}_j^1 - \hat{\sigma}_j^2}{\hat{\sigma}_j^1}$ therefore indicates the share of variance in suicide approval Model 3 helps to explain on a country-by-country basis; in other words, it shows the estimated improvement in explained variance that is afforded by the model, with values closer to 1 signifying a greater improvement from baseline.

Using the posterior means of these proportions, countries were then divided into quartiles, with the lowest 25% treated as cases where Model 3 exhibited the poorest fit. Among countries where Model 3 exhibited poorest fit, a high number were located in Eastern Europe (e.g., Georgia, Armenia, Albania, Bulgaria, Bosnia and Herzegovina, Azerbaijan, Lithuania, Serbia). Indeed, in many of these cases, the proportionate reduction in residual variance was negative, indicating Model 3 performed worse than a model with no predictors. Inspection of countries in the top three quartiles did not reveal any further geographic patterns; for instance, among the 25% of countries that received the greatest improvements in explained variance, there was mixture from Western Europe (e.g., France, the Netherlands, Germany), Eastern Europe (e.g., Poland, Slovakia, Croatia), East Asia (e.g., South Korea, Singapore, Hong Kong) and Africa (e.g., Ethiopia, South Africa, Zimbabwe). Thus, while Model 3 has applicability to a broad range of countries across the world, it may be less suited to predicting suicide approval in some Eastern European countries.

Sensitivity Analyses

In the previous chapter, it was highlighted that trust in strangers may also gauge particular trust to a limited degree, raising doubts about using it as part of a general trust index. Thus, to better understand how the trust variables are associated with suicide approval, Model 3 was rerun replacing the general trust index with one of two variables: first, the single item for

stranger trust; second, an index of outgroup trust comprised of trust in religious outgroups and national outgroups[18]. Results indicated that both stranger (β = 0.164, 95% CI = [0.129, 0.199]) and outgroup trust (β = 0.056, 95% CI = [0.022, 0.091]) were positively associated with suicide approval, although the association was much stronger for stranger trust. This suggests that the association between general trust and suicide approval recorded in Model 3 is largely driven by trust in strangers. In turn, the effect of particular trust was no longer plausibly different from 0 when outgroup trust was entered in place of the general trust index (β = -0.003, 95% CI = [-0.036, 0.030]). This raises further doubts about inferring an association between particular trust and suicide approval as it appears to be more sensitive to the influence of other predictors in the model.

As the data were taken from two waves of the WVS, Model 3 was also rerun on each wave to ascertain whether the associations between the trust variables and suicide approval held over time. Results were largely unchanged for family and general trust, only the coefficient for family trust was slightly smaller in both models. For particular trust, however, the coefficient was only plausibly different from 0 in Wave 7. The magnitude of this coefficient was almost identical across waves, suggesting the difference in credible intervals was mainly due to the increased sample size in Wave 7. Additional checks for whether model estimates were impacted by the onset of COVID-19 also indicated that the association between particular trust and suicide approval was no longer plausibly different from 0 in either the pre-COVID or post-COVID subsample. This lends further credence to the reservations that were previously raised with particular trust – that is, given the weakness of its association with suicide approval, it is unlikely to be reliably associated with this outcome.

Diagnostics

Multicollinearity was evaluated by refitting Model 3 under a frequentist framework and calculating variance inflation factors (VIFs) for each predictor in the model. The VIF is calculated for each predictor by regressing it on the remaining predictors in the model and computing the multiple squared correlation coefficient (R^2) (Finch *et al.* 2014, p.9). The formula for the VIF is then:

$$VIF = \frac{R^2}{1 - R^2}$$

Values above 5 are conventionally treated as evidence of multicollinearity (Finch *et al.* 2014, p.9). In the present analysis, no VIF was greater than 2, making it unlikely that model estimates are distorted by correlations among the predictors.

Normality of residuals was inspected by calculating posterior means for the level 1 and 2 residuals and plotting their distributions using histograms (see Appendix 7E). The plots highlight that the normality assumption is undermined for each residual term. For example, similar to the patterns observed in Figure 7.1, the level 1 residuals have a strong positive skew. The random slopes for particular and general trust also exhibit skewed distributions. Although the random slopes for family trust do not demonstrate any pronounced skew, Appendix 7E shows there are 5 countries exhibiting unusually strong effect sizes –

[18] The decision was made to test stranger trust and outgroup trust separately to prevent multicollinearity from distorting estimates.

specifically, in Chile, Denmark, Finland, Lebanon and South Africa, the slope for family trust is below -0.7. While normality of residuals is often required for ensuring accuracy of standard errors and credible intervals – and thereby facilitates inference to the wider population – we should not be too concerned about these violations in the present analysis. As explained in Chapter 5, uncertainty estimates from regression models are often reliable even in the presence of non-normal residual distributions, especially as the sample size increases. Thus, credible intervals from Model 3 are unlikely to be greatly biased by non-normality of the residuals.

The assumption of homoscedastic residual variance was assessed by plotting the posterior means of the level 1 residuals against the predictors (see Appendix 7F). From these plots, there were signs of heteroscedasticity in relation to seven predictors: all three trust variables, church attendance, age, education level and marital status. For example, the residual variance appeared to decrease at lower levels of family and particular trust as well as decreasing at higher levels of general trust and age. These patterns are concerning as heteroscedasticity is known to bias uncertainty estimates regardless of sample size (Schmidt and Finan 2018), meaning the 95% credible intervals reported in Table 7.2 may be inaccurate.

Thus, to determine whether heteroscedasticity could be impacting credible intervals, two tests were conducted. First, following the guidance of Cleasby and Nakagawa (2011), attempts were made to model the residual variance as a function of the trust variables, church attendance, marital status, and education level[19]. In no case did this lead to different conclusions regarding any of the trust or control variables, suggesting that Model estimates are not compromised by heteroscedasticity. Second, a maximal model was fitted to the data, meaning random effects were included for all predictors. This model adjusts for the possibility that country effects create more variation in suicide approval at specific levels of the predictors, thereby augmenting uncertainty estimates (Snijders and Bosker 2012, pp.75-6; Bell *et al.* 2019, pp.1062-5). None of the trust effects were substantially altered in the maximal model (see Appendix 7G). Thus, it is unlikely that model estimates are drastically compromised by heteroscedasticity.

Functional form was assessed by calculating posterior means for the model fitted values and residuals and plotting them against one another (see Appendix 7H). A LOESS smoother was then applied to assess whether the mean of the residuals was approximately 0 across the range of fitted values. There was clear evidence of a functional form violation, with the mean of the residuals rising above 0 toward the lower and higher end of the fitted values. We therefore need to be cautious when drawing inferences from Model 3 as the coefficients reported in Table 7.2 and Appendix 7C are likely to be biased.

The poor functional form of Model 3 could suggest that some of the predictors share curvilinear associations with suicide approval or that important interaction effects have not been modelled (Schmidt and Finan 2018, p.149). Indeed, there was some evidence of curvilinear associations in Figures 7.2-3. Thus, to assess whether the inclusion of curvilinear associations would have provided a better representation of the data, Model 3 was refitted with squared terms for all ordinal and continuous predictors. The results showed that five

[19] *MCMCglmm* only provides functionality for modelling the residual variance with categorical variables, meaning a separate error variance is estimated for each category level. Thus, for variables with many unique values such as age, it becomes impractical to estimate separate error variances.

variables may be better modelled with curvilinear associations as evidenced by their statistically significant squared terms: general trust (β = 0.097, 95% CI = [0.059, 0.135]), self-expression values (β = 0.456, 95% CI = [0.434, 0.478]), church attendance (β = 0.009, 95% CI = [0.007, 0.011]), perceived control (β = -0.009, 95% CI = [-0.010, -0.007]) and number of children (β = 0.020, 95% CI = [0.015, 0.025]). Replotting residuals by fitted values indicated that these adjustments slightly improved functional form, although the mean of the residuals continued to drastically depart from 0 at the lower and higher end of the fitted values. Thus, it may be that interaction effects are also needed to adequately specify the model.

Lastly, it was noted in Chapter 5 that the suicide approval scale constitutes an ordinal variable, meaning it is technically inappropriate to apply methods that assume continuous data (Liddell and Kruschke 2018). Thus, to verify whether results would hold when using methods designed for ordinal data, a multilevel probit model was fitted to the suicide approval scale using the same explanatory variables as Model 3. Similar to polychoric correlations (see Chapter 5), the probit model assumes that responses to an observed ordinal variable are a function of an unobserved continuous variable that is normally distributed (Liddell and Kruschke 2018, p.330) – in this case, psychological levels of suicide approval. Fitting the probit model therefore involves locating the thresholds at which higher levels of the unobserved variable translate into higher scores on the observed ordinal variable.

In order to achieve good convergence of the MCMC sampler, it was necessary to make two modifications to the probit model to ease estimation. First, to reduce the number of effects to estimate, the trust effects were treated as being fixed across countries. Second, the suicide approval scale was collapsed from 10 categories to 4, thereby providing a smaller number of well-populated categories for estimating the thresholds. These categories were designated as:

No approval = 1
Low approval = 2-4
Medium approval = 5-7
High approval = 8-10

Fitting a multilevel probit model to the 4-category suicide approval item yielded virtually identical results to Model 3, giving some confirmation that Model 3 provides a valid basis for inference (see Appendix 7I).

Discussion

The purpose of this chapter was to learn how an individual's feelings of trust in various groups are associated with approving attitudes toward suicide. The analysis sought to understand how three types of trust may be related with suicide approval: trust in family, particular trust and general trust. To determine how these trust variables are associated with suicide approval, a series of Bayesian multilevel models were fitted to data from two waves of the WVS. Findings from the multilevel models indicated that all three types of trust were associated with approving attitudes toward suicide to varying degrees, although the direction and magnitude of these associations varied across countries. In closing this chapter, the implications of these findings for existing theory on suicide risk will be discussed.

Theoretical Implications

Family Trust

It was hypothesised at the outset that individuals reporting more trust in family would be less approving of suicide. This hypothesis was largely confirmed in Model 3, which indicated that the association between family trust and suicide approval was negative on average and across many of the countries in the sample. In making sense of these findings, we can appeal to various theoretical frameworks.

First, it could be argued that the negative association between family trust and suicide approval is consistent with a Durkheimian perspective on suicide. Thus, Durkheim (2002) argued that attachments to family provide the individual with goals outside themselves, thereby creating a sense of purpose in life and guarding against egoistic suicide. In turn, this interpretation is consistent with sociological studies that have found family attachments to be important for explaining suicide risk (Maimon and Kuhl 2008; Fincham *et al.* 2011).

Alternatively, we can conceptualise the effects of family trust using attachment theory. From an attachment perspective, heightened trust in family may form part of a secure attachment orientation as it presupposes a positive working model of family members (Bowlby 1980) – for example, it may indicate that the individual views family members as dependable and concerned with their personal welfare. Individuals who place more trust in family may therefore report lower levels of suicide approval as they are more likely to have received love and support from family members in the past and are therefore less inclined to experience emotional distress in their current relationships (Adam 1994; Fincham *et al.* 2011). This interpretation also coheres with some findings from the systematic review, which indicated that the style and quality of parenting an individual has received may influence their levels of suicide approval.

It could also be argued that the negative relationship between family trust and suicide approval is consistent with the IPT, which assigns a key role to thwarted belongingness in elevating suicide risk. According to Van Orden *et al.* (2010), the need to belong is thwarted when the individual feels lonely and lacks mutually supportive relationships. Both of these elements of thwarted belongingness seem to map on to trust in more intimate relationships, as discussed in Chapter 4. Thus, it was explained that trust in intimate relationships may form part of an emotional attachment (Lewis and Weigert 1985; Rothbard and Shaver 1994) that helps to lessen feelings of loneliness and signals the presence of an effective support network (Hardin 1993; Ray 2015; Benson *et al.* 2016). However, we should perhaps be more cautious of accepting this explanation, given the mixed evidence for an association between thwarted belongingness and suicide approval (see Chapter 3).

Finally, we can interpret the findings on family trust in light of network theories (Pescosolido and Georgianna 1989) and GST (Agnew 1992). These theories posit that social support may constitute one mechanism for protecting against suicide because it helps to sustain the individual's morale during times of crisis as well as providing them with practical guidance and resources for coping with setbacks. Thus, if family trust indicates that an effective channel of support is in place, it may reduce suicide approval by helping the individual to cope with personal crises.

Unfortunately, the analysis was not able to offer a more stringent test of competing theoretical accounts. For example, social support theorists have long noted that social relationships can intervene in suicide risk either by acting directly on the individual's psychological wellbeing or shielding them against the disastrous effects of stressors (Jung and Olson 2014; Mackin *et al.* 2017). The latter possibility implies that social relationships may only exhibit protective effects among those exposed to severe levels of stress. Thus, assuming the stress-buffering model is accurate, we would expect a statistically significant negative interaction between family trust and stress. Since the WVS lacks adequate measures of stress and strain, it was not possible to test for such interaction effects in the present analysis. This is a problem that could be explored through future research.

Particular Trust

The second hypothesis stated that individuals with higher levels of particular trust would be less approving of suicide. This hypothesis garnered mixed support from Model 3. On the one hand, the average association between particular trust and suicide approval was found to be negative. This finding is consistent with evidence from previous quantitative studies showing that trust in groups such as neighbours, school peers and friends is negatively associated with suicidal ideation (e.g., Langille *et al.* 2012; Noguchi *et al.* 2017; Hill *et al.* 2019). In turn, it appears to cohere with qualitative evidence showing that trust in peers may help to lower suicide risk by guarding against feelings of loneliness (Ozawa-de Silva 2008) and facilitating access to social support (Benson *et al.* 2016). Thus, similar to trust in family, it may be that particular trust protects against suicide by contributing to feelings of purpose in life (Durkheim 2002), secure attachments (Bowlby 1980), a sense of belongingness (Van Orden *et al.* 2010) or the provision of social support (Pescosolido and Georgianna 1989).

On the other hand, the association between particular trust and suicide approval was negligible on average and not reliably different from 0 across many countries. Furthermore, the sensitivity analyses indicated that this association was highly contingent on timeframe and sample size. These findings are perhaps consistent with studies showing that peer connections have less of an impact on recovery from mental health crises and suicide risk than ties to parents and spouses. Thus, Perry and Pescosolido (2015) provided evidence that parents and romantic partners are more likely to be enlisted for coping with mental health crises, suggesting that relationships with acquaintances and neighbours may play a smaller role in supporting the individual's mental health. Similarly, some studies have found that suicidal ideation is more strongly associated with attachments to parents rather than peers (de Jong 1992; Sheftall *et al.* 2013), although these findings are based on adolescent and student samples. Findings from Model 3 may therefore suggest that peer relationships have a weaker association with suicide risk among a broader range of groups.

Alternatively, the weaker effects of particular trust could speak to more granular network dynamics than could be captured with the available data. When reviewing network theories in Chapter 2, it was highlighted that the cultural content of social networks also needs to be considered to appreciate their influence on suicide risk. Some studies have indicated that close ties to peers may exacerbate suicide risk if they serve to spread ideas favourable to suicide (Mueller and Abrutyn 2016). Furthermore, it was explained that social support can reinforce negative emotions if individuals use interactions to engage in co-rumination (Boren 2013; Balsamo *et al.* 2015; Spendelow *et al.* 2017) – e.g., frequently discussing problems and

overanalysing their details. Thus, even if particular trust helps the individual to establish closer relationships with selected groups, it could also make them more receptive to any harmful norms or emotions contained within those relationships. As a result, the potential for particular trust to lower suicide approval through its effects on emotional bonding and social support may be dampened if it also exposes the individual to such factors.

This explanation may also offer some insight into why the association between particular trust and suicide approval was reliably positive in four countries; it may be that participants from these countries happened to have a higher number of relationships that exposed them to harmful norms or emotions. Indeed, there were few geographical or cultural similarities between counties where particular trust exhibited a positive association with suicide approval, suggesting these effects were not driven by country-level characteristics. Future research should therefore attempt to assess the cultural and emotional profile of individuals' social relationships when evaluating the effects of particular trust on suicide approval. This could help us to identify the circumstances under which particular trust contributes to higher levels of suicide approval and potentially aggravates suicide risk.

General Trust

In terms of the association between general trust and suicide approval, two competing hypotheses were advanced. Hypothesis 3 stated that individuals expressing higher levels of general trust would be more approving of suicide; conversely, hypothesis 4 stated higher levels of general trust would coincide with less approving attitudes. Results from Model 3 gave stronger support to hypothesis 3. Across countries, the average trend was for general trust to be positively associated with suicide approval. This global trend was also discernible across a moderate number of countries in the sample, suggesting it has some applicability in various contexts.

These findings are compatible with a modified Durkheimian perspective that understands general trust as part of a self-expression value orientation. As explained in Chapter 4, Stack and Kposowa (2011a; 2016a) built upon Inglehart and colleagues' modernisation theory in positing an association between self-expression values and suicide approval; as material security becomes more widespread, the collective loses its hold over the individual, giving them more freedom to build connections with diverse others and exposing them to novel practices and beliefs. General trust is thought to be one facet of this cultural shift, meaning it coincides with a looser network structure, heightened individualism and cultural tolerance. Together, these factors converge to promote a more approving attitude toward suicide.

Nonetheless, this explanation does not help us understand what features of general trust uniquely link it to suicide approval. Drawing on the social capital literature, it could be that general trust is more likely to capture social network dynamics. For example, if general trust coincides with more extensive social networks that include people from diverse backgrounds (Granovetter 1973; Newton 1997; Paxton 2007), it may bring the individual into direct contact with novel practices and beliefs or imply that they are comfortable with such diversity in their life. Thus, if self-expression values reflect a tolerant outlook in the abstract, general trust may indicate greater tolerance in practice.

It should be noted that a positive association between general trust and suicide approval conflicts with a stream of studies demonstrating that general trust has negative associations

with suicidal ideation (e.g., Economou *et al.* 2013; Yamamura 2015; Kim *et al.* 2017) and suicide rates (Helliwell 2007; Kelly *et al.* 2009; Okamoto *et al.* 2013). These discrepant findings may again serve as further justification for treating suicide approval as a distinct but related construct to suicidal ideation and death by suicide. In other words, it could be that general trust encourages tolerance for the act of suicide while simultaneously guarding against suicidal thoughts. More research is therefore needed to elucidate how general trust influences suicidal ideation and suicide attempts through its effects on suicide approval.

Alternatively, these contrary findings may reflect methodological differences between previous studies and the current analysis. Thus, prior research on suicidal ideation and suicide rates has only measured general trust in terms of whether the participant trusts 'most people'. In other words, these studies do not measure trust in a clearly specified group but gauge trust in whatever group is implicitly taken by the participant to represent most people. As explained in Chapter 1, such measures may conflate particular and general trust since respondents are more likely to view most people as including friends and family in certain contexts (Sturgis and Smith 2010; Delhey *et al.* 2011). It may therefore be that previous studies of general trust and suicide risk have unintentionally measured particular trust, leading them to record negative associations. As the current study used more targeted measures of general trust that are claimed to be more valid, it may have yielded different conclusions concerning the association between general trust and suicide approval.

Variation in Trust Effects

The last key finding from the analysis is that the above associations involving trust and suicide approval appear to vary across countries. As estimates from Model 3 made clear, this variation was more pronounced in the case of family and general trust than particular trust. While the mechanisms driving this variation could not be explored in this PhD, we can nevertheless draw upon existing theory to speculate on potential moderating factors.

Thus, in Chapter 2 it was explained that Baumeister and Leary (1995) viewed the need to belong as a feature of human biology whose expression varies by cultural context. In other words, even if a need for companionship and mutual support is fairly widespread, the intensity of this need and the manner in which it is fulfilled is likely to differ across time and place. The effect of family trust on suicide approval may therefore vary across countries due to cultural factors such as the value that is ascribed to family (Fukuyama 1995) or a tendency to define the self in terms of social relations (Ozawa-De Silva 2010). For instance, it was highlighted in Chapter 4 that a greater emphasis is placed on maintaining harmonious relationships in Japan, which may have unique consequences for feelings of belongingness and purpose in life (Ozawa-de Silva 2008). In line with this conjecture, the effects of family trust on suicide approval were slightly stronger in Japan (β = -0.432, 95% CI = [-0.659, -0.205]). Thus, future research could attempt to develop measures of the importance ascribed to family and social relationships, which could then be tested as moderating factors in the association between family trust and suicide approval.

Likewise, variation in the effects of general trust on suicide approval may be related to contextual factors such as levels of diversity in the wider population (Inglehart and Welzel 2005) and the prevalence of norms that discourage suicide (van Tubergen *et al.* 2005). Thus, in reviewing limitations with network theory in Chapter 2, it was highlighted that the strength of social ties may be less relevant to suicide risk than the frequency with which individuals

receives messages that urge against suicide. If social capital theory is correct and general trust helps the individual to forge connections with diverse groups, then general trust may have weaker effects on suicide approval in highly religious contexts where the disapproval of suicide is more unanimous. In other words, if general trust only links the individual to those who disapprove of suicide, it may be less likely to shift their own attitude toward approval. Model 3 provides some grounds for exploring this prediction as the effects of general trust were stronger in a number of countries that are less religious, such as Germany ($\beta = 0.463$, 95% CI = [0.351, 0.574]), Canada ($\beta = 0.35$, 95% CI = [0.215, 0.487]) and Singapore ($\beta = 0.355$, 95% CI = [0.229, 0.478]).

Thus, a key goal for future research is to develop a theoretical account of how the effects of different types of trust on suicide approval vary by cultural context and empirically test its propositions. This would allow for a more comprehensive understanding of how trust is related to suicide risk that remains sensitive to the unique situations of different groups.

Limitations

Measurement Validity

A potential limitation with the preceding analysis is that the instruments used to gauge key constructs lack validity. This includes the item used to measure suicide approval. It was explained in Chapter 5 that the WVS gauges suicide approval by asking participants to state how justifiable they view suicide on a scale from 1 (never) to 10 (always). While this question appears to have face validity, there is evidence to suggest that it may underestimate participants' levels of suicide approval (Remizova and Rudnev 2020) and that it may also tap into views of suicide as incomprehensible (Renberg and Jacobsson 2003) or stigmatizing attitudes (Batterham *et al.* 2013). As Remizova and Rudnev (2020) highlight, these issues may be connected to question phrasing, with "justified" carrying more negative connotations and possibly eliciting more condemning responses from participants.

These concerns around measurement validity are compounded by the fact that suicide approval could only be gauged using a single item. A key principle of psychometrics is that multiple items are required to accurately measure psychological constructs since responses to an item are shaped in part by its idiosyncratic features (Watkins 2018, pp.211-2). Thus, the use of multiple items helps to separate what is common among an individual's responses from what is peculiar to the item, allowing for a more precise measure of the construct under study. We should therefore be cautious in drawing firm conclusions from the above models as it is likely that participants' responses are capturing a mix of attitudes toward suicide, including incomprehensibility and stigma.

Future research should therefore attempt to utilise multi-item measures of suicide approval that have been validated through previous research. For example, the General Social Survey (GSS) includes four items on suicide approval, asking participants to indicate whether they would approve of suicide when faced with various hardships (e.g., dishonour, terminal illness, shame) (Tong and Phillips 2018). A similar approach is adopted in Eskin's Attitudes Toward Suicide Scale (Eskin 2004; Eskin *et al.* 2016), which has received some empirical support concerning its factor structure and internal reliability (Nader *et al.* 2012).

Associations from Models 2 and 3 can also be questioned on the grounds that they do not account for error in the measurement of particular and general trust. It will be recalled from the previous chapter that particular and general trust were previously analysed as latent variables that are imperfectly represented by the observed trust items. This implies there is a degree of uncertainty around how well participants' scores on the observed items capture their standing on the latent constructs. However, in the present analysis, particular and general trust scores were derived for each participant by summing their scores on the observed items. While this procedure has the advantage of easing interpretation of the particular and general trust variables, it implicitly assumes that we have actually observed participants' scores on these latent dimensions.

According to Marsh *et al.* (2014), structural equation modelling (SEM) is needed to address these problems as it allows the researcher to test for associations between latent variables while adjusting for uncertainty in the latent scores. As explained in Chapter 5, the computational demands of fitting Bayesian latent variable models to a multilevel dataset of over 180,000 observations made this approach unfeasible in the current analysis. It may therefore be prudent for future researchers utilising a Bayesian framework to test for latent associations between trust and suicide approval based on simple random samples from a single cultural context.

Omitted Variables

One variable that could have been relevant for explaining suicide approval is depression, given evidence that is implicated in suicidal ideation (Klonsky *et al.* 2016, p.312). While care has been taken to distinguish suicide approval from suicidal ideation, there is accumulating evidence to suggest that depression is also positively associated with suicide approval (Zhang and Sun 2014; Lund *et al.* 2016; Cwik *et al.* 2017; Gill *et al.* 2018; Kim *et al.* 2021). The studies that have explored these associations have their own limitations (e.g., cross-sectional, bivariate analyses, non-probabilistic samples), meaning it is too early to conclude that depression is a key factor for explaining suicide approval. Nonetheless, it would have been useful to control for depressive symptoms to at least account for this possibility.

Future research could therefore attempt to examine the relationship between suicide approval and different types of trust while controlling for depression. This would also allow for more targeted tests of the stress-buffering model. For example, in Agnew's (1998) GST, depression is highlighted as a negative emotional state that plays a key role in motivating suicidal thoughts and attitudes. Assuming that family and particular trust act as stress-buffers, we might expect them to lower suicide approval by neutralizing the harmful effects of depression.

Functional Form

Perhaps the most critical weakness of Model 3 is that its functional form is inappropriate. This may be partly because some of the associations between the predictors and suicide approval are not strictly linear. Thus, as Figures 7.2-3 highlighted, general trust, church attendance and self-expression values appeared to exhibit curvilinear associations with suicide approval. On the other hand, it may be that important interaction effects have been omitted. For instance, as noted above, it may be that certain types of trust only exhibit negative associations with suicide approval for those experiencing heightened levels of

distress. As a result of this misspecification, the coefficients reported in Table 7.2 and Appendix 7C are unlikely to accurately capture the expected associations between the predictors and suicide approval in the wider population. It may therefore be helpful for future researchers to explore the possibility of interaction effects and allow selected predictors (e.g., general trust) to share curvilinear associations with suicide approval.

Conclusion

Overall, the above analysis has shown that different types of trust are associated with suicide approval at the individual level. Individuals who reported higher levels of family trust and particular trust tended to express less approving attitudes toward suicide. This could mean that family trust and particular trust help to foster feelings of belongingness and purpose in life, undergird secure attachments or facilitate access to social support in times of crisis. Conversely, individuals who reported higher levels of general trust tended to express more approving attitudes toward suicide. This positive association could suggest that general trust reflects the presence of weaker ties that expose the individual to a variety of practices and beliefs, thereby increasing their tolerance for behaviours such as suicide. However, future research using more robust methods is needed to verify these interpretations and understand what factors cause these associations to vary across countries.

Chapter 8 – Concluding Thoughts

The research conducted over the course of this PhD has demonstrated that trust is a multidimensional construct that is related to suicide approval in complex ways, suggesting it may have a bearing on suicide risk. Having completed the empirical analysis, the purpose of this concluding chapter is to reflect on the key lessons and contributions of the PhD for the study of suicide, highlight areas where more research is needed, and consider the implications of findings for suicide prevention.

Key Lessons and Contributions

The Relevance of Trust Perceptions to Suicide Risk

The current project set out to understand how trust perceptions are associated with suicide risk using insights from sociological and psychological theory. To address this aim, measures of trust in various social groups were examined as predictors of suicide approval, a proxy measure of suicide risk that has been linked to a range of suicidal thoughts and behaviours. It was demonstrated that perceptions of trust in different groups are associated with suicide approval, although the direction and magnitude of these associations depend on the type of trust and the context in which it is expressed. The project has therefore offered provisional evidence to suggest that trust perceptions may have a bearing on suicide risk.

Based on these findings, the project lends support to existing sociological work that has linked suicide risk to subjective and qualitative features of social relationships, including family attachments (Maimon and Kuhl 2008) and romantic relationship quality (Still 2021). In turn, the project has added to our stock of knowledge on how subjective aspects of social relationships associate with suicide approval. As the systematic review demonstrated, previous research into suicide approval has considered certain relationship perceptions, such as importance of religion, subjective loneliness and perceived burdensomeness. However, many of these studies only examine bivariate associations and none have examined trust specifically. Thus, by studying trust perceptions and adjusting for relevant confounders (e.g., religiousness, self-expression values, life satisfaction), the project has contributed new information on the predictors of suicide approval while addressing some of the methodological limitations that characterise past research.

On a broader level, the project has helped to address criticisms that prior sociological work on suicide has tended to focus on structural factors to the neglect of subjective aspects of social relationship (Taylor 1982, pp.36-8; Abrutyn and Mueller 2016, p.60; Still 2021, p.134). Indeed, findings from the systematic review and the empirical analysis have highlighted that various types of relationship perceptions may be important for explaining suicide approval, including but not limited to trust. This underscores the importance of controlling for qualitative and subjective dimensions of social relationships in sociological analyses of suicide risk; such factors may contribute to the explanation of suicide risk above and beyond the standard controls for marital status, religious affiliation and employment. As Still (2021) highlights, this is because measuring the mere presence of social relationships does not capture the individual's experience of them, such as whether they are viewed as supportive, unimportant or constraining.

In testing the associations between trust perceptions and suicide approval, the project has also endeavoured to overcome a number of limitations with earlier analyses that have used trust to predict suicidal thoughts and behaviours. It was explained in Chapter 1 that many of these studies use problematic measures of particular and general trust that are either narrow in scope (e.g., only assessing trust in neighbours) or ambiguous in phrasing (e.g., inquiring about trust in 'most people'). In the case of particular trust, these measurement issues are compounded by the tendency for analyses to be conducted among specific age-groups and populations (e.g., school pupils, psychiatric patients), thereby limiting the generalisability of results. By taking advantage of the WVS and recent additions to its catalogue of trust measures, the current project has been able to develop more valid measures of trust and test their associations with an indicator of suicide risk among a representative sample of people from around the world. Findings from the current project may therefore offer a more reliable picture of how different types of trust associate with suicide risk in a global context.

The Type of Relationship Matters

While the project has highlighted that trust perceptions are associated with suicide approval, it has also drawn attention to the complexity of these associations. In other words, different types of trust do not influence suicide approval in a uniform way; rather, their effects vary depending on the group trust is directed toward, such as family, neighbours and personal acquaintances, or less familiar groups. This represents a novel finding as previous studies of suicidal thoughts and behaviours have typically only examined a single type of trust at a time, thereby obscuring whether certain trust types play a larger role in shaping these outcomes.

More specifically, the current project has evidenced that trust in family may afford greater protection against suicide than particular trust, operationalised as trust in neighbours and personal acquaintances. While both types of trust were found to be negatively associated with suicide approval on average, these associations were stronger and more reliable across countries in the case of family trust. The unique role of family trust in lowering suicide risk has largely been overlooked in previous studies of suicidal thoughts and behaviours due to their focus on trust in neighbours and trust in 'most people'. Furthermore, where studies have controlled for trust in family, its effects have not been disentangled from trust in other groups (Hill *et al.* 2019). The current project therefore reaffirms and extends earlier work showing that family connections are important to suicide risk (Maimon and Kuhl 2008; Fincham *et al.* 2011; Sheftall *et al.* 2013; Barzilay *et al.* 2019).

On the other hand, the current project has challenged the notion that trust in more distant and unfamiliar groups is necessarily protective against suicide. As detailed in Chapter 4, previous studies have largely indicated that general trust helps to reduce the odds of suicidal thoughts and behaviours. The only indication that general trust has a contrary influence on suicide risk was based on studies of self-expression values and suicide approval; however, none of these studies attempted to isolate the effects of general trust from self-expression values more broadly, making it unclear whether general trust is also positively associated with this outcome. Findings from the current project provide more direct confirmation for this possibility by demonstrating that general trust is positively associated with suicide approval on average, even after accounting for the influence of self-expression values. The current project therefore adds to work that cautions against treating all social relationships as protective against suicide (Bearman and Moody 2004; Abrutyn and Mueller 2016; Still 2021)

as well as more recent efforts to explore the "dark side" of social capital for health and wellbeing (Campos-Matos *et al.* 2016).

In terms of theoretical implications, these findings may also give us reason to reassess some of the core premises behind existing theories of suicide. For example, the IPT does not distinguish between different types of relationships in its conceptualisation of thwarted belongingness and perceived burdensomeness; rather, these cognitive-affective states are thought to map on to general psychological needs that theoretically can be satisfied in any relationship, be this with family members, peers or others (Van Orden *et al.* 2010; Hagan *et al.* 2016). This may be true theoretically, but practically it seems that specific types of relationships may work better in fulfilling these needs, at least on average. Thus, if we are to develop a comprehensive theory of how social relationships are implicated in suicide risk, this needs to take account of how certain relationships may do more good or harm for individuals.

As was hinted in Chapter 7, contextual factors are likely to play some role in shaping whether a given kind of relationship produces beneficial or harmful effects. One means of elucidating how different types of relationships influence suicide risk may therefore be to identify factors that explain the variation in trust effects across countries. Some contextual factors that could explain this variation were noted toward the end of Chapter 7. For instance, building on the work of Ozawa-de Silva (2008; 2010), it may be that feelings of belongingness have more pronounced effects on suicide risk in contexts where selfhood is primarily defined in terms of participation in the group. Consequently, family and particular trust may exhibit stronger negative associations with suicide approval in such contexts. On the other hand, it was observed that family trust was positively associated with suicide approval Nigeria, a highly religious country that endorses less individualistic/tolerant values and criminalises suicide. This finding could indicate that levels of suicide stigma in the wider society have a bearing on the association between family trust and suicide approval.

Limits and Possibilities of Existing Theory

A more modest contribution of the current project is that it has attempted to combine insights from sociological and psychological theories of suicide, thereby helping to bridge the gaps between disciplines. This is not the first sociological analysis of suicide risk to draw upon psychological theory and it would certainly be wrong to claim that previous researchers have viewed the two as incompatible (Fincham *et al.* 2011, p.35; Abrutyn and Mueller 2021). Even Durkheim did not accept this position, despite his eagerness to carve out a unique space for sociology in the study of suicide (Taylor 1982, pp.17-8). Nonetheless, sociologists have traditionally been wary of incorporating psychological theory into their understanding of suicide, in part because of their legitimate concerns with the positivist orientation of mainstream suicidology and its tendency to individualise human behaviour (Wray *et al.* 2011, p.511; Abrutyn and Mueller 2021). In bringing together sociological and psychological theory, the current project has therefore gone some way to addressing the recommendations of Wray *et al.* (2011) that sociologists engage with psychology in their analyses of suicide.

While the project has highlighted a number of promising avenues for integrating sociological and psychological theory, it has also shown that existing theory does not go far enough in helping us to understand trust and its connections to suicide risk. As noted in Chapter 7,

frameworks such as the IPT, attachment theory and GST can help us to understand why family and particular trust might lower suicide approval. However, none of these theories adequately equip us to interpret the positive association between general trust and suicide approval. By contrast, a Durkheimian perspective is perhaps better able to account for these patterns of associations. As discussed in Chapters 2 and 4, particular and general trust have been treated as facets of mechanical and organic solidarity, respectively, meaning we would expect them to exhibit contrary associations with suicide approval. Yet, even a Durkheimian framework is not entirely adequate as it cannot explain why particular and general trust are positively associated with one another, even as they produce different effects on suicide approval.

Thus, while each of the included theories can account for a portion of the empirical findings, none can help us to make sense of the whole picture. This underscores the need to refine and integrate ideas from different theoretical traditions; it is only by doing so that we can produce a more comprehensive account of trust perceptions and suicide risk that is consistent with all the evidence.

Attachment theory seems to offer a promising starting point for addressing these issues. As noted in Chapters 4 and 6, attachment theory can help us to understand the unique emphasis individuals place on family trust and its positive correlations with trust in other groups. Some researchers have also provided evidence that attachment orientations generalise to strangers (Feeney *et al.* 2008; Izhaki-Costi and Schul 2011). Interestingly, Izhaki-Costi and Schul (2011, p.323) argue that insecure attachment orientations may influence interactions with strangers by leading us to perceive strangers as more different from ourselves, conceal personal information from them and feel indifference towards them. These mechanisms appear to overlap with some of the defining features of particular trust (e.g., perceived similarity, sharing personal information, feelings of sympathy and concern) that were discussed in Chapter 4. By further exploring these mechanisms and complementing them with recent modifications to Durkheimian theory, researchers may be able to develop a framework for reconciling, first, the linkages between family trust, particular trust and general trust, and second, the varying effects of these trust types on suicide approval.

Missing Pieces of the Puzzle

It has been argued that the project has made contributions to the sociological and psychological literature on suicide. Nonetheless, findings from the empirical analyses need to be interpreted in relation to a number of limitations with the project design and scope. This includes methodological limitations that also apply to prior studies of trust and suicide risk, such as the inability to draw causal inferences due to the cross-sectional design of the analysis. However, rather than highlighting drawbacks with how the analysis was implemented, the purpose of this section is to reflect more broadly on key issues that the project has been unable to address and that could be explored through future research. Three issues seem to be especially pertinent in this regard: 1) the role of social structures; 2) the problems of using suicide approval as proxy for suicide risk; and 3) the use of quantitative methods for studying suicide.

The Role of Social Structures

On the one hand, the project has drawn heavily on sociological theory for conceptualising trust and its associations with suicide approval. This has involved examining how perceptions of trust are shaped through concrete interactions with others and may be affected by societal levels of cultural uniformity and material insecurity. On the other hand, the analysis has been framed at the level of individuals, examining how a person's feelings of trust in key social groups shape their attitudes toward suicide. Indeed, cultural context has only entered into the analysis implicitly by allowing the associations between different types of trust and suicide approval to vary across countries. To this extent, the analysis is subject to similar criticisms that sociologists (Abrutyn and Mueller 2021) and critical suicidologists (Hjelmeland and Knizek 2020) have levied against the IPT – the role of social structures, while not dismissed entirely, has been downplayed.

By focusing on individual perceptions of trust in the current project, the intention has not been to suggest that social structures are irrelevant to the explanation of suicide; rather, this decision has been guided by concerns that sociological analyses of suicide have traditionally tended in the opposite direction, prioritising structural aspects of social relationships over subjective factors. Nonetheless, it is acknowledged that more work is needed to understand how social structures intervene in the individual-level associations between trust perceptions and suicide risk. This would not only grant more recognition to structural factors in the explanation of suicide; it could help us to understand why the effects of trust on suicide approval differ across countries, as demonstrated in Chapter 7.

One factor that may be relevant in this regard is economic hardship. While modernisation theory highlights material insecurity as an important obstacle to the formation of general trust, less is known about what consequences this may have for trust in familiar groups and, by extension, suicide risk. In turn, examining how economic hardship impacts trust and suicide risk seems especially important given that, as highlighted in Chapter 4, Durkheimian approaches make the questionable assumption that poverty affords protection against suicide. From a review of the literature on economic recession and suicide, Haw *et al.* (2014) observe that economic setbacks such as unemployment and increased debt creates additional stress within families, potentially leading to more conflictual relationships between family members. It is possible that such economic setbacks may also undermine trust in family, thereby increasing risk for suicide.

Qualitative research further indicates that economic hardship may have unique consequences for trust relations. For example, Ray (2015) attempted to learn how youth living in poverty utilise exchange networks to access crucial resources (e.g., food, job opportunities), conducting three years of ethnography in a North-eastern city of the USA. A key finding from her research was that material hardship compelled youth into sharing resources with kin to ensure their mutual survival, meaning the exchanging of favours was often perceived as obligatory rather than a voluntary expression of love and concern (Ray 2015, pp.355-6). Thus, although the youth believed they could turn to their kin for support, they did not claim to fully trust their kin as they believed this support was insincere.

Economic hardship therefore seems to provide a suitable starting point for integrating structural factors into our understanding of relationship perceptions and suicide risk. Furthermore, existing survey data provides some avenues for exploring these issues. For

instance, waves 6 and 7 of the WVS include questions on access to food, medicine and money for a subset of countries. Researchers could include statistical interactions using these items to understand how economic hardship moderates the associations between different types of trust and suicide approval. Alternatively, the Scottish Health Survey (SHS) includes questions on trust in neighbours and suicidal ideation. By merging the SHS with area-level data on multiple deprivation, multilevel modelling could be utilised to examine how trust in neighbours relates to suicidal ideation in more and less deprived areas of Scotland.

Suicide Approval as a Proxy for Suicide Risk

A key assumption underpinning the project is that suicide approval constitutes a valid indicator of suicide risk. Even if readers are willing to accept findings from the analysis, they may be more reluctant in using them to draw conclusions about an individual's risk for suicide. Part of the issue in using suicide approval as a proxy for suicide risk is that the relationship between the two appears to be complex. On the one hand, theories such as GST argue that approving attitudes toward suicide develop in response to the same stressors and negative emotions that underlie suicidal ideation, suggesting the two share similar predictors. It is perhaps for such reasons that some psychiatrists have floated the idea of treating suicide approval as an implicit measure of suicidality, at least among certain populations (Galynker *et al.* 2015). In turn, evidence that key risk factors for suicide – e.g., depression and perceived burdensomeness – also correlate with higher levels of suicide approval gives some credibility to these accounts.

On the other hand, it has also been shown that some theories view suicide approval as being shaped through distinct processes to suicidal ideation. On this basis, it is plausible that some factors may increase suicide approval while having no direct effect on, or even helping to reduce, suicidal ideation. Thus, Eskin (2004, p.537) argues that suicide approval only increases the chances an individual will consider suicide when they are confronted with hardships. In other words, suicide approval is simply a moderator in the association between suicidal ideation and life stressors. This means that suicide approval is implicated in suicide but is itself explained by separate factors, such as exposure to religious prohibitions against suicide (Eskin *et al.* 2019) and individualistic values (Eskin *et al.* 2020). Consistent with this perspective, it was observed in Chapter 7 that one of the strongest predictors of suicide approval was self-expression values.

Thus, although the project has demonstrated that trust perceptions are connected with suicide approval, there is ambiguity in what these associations can tell us about suicide risk –do trust perceptions exert similar effects on suicidal ideation or do they only influence it indirectly through their effects on approval? To address this question, additional research is needed into how perceptions of trust associate with more established measures of suicide risk, such as suicidal ideation and suicide attempts. Unfortunately, available surveys do not provide many opportunities for addressing these questions. For example, there are a number surveys containing information on suicidal ideation and trust, including the Adult Psychiatric Morbidity Survey (APMS) and the SHS. However, the measures of trust included in these surveys repeat many of the limitations that have been noted for prior studies. First, they are primarily concerned with trust in ambiguous groups such as 'most people' or 'people around here'. Second, where they do include questions on trust in clearly defined groups, these are usually restricted to trust in neighbours.

If we are to properly assess how expressions of trust in different groups are linked to suicidal thoughts and behaviours, it will therefore be necessary to collect primary data. Ideally, this data would include measures of suicide approval and key theoretical constructs (e.g., perceived burdensomeness, feelings of purpose in life, social support) to disentangle the separate pathways linking trust to suicidal ideation.

Moving Beyond Quantitative Methods

The final point that warrants discussion is the use of quantitative methods for studying suicide risk in the current project. In some ways, it would have been possible to phrase this as a contribution to the sociological literature. A number of commentators have noted that, at least in the UK, sociologists have taken a largely critical stance toward quantitative methods (Fincham *et al.* 2011, pp.40-1), with sociology providing less training in statistics and publishing fewer quantitative articles compared to other disciplines (Payne *et al.* 2004; Byrne 2012, pp.13-4). On this basis, Payne *et al.* (2004, pp.161-2) have urged that "there should be more quantitative research" to prevent "sociology locking itself out of wide areas of research problems…". The current project can therefore be said to have helped in addressing the lack of quantitative analyses in UK sociology.

However, the sociological literature on suicide is somewhat of an anomaly in this regard, having traditionally relied on quantitative methods (see Stack 2000a; 2000b) and continuing to favour this approach (e.g., Maimon and Kuhl 2008; Stack and Laubepin 2019; Kposowa *et al.* 2020). Quantitative approaches to suicide have faced criticism for oversimplifying the complex circumstances and motivations that underlie suicidal behaviours by reducing this complexity to abstract laws that are invariant across time and space (Chandler and Wright 2023, p.1039). While the current project has endeavoured to apply quantitative methods in a manner that avoids presupposing universal laws and is open to contextual variation – e.g., using Bayesian methods, allowing trust effects to vary across countries – it has nevertheless treaded familiar ground in adopting a quantitative approach to studying suicide risk.

These concerns may be especially pronounced for the current project given that suicide approval was employed as a proxy for suicide risk. As findings from the systematic review highlighted, even academic understandings of suicide approval exhibit considerable variation; this includes notions of suicide as a right, an act that is prohibited by religious doctrine, and a justifiable response to specific circumstances (which is to say nothing on how individuals may view some circumstances as justifying suicide more than others). One can only wonder how much more complex these attitudes become in everyday life when they are mixed in with cultural norms and the niceties of personal experience.

Indeed, cultural script theory highlights that social constructions of gender and ethnicity are heavily implicated in suicide attitudes (Scourfield *et al.* 2007; Canetto 2008; Canetto 2015). How might an absence of trust interact with such social constructions in shaping attitudes toward suicide? For example, Scourfield and Evans (2015, p.381) observe that men may be less likely to reach out for support when confronted with crises as "dominant discourses of masculinity suggest that the admission of distress, loss, and grief can signal weakness and be seen as an expression of femininity". Could such discourses also limit men's opportunities to build trust by discouraging them from relying on others, thereby making suicide a preferable option in the face of hardships? Exploring these issues would seem to be especially important

as the role of relationships in male suicide has recently be highlighted as a priority area for future research (Bennett *et al.* 2024).

In order to address such questions, qualitative research is needed. As Abrutyn and Mueller (2021, p.525) point out, "Qualitative methods can help us understand why two variables are correlated…" as well as "generating new theoretical insights, in part by illuminating cases of suicides that do not fit current theories". In turn, qualitative methods have already been employed with great effect to shed light on how notions of gender and race feed into suicide (Early and Akers 1993; Cleary 2012; Oliffe *et al.* 2012; Scourfield *et al.* 2012) and to better understand the mechanisms linking trust to suicide (Ozawa-de Silva 2008; Benson *et al.* 2016). Indeed, at least one qualitative study has attempted to explore how masculine norms are implicated in suicide by influencing men's willingness to trust others (Cleary 2005, pp.171-2). Future researchers could therefore utilise qualitative methods to develop a richer understanding of how trust perceptions influence suicide risk that more fully acknowledges their complex linkages with gender and ethnicity.

Implications for Suicide Prevention

Having discussed the main contributions of the PhD and key issues that require further attention, it will be helpful to indicate how findings might inform suicide prevention efforts. Of course, we need to exercise caution in this matter given the global scope of the data analysis. Indeed, a key finding from Chapter 7 is that the effects of trust on suicide approval vary across countries, with certain types of trust potentially doing more harm than good in certain contexts. It is therefore not possible or desirable to make recommendations that are universally applicable. Rather, recommendations can only be made on a country-by-country basis with an awareness of the situational factors that characterise each context.

In light of these concerns, the UK will be used as an illustrative example of how findings could aid suicide prevention. The UK is selected as it is the context that is most familiar to the author and highlights some of the complexities surrounding trust and suicide approval. To contextualise the discussion, Table 8.1 shows how each trust variable is associated with suicide approval for the UK. It can be seen that only family trust and particular trust are reliably associated with suicide approval at the 95% level. Therefore, these two types of trust will form the focus of the discussion.

Table 8.1: Associations between Trust and Suicide Approval for the UK

Parameter	**Estimate**	**95% CI**
Family Trust	-0.243	[-0.467, -0.021]
Particular Trust	0.183	[0.001, 0.371]
General Trust	0.116	[-0.063, 0.292]

Notes: Estimates taken from Model 3 in Chapter 7

As family trust is negatively associated with suicide approval in the UK, clinicians could attempt to reduce suicide risk by helping patients to develop trust in family. In making this recommendation, it is not being suggested that the absence of family trust be seen as a

'cognitive distortion' that requires modification regardless of the individual's circumstances. As Lewis and Weigert (1985, p.968) insist, "trust must be conceived as a property of collective units (ongoing dyads, groups, and collectivities), not of isolated individuals". Furthermore, rational choice and attachment theories make clear that distrust may be founded in real experiences of abuse, neglect or harassment from others, including family. Thus, before attempting to act on family trust, clinicians should first inquire into the patient's history of experiences with family to determine whether this could pose any risks.

Instead of treating changes in cognition as the end goal, what is being suggested is that clinicians help to bring about the conditions where family trust becomes possible and beneficial for individuals. In other words, the goal should be to support individuals in forging meaningful connections with family that allow for trust. One option for realising this might be to incorporate an awareness of family trust into therapies that are primarily concerned with social relationships, such as Interpersonal Therapy. According to Lipsitz and Markowitz (2013, pp.1135-6), Interpersonal Therapy attempts to treat mental health conditions by resolving a key relationship crisis (e.g., role disputes, interpersonal deficits, role transitions) that is agreed between patient and therapist. While Interpersonal Therapy has typically been used to treat conditions such as depression, eating disorders and social anxiety (Lipsitz and Markowitz 2013, p.1135), there is some evidence that it may also help to alleviate suicidal thoughts (Van Orden *et al.* 2012; van Bentum *et al.* 2021). In turn, Interpersonal Therapy is listed as one of the talking therapies available through the National Health Service (NHS 2022), meaning there are already procedures in place for delivering this treatment in the UK.

It may prove useful for therapists adopting an interpersonal approach to remain attentive to trust perceptions and act on these where appropriate. For example, the therapist could encourage the patient to question their assumptions about viewing family members as untrustworthy and help them to identify reliable sources of support in the event of a mental health crisis. This could enable the patient to gradually take more risks in trusting family members, thereby allowing them to build trust organically through practical experience. Furthermore, the process of conducting Interpersonal Therapy may provide the patient with opportunities to gain comfort in trusting others. According to Markowitz *et al.* (2019, p.97), therapeutic interventions such as Interpersonal Therapy depend on epistemic trust, defined as the patient's belief in the competence of the therapist and willingness to accept their guidance. By helping the patient to feel understood and providing them with relevant advice for addressing their concerns, the therapist establishes the conditions for epistemic trust and motivates the patient to engage with their treatment (Markowitz *et al.* 2019). It may be worth considering whether the experience of developing trust in the therapist can be used as a framework for helping patients to build trusting relationships with family members.

It should be emphasised that the above suggestions apply to family trust. As can be seen from Table 8.1, particular trust exhibits a contrary association with suicide approval in the UK – higher levels of particular trust coincide with a more approving attitude toward suicide. It was noted in Chapter 7 that this discrepancy does not seem to be a product of the UK cultural context. First, inspection of countries where particular trust is positively related to suicide approval did not point toward any common cultural or geographical characteristics. Second, among other English-speaking countries that share similarities with the UK (e.g., Australia, Canada, New Zealand, the USA), the associations between particular trust and suicide approval either do not plausibly differ from 0 or tend toward negative (see Appendix

7C). It is therefore possible that the positive association between particular trust and suicide approval is linked to social network dynamics at the individual-level, such as co-rumination or exposure to ideas that condone suicide.

Based on these observations, a further recommendation that can be made in the UK context is for clinicians to exercise caution in targeting particular trust as it could introduce additional risks for suicide. It may be prudent for clinicians to review the nature of patients' exchanges with groups such as peers and neighbours to ascertain whether these could be exposing patients to harmful emotions or norms. This could create additional opportunities for clinicians to intervene in preventing suicide, such as encouraging patients to question problematic norms that are learned from peers.

Conclusion

In sum, this PhD has contributed to our understanding of how trust perceptions are implicated in suicide risk through an analysis of suicide approval. It has demonstrated that the role of trust in shaping suicide approval varies by the type of relationship in which it is invested, with certain kinds of trust possibly offering more protection against suicide than others. Furthermore, it has highlighted that existing theory is not fully equipped to interpret these patterns, meaning more work is needed to integrate different ideas into a comprehensive framework that can account for the observed evidence. To build upon findings from the current project, it has been suggested that researchers examine how aspects of social structure impinge upon trust perceptions and suicide risk. From a quantitative perspective, this should involve the use of more established measures of suicide risk, namely suicidal ideation and suicide attempts. Alternatively, qualitative analyses could be utilised to shed light on how cultural norms are implicated in trust dynamics and their consequences for suicide.

Appendices

Appendix 3A – Search Terms

Platform	*Databases*	*Search Terms*
Embase	• Embase 1947-Present, updated daily	(suicide adj2 attitude*) or (suicide adj2 approv*) or (suicide adj2 accept*) or (suicide adj2 belief*) or (suicide adj2 opinion) or (suicide adj2 condemn*) or (suicide and "cultural scripts") or (suicide and "moral objections") [Searched in: All Fields (af)]
EBSCO	• APA PsychINFO • CINAHL • Medline • Psychology and Behavioural Science Collection • SocINDEX	(suicide N2 accept*) OR (suicide N2 approv*) OR (suicide N2 attitude*) OR (suicide N2 opinion*) OR (suicide N2 belief*) OR (suicide N2 condemn*) OR (“cultural scripts” AND suicide) OR (“moral objections” AND suicide) [Searched in: All Text (TX)]
Web of Science	• WoS Core Collection • Data Citation Index	(suicide NEAR/2 accept*) OR (suicide NEAR/2 approv*) OR (suicide NEAR/2 attitude*) OR (suicide NEAR/2 opinion*) OR (suicide NEAR/2 belief*) OR (suicide NEAR/2 condemn*) OR (“cultural scripts” AND suicide) OR (“moral objections” AND suicide) [Search in: Topic, Title, Abstract, Author Keywords, Keyword Plus, Web of Science Categories]

Appendix 3B – Study Table

No.	*Study*	*Context*	*Aims*	*Sample*	*Design*	*Outcome(s)*	*Exposure(s)*	*Results*
1	Hodwitz and Frey (2016)	Cross-national	1. Determine whether periods of large social change contribute to increases in the suicide rate 2. Assess the association between economic indicators (e.g., employment status) and suicide attitudes	Sampled group: General population of adults aged 18+ across 27 European countries N = 36620 • Age: not reported • Sex: women = 55.7% men = 44.3% • Ethnicity: not reported	Cross-sectional	SJI – 10-point item on justifiability of suicide	Marital status Employment status Importance of work Importance of religion	Compared to the unemployed, the employed were lower in suicide justification (b = -0.269, p < 0.001) Significant interaction between employment status and sex (b = -0.101, p < 0.05), such that employed women were lower in suicide justification than employed men. Compared to the single, the married (b = -0.409, p < 0.001) and divorced (b = -0.175, p < 0.001) were lower in suicide justification No significant interactions between sex and married (b = -0.215, p N.S.) or divorced status (b = -0.141, , p = N.S.) Importance of work negatively associated with suicide justification (b = -0.089, p < 0.001) Significant interaction between importance of work and sex (b = 0.073, p < 0.05), such that work importance had stronger effects among men than women Importance of religion negatively associated with suicide justification (b = -0.427, p < 0.001) No significant interaction between importance of religion and gender (b = 0.013, p = N.S.)
2	Siewierska and Chodkiewicz (2022)	Poland	Analyse the psychometric properties of the Polish version of the RFLI	Sampled group: Non-clinical groups N = 431 • Age: M = 33.0 SD = 11.33	Cross-sectional	RFLI: Moral Objections– gauges religious and moral reasons for rejecting suicide	Marital status Parental status	No significant differences in moral objections by marital status. Compared to the childless, parents were higher in moral objections (t = 2.402, p < 0.05)

				• Sex: women = 54.8% men = 45.2% • Ethnicity: not reported				
3	Bock *et al.* (2019)	USA	1. Examine how honour-ideology is associated with suicide risk 2. Examine the role of ageism in shaping suicide risk	Sampled group: Adult men living in the USA N = 201 • Age: M = 56.45 SD = 8.35 • Sex: men = 100% • Ethnicity: White/European American = 83.1% Other = 16.9%	Cross-sectional	ATTS: Permissiveness – gauges the acceptability of suicide in response to physical illness and views of suicide as a right	Perceived burdensomeness subscale of INQ Thwarted belongingness subscale of INQ	Perceived burdensomeness positively correlated with suicide permissiveness ($r = 0.22$, $p < 0.01$) Thwarted belongingness negatively correlated with suicide permissiveness ($r = -0.18$, $p < 0.05$)
4	Choi *et al.* (2020)	South Korea	Examine whether perceived parenting style is associated with approving and understanding attitudes toward suicide	Sampled group: middle school students N = 1071 • Age: not reported • Sex: women = 51.1% men = 48.9% • Ethnicity: not reported	Cross-sectional	ATTS: Suicide as a Right – gauges the acceptability of suicide in response to physical illness and views of suicide as a right ATTS: Resignation– gauges views of suicide as a solution and a relief	Parental Authority Questionnaire Family type Religion	Significant differences in right to suicide attitudes by parenting style ($p < 0.001$); students with democratic parents were lower in right to suicide attitudes compared to students with permissive ($p < 0.05$) or authoritarian ($p < 0.05$) parents. After adjusting for confounders, only the difference between democratic and authoritarian parenting styles remained statistically significant ($p < 0.05$). Significant differences in resignation attitudes by parenting style ($p < 0.001$); students with democratic parents were lower in resignation attitudes compared to students with permissive ($p < 0.05$) or authoritarian ($p < 0.05$) parents. After adjusting for confounders, only the difference between democratic and authoritarian parenting styles remained statistically significant ($p < 0.05$). No results reported for family type No results reported for religion
5	Moraes *et al.* (2016)	Brazil	Investigate attitudes and	Sampled group: Nursing undergraduates	Cross-sectional	SBAQ: Right to Die – gauges	Exposure to someone who attempted suicide	No differences in right to die attitudes by exposure status ($p = 0.51$)

			associated factors related to suicide among nursing undergraduates.	N = 244 • Age: 19-20 = 31.6% 21-22 = 42.2% 23-24 = 12.7% ≥ 25 = 7.8% Missing = 5.7% • Sex: women = 86.5% men = 13.5% • Ethnicity: not reported		religious reasons for rejecting suicide and views of suicide as a right		
6	Vedana and Zanetti (2019)	Brazil	Investigate attitudes related to suicidal behaviour, and associated factors, among undergraduate students in the last year of the nursing school.	Sampled group: Final year nursing students N = 111 • Age: M = 22.6 Range = 20-39 • Sex: women = 86.5% men = 13.5% • Ethnicity: not reported	Cross-sectional	SBAQ: Right to Die – gauges religious reasons for rejecting suicide and views of suicide as a right	Exposure to someone who attempted suicide	No significant differences in right to die attitudes by exposure status (p = 0.890)
7	Poreddi *et al.* (2021)	India	Evaluate nursing students' attitudes towards suicide and their role in suicide prevention	Sampled group: Nursing students N = 223 • Age: ≤20 = 55.2% ≥ 21: 44.8% • Sex: women = 89.7% men = 10.3% • Ethnicity: not reported	Cross-sectional	Suicide Attitude Questionnaire: Acceptability – gauges views of suicide as an acceptable way to end an incurable illness, a right and unacceptable in young people	Religious affiliation Religious activities Family history of suicide	No significant differences in acceptability by religious affiliation (t = 0.91, p = 0.36) No significant differences in acceptability by religious activities (F = 0.26, p = 0.85) No significant differences in acceptability by family history of suicide (t = 1.42, p =0.16)
8	Norheim *et al.* (2013)	Norway	1. Explore the range of attitudes toward suicide among mental health professionals in Child and Adolescent Psychiatry (CAP) and the District Psychiatric Centre (DPC)	Sampled group: Mental health professionals working in outpatient units N = 229 • Age: 30 = 7%	Cross-sectional	ATTS: Suicide as Acceptable – gauges the acceptability of suicide in response to physical illness	Religious affiliation Experience of a patient suicide Experience of a patient suicide attempt	Compared to Christians, mental health professionals reporting no religion viewed suicide as more acceptable (p < 0.001). Stratified analyses indicated that the effect of religious affiliation was significant for professionals working in District Psychiatric Centres (p < 0.001), but not for Child and Adolescent Psychiatry (p = 0.589).

			outpatient units in Oslo, Norway 2.Determine whether attitudes very by gender, profession, age or religion 3. Determine whether experience, competence and understanding of suicidal behaviour vary by work site or profession	31–40 = 35% 41–50 = 23% 50 = 36% • Sex: women = 65% men = 35% • Ethnicity: not reported		and views of suicide as a right		Experience of a patient suicide not tested Experience of a patient suicide attempt not tested
9	Murphy *et al.* (2017)	Canada	Determine attitudes toward suicide among Canadian pharmacists	Sampled group: Canadian pharmacists N = 149 • Age: M = 43 SD = 12 • Sex: women = 73% men = 27% • Ethnicity: not reported	Cross-sectional	ATTS: Permissiveness–gauges the acceptability of suicide in response to physical illness and views of suicide as a right	Knowledge of suicide death/attempt of someone close to participant	No significant differences in permissiveness by exposure status (p = 0.24)
10	Stack and Kposowa (2016)	Cross-national	1. Examine whether micro-level self-expressionism is associated with suicide acceptability 2. Examine whether macro-level self-expressionism is associated with suicide acceptability 3. Examine whether there is an interaction between micro- and macro-level self-expressionism is predicting suicide acceptability	Sampled group: general population of adults aged 18+ across 56 countries N = 53275 • Age: M = 42.256 SD = 16.193 • Sex: women = 52.3% men = 47.7% • Ethnicity: not reported	Cross-sectional	SJI – 10-point item on justifiability of suicide	Individual level • Marital status • Frequency of church attendance • Religious affiliation • Number of children Country level • Self-expression values • Culture zone	Married were lower in suicide acceptability than the unmarried (b = -0.058, p < 0.000) Higher church attendance negatively associated with suicide acceptability (b = -0.026, p < 0.000) Compared to the unaffiliated, Protestants (b = - 0.077, p < 0.000), Muslims (b = - 0.112, p < 0.000) and those affiliated with other religions (b = -0.036, p = 0.0177) were lower in suicide acceptability; Catholics (b = -0.007, p = 0.4758) and Orthodox Christians (b = -0.004 p = 0.8093) did not significantly differ; those affiliated with unknown religions (b = 0.124, p < 0.000) were higher in acceptability. Number of children not associated with suicide acceptability (b =-0.004, p = 0.0516)

								Country-level self-expressionism not associated with acceptability (b = 0.133, p = 0.0768) Significant interaction between country-level self-expressionism and individual-level self-expressionism (b = 0.069, p < 0.000), such that higher country self-expressionism increases the positive effect of individual self-expressionism on acceptability. Compared to countries in a Latin culture zone, countries in a Catholic (b = 0.273, p = 0.014), Protestant (b = 0.266, p = 0.026), Ex-Communist (b = 0.237, p = 0.021) and Confucian (b = 0.391, p = 0.049) culture zones were higher in acceptability; African (b = 0.094, p = 0.466), English-speaking (b = 0.045, p = 0.725) and South Asian (b = 0.131, p = 0.236) culture zones did not significantly differ from Latin culture zones
11	Zhou and Zhang (2014)	China	Test the relationship between community factors and different aspects of residents' psychopathology	Sampled group: community residents aged 15-35 serving as informants for suicide cases or matched controls Communities with suicide N = 786 • Age: M = 45.15 SD = 12.893 • Sex: women = 43.8% men = 56.2% • Ethnicity: not reported Communities without suicide N = 1248 • Age: M = 32.04 SD = 12.031	Cross-sectional	GSS items – gauges the acceptability of suicide in four different circumstances	Suicide exposure Community stress Marital status Religious affiliation	Individuals from communities with suicides had more pro-suicide attitudes (t = 4.231, p < 0.001) in bivariate analyses Community stress positively associated with pro-suicide attitudes in communities with suicides (b = 0.006, se = NA, p = 0.048), but not in communities without suicides (b = 0.003, p = 0.106) Individuals in a relationship did not significantly differ from the single on pro-suicide attitudes in communities with suicides (b = -0.079, p = 0.359) or communities without suicides (b = -0.054, p = 0.226) The religiously affiliated did not significantly differ from the unaffiliated on pro-suicide attitudes in communities with suicides (b = 0.169, p = 0.218) or communities without suicides (b = -0.070, p = 0.258)

				• Sex: women = 56.5%, men = 43.5% • Ethnicity: not reported				
12	Kodaka *et al.* (2013a)	Japan	Explore demographic, occupational and personal factors associated with attitudes toward suicide among social workers	Sampled group: Social workers N = 842 • Age: M = 44.1 SD =11.4 • Sex: women = 70.3% men = 29.7% • Ethnicity: Not reported	Cross-sectional	ATTS: Suicide as a Right – gauges acceptability of suicide in cases of terminal illness and views of suicide as a right (reverse coded) ATTS: Unjustified Behaviour – gauges views of suicide as unjustified and worst thing to do to family (reverse coded)	Exposure to suicidal behaviour through occupation Exposure to suicidal behaviour in personal life	No significant differences in right to suicide attitudes by occupational exposure to suicidal behaviours ($F = 3.71$, $p = N.S.$) No significant difference in right to suicide attitudes by personal exposure to suicidal behaviours ($F = 3.71$, $p = N.S.$) Individuals who had occupational exposure to suicidal behaviours viewed suicide as less unjustified than those who had no occupational exposure ($F = 6.60$, $p < 0.05$) Individuals who had personal exposure to suicidal behaviours viewed suicide as less unjustified than those who had no personal exposure ($F = 6.18$, $p < 0.05$)
13	Kodaka *et al.* (2013b)	Japan	1. Explore pharmacists' attitudes toward suicide 2. Explore demographic, occupational and personal factors associated with attitudes toward suicide	Sampled group: Pharmacists N = 335 • Age: Mean = 43.2 SD = 11.2 • Sex: women = 67.3%, men = 32.7% • Ethnicity: Not reported	Cross-sectional	ATTS: Suicide as a Right – gauges acceptability of suicide in cases of terminal illness and views of suicide as a right (reverse coded) ATTS: Unjustified Behaviour – gauges views of suicide as unjustified and worst thing to do to family (reverse coded)	Exposure to suicidal behaviour through occupation Exposure to suicidal behaviour in personal life	No significant differences in right to suicide attitudes by occupational exposure to suicidal behaviours ($F = 1.38$, $p = N.S.$) No significant difference in right to suicide attitudes by personal exposure to suicidal behaviours ($F = 1.39$, $p = N.S.$) Unjustified behaviour not tested due to heteroscedasticity
14	Abbott and	USA	Examine levels of grief and suicide attitudes	Sampled group: people exposed and not	Retrospective cohort	ATTS: Suicide as a Right – gauges	Number of peers lost to suicide	No significant bivariate correlation between peers lost to suicide and right to suicide or

	Zakriski (2014)		among survivors of an adolescent cluster of suicides as a function of closeness to the deceased and social support	exposed to suicide cluster in high school Exposed group N = 85 • Age: M = 21.2 SD = 0.44 • Sex: women = 76.5% men = 23.5% • Ethnicity: white = 90.5% other = 9.5% Non-exposed group N = 67 • Age: M = 21.5 SD = 0.44 • Sex: women = 56.7% men = 43.3% • Ethnicity: white = 87.3% other = 12.7%		the acceptability of suicide in response to physical illness and views of suicide as a right ATTS: Resignation– gauges views of suicide as a solution and a relief	Closeness to deceased Multidimensional Scale of Perceived Social Support	resignation attitudes. Results unchanged in multivariable analyses. Bivariate negative correlation between closeness to deceased and right to suicide attitudes ($r = -0.22$, $p < 0.05$), although not when limited to the closest peer ($r = -0.13$, p = N.S.). In MANOVA, there were no significant differences by high and low closeness to deceased. No bivariate correlation between closeness to deceased and resignation attitudes in general ($r = 0.07$, p = N.S.) or when limited to the closest peer ($r = 0.07$, p = N.S.). Results unchanged in multivariable analyses. No significant bivariate correlation between right to suicide attitudes and social support from friends ($r = -0.17$, p = N.S.), a special person ($r = -0.10$, p = N.S.), or family ($r = -0.04$, p = N.S.). Results unchanged in multivariable analyses. Negative bivariate correlations between resignation attitudes and social support from friends ($r = -0.34$, $p < 0.01$), a special person ($r = -0.36$, $p < 0.01$) and family ($r = -0.29$, $p < 0.01$). In MANOVA, resignation attitudes were lower among those with high social support from peers ($F = 6.13$, $p = 0.015$)
15	Thimmaiah *et al.* (2016)	India	Examine and compare attitudes towards suicide among Hindus and Muslims in India	Sampled group: Community residents aged 18+ who had lived in the area for at least 3 months N = 172 • Age: 25< = 26.2%, 25-34 = 35.5% 35-44 = 23.3% 45-54 = 11% 55> = 4.1%	Cross-sectional	ATTS: Individual Items – e.g., suicide is an acceptable means to terminate an incurable disease	Religious affiliation	No significant differences between Hindus and Muslims on any relevant ATTS items

				• Sex: women = 67.4%, men = 32.6% • Ethnicity: not reported				
16	Cwik *et al.* (2017)	Germany	Examine the factor structure, reliability and construct validity of the German version of Cognitions Concerning Suicide Scale (CCSS)	Sampled group: university students and miscellaneous adults N = 503 • Age: M = 24.74 SD = 6.55 • Sex: women = 90.01% men = 9.99% • Ethnicity: Caucasian = 100%	Cross-sectional	CCSS: Right to Suicide – gauges views of suicide as a right and an acceptable means of escaping pain CCSS: Interpersonal Gesture – gauges view of suicide as appropriate means of accomplishing interpersonal goals CCSS: Resiliency – gauges views that, even in the face of adversities, suicide would not be an appropriate solution	Perceived burdensomeness subscale of INQ Thwarted belongingness subscale of INQ	Perceived burdensomeness positively correlated with right to suicide (rho = 0.163, $p < 0.001$), interpersonal gesture (rho = 0.150, $p < 0.01$) and resiliency attitudes (rho = 0.327, $p < 0.001$) Thwarted belongingness not significantly associated with right to suicide (rho = 0.037, p = N.S.) or resiliency attitudes (rho = 0.037, p = N.S.). Thwarted belongingness positively correlated with interpersonal gesture attitudes (rho = 0.409, $p < 0.001$)
17	Torgler and Schaltegger (2014)	Cross-national	Identify whether Catholics and Protestants differ in their suicidal behaviours and attitudes in contemporary societies	Sampled group: general population of adults aged 18+ affiliating with either Protestantism or Catholicism across 32 European countries N = 18890 • Age: not reported • Sex: no reported • Ethnicity: not reported	Cross-sectional	SJI – 10-point item on justifiability of suicide (dichotomised)	Marital status Frequency of church attendance Time spent at church Religious affiliation Number of children Employment status Importance of family	In models excluding selected predictors, the married (b = 0.028 to 0.024) were more likely to view suicide as never justifiable than the single; the widowed (b = 0.022 to 0.014), divorced (b = -0.020 to -0.024) and separated (b = 0.008 to 0.01) did not significantly differ from the single. After including importance of family, importance of friends or interactions between religious affiliation and church attendance, there were no significant differences by marital status. Frequency of church attendance positively associated with viewing suicide as never

							Importance of friends	justifiable across all models (b = 0.009 to 0.016) In models excluding selected predictors, Protestants were less likely to view suicide as never justifiable than Catholics (b = -0.042 to -0.03). After including interactions between religious affiliation and church attendance, there were no significant differences by religious affiliation Time spent at church positively associated with view of suicide as never justifiable (b = 0.015, p < 0.05) Statistically significant interaction between church attendance and religious affiliation (b = 0.018, p < 0.1), such that Protestants who attend church more frequently were more likely to view suicide as never justifiable Statistically significant interaction between time in church and religious affiliation (b = 0.05, p < 0.05), such that Protestants who spend more time in church were more likely to view suicide as never justifiable Number of children positively associated with viewing suicide as never justifiable across all model (b = 0.012 to 0.016) In models excluding selected predictors, part-time workers (b = -0.036 to -0.034) and students (b = -0.088 to -0.082) were less likely to view suicide as never justifiable compared with full-time workers; the retired (b = 0.023 to 0.029) were more inclined to view suicide as never justifiable compared to full-time workers; the self-employed (b = -0.005 to 0.016), those at home (b = 0.007 to 0.012), the unemployed (b = -0.012 to 0.019) and those classed as other (b = -0.026 to 0.005) did not significantly differ from full-time workers. After including interactions between religious affiliation and church attendance, there were no significant differences by employment status.

								Importance of family positively associated with view of suicide as never justifiable (b = 0.044, p < 0.01) Importance of friends positively associated with view of suicide as never justifiable (b = 0.012, p < 0.05)
18	Hashimoto *et al.* (2014)	Japan	Examine whether parental bonding is associated with attitudes toward suicide among Japanese medical students	Sampled group: medical students N = 160 • Age: M = 25.2, SD = 4 • Sex: women = 27.5%, men = 72.5% • Ethnicity: not reported	Cross-sectional	ATTS: Suicide as a Right – gauges acceptability of suicide in cases of terminal illness and views of suicide as a right (reverse coded) ATTS: Unjustified Behaviour – gauges views of suicide as unjustified and worst thing to do to family (reverse coded)	Care subscale of Parental Bonding Instrument Overprotection subscale of Parental Bonding Instrument	In bivariate analyses, right to suicide attitudes positively correlated with paternal care (r = 0.155, p < 0.05), but not paternal overprotection (r = -0.127, p = N.S.). In multiple regression models, there were no significant associations between paternal care (b = 0.026, p = 0.636) or paternal overprotection (b = 0.004, p = 0.956) and right to suicide attitudes In bivariate analyses, right to suicide attitudes positively correlated with maternal care (r = 0.215, p < 0.05) and negatively correlated with maternal overprotection (r = -0.163, p < 0.05). In multiple regression models, there were no significant associations between maternal care (b =0.117, p = 0.058) or maternal overprotection (b = -0.079 p = 0.282) and right to suicide attitudes In bivariate analyses, paternal care (r = -0.103, p = N.S.) and overprotection(r = -0.002, p = N.S.) were not significantly associated with suicide unjustifiability. Results unchanged for paternal care (b = -0.028, p = 0.239) and paternal overprotection (b = -0.017, p = 0.604) in multiple regression models. In bivariate analyses, maternal care (r = -0.072, p = N.S.) and overprotection(r = -0.063, p = N.S.) were not significantly associated with suicide unjustifiability. Results unchanged for maternal care (b = -0.018, p = 0.492) and maternal overprotection (b = 0.001, p = 0.980) in multiple regression models.

19	VanSickle *et al.* (2016)	USA	1. Understand whether the SOQ is applicable to Marine Corps Non-Commissioned Officers selected for a suicide prevention programme 2. Examine the relationship among sex, education, prior exposure to suicide within one's military unit, and suicide opinions	Sampled group: Marine Corps Non-Commissioned Officers (NCOs) N = 1758 • Age: not reported • Sex: women = 8% men = 92% • Ethnicity: Caucasian = 60.0% African-American = 8.2% Hispanic = 19.2% Asian/American Indian/Pacific Islander = 4.7% Other = 7.9%	Cross-sectional	SOQ: Acceptability– gauges the acceptability of suicide in response to physical deterioration and morality of suicide.	Exposure to suicidal ideation/suicide attempt/suicide death in military unit	No significant difference in suicide acceptability by exposure status (b = −0.04, p = N.S.)
20	Bryan *et al.* (2018)	USA	Examine the psychometric properties of the Brief Reasons for Living Inventory (BRFLI) in a high-risk sample of treatment-seeking military personnel	Sampled group: Active duty US army personnel N = 97 • Age: M = 26.1 SD = 6.4 • Sex: women = 22% men = 78% • Ethnicity: White = 74%, Other = 2% , Latina/o = 7%, Asian = 4%, Native American = 8%, Black = 18%, Pacific Island = 3%	Cross-sectional	BRFLI: Moral Objections – gauges religious and moral reasons for rejecting suicide	Perceived burdensomeness subscale of INQ Thwarted belongingness subscale of INQ	Perceived burdensomeness not significantly associated with moral objections (r = 0.01, p = N.S.) Thwarted belongingness negatively associated with moral objections (r = -0.31, p < 0.01)
21	Amini-Tehrani et al. (2021)	Iran	Develop and validate the Relational Adverse Childhood Experiences Questionnaire (RACE-Q)	Sampled group: Undergraduate students in various schools N = 487	Cross-sectional	Suicide acceptability – single item on acceptability of suicide for	Adverse parent-child relations subscale of RACE-Q	Adverse parent-child relations positively correlated with suicide acceptability (rho = 0.23, p < 0.001)

				• Age: M = 20.66 SD = 1.42 • Sex: women = 59.2% men = 40.8% Ethnicity: Fars = 53.8% Turk = 23.2% Mazani/Gilak = 8.2% Lor = 4.3% Kurd = 2.9% Other = 2.1%		escaping pain and suffering	Adverse parent-parent relations subscale of RACE-Q Loss subscale of RACE-Q Adverse school relations subscale of RACE-Q Sexual abuse subscale of RACE-Q Total scores of RACE-Q Feelings of loneliness	Adverse parent-parent relations positively correlated with suicide acceptability (rho = 0.16, p < 0.001) Adverse school relations positively correlated with suicide acceptability (rho = 0.14, p < 0.01) Sexual abuse positively correlated with suicide acceptability (rho = 0.16, p < 0.001) Total scale (excluding loss) positively correlated with suicide acceptability (rho = 0.28, p < 0.001) Loneliness positively correlated with suicide acceptability (r = 0.30, p < 0.001) Loss not tested due to poor factorability
22	Jung and Olson (2014)	South Korea	1. Assess the relationship between religion and suicide acceptability in South Korea 2. Determine whether religion interacts with stress to affect suicide acceptability	Sample group: general population of Korean adults aged 18+ N = 1599 • Age: M = 42.736 SD = 14.481 • Sex: women = 50.1% men = 49.9% • Ethnicity: Not reported	Cross-sectional	Suicide acceptability – gauges views of suicide as a right, a solution and an ethical breach	Religious affiliation Frequency of church attendance Marital status Employment status	In bivariate analyses, suicide acceptability varied by religious affiliation (F = 17.441, p < .001). Protestants were lower in suicide acceptability than other religious groups (p < 0.05). In multiple regression analyses, Buddhists (b = 0.067 to 0.127) and Catholics (b = 0.065 to 0.173) did not significantly differ from unaffiliated across all models. When excluding selected predictors in regression analyses, Protestants were less accepting of suicide (b = -0.315, p < 0.001). After controlling for church attendance and religious salience, Protestants did not significantly differ from the unaffiliated. Higher church attendance negatively associated with suicide acceptability across all models (b = - 0.27 to -0.26) Significant interaction between church attendance and stress (b = -0.022, p < 0.05), such that church attendance reduces the positive effect of stress on acceptability The divorced/separated (b = 0.067 to 0.082), widowed (b = 0.054 to 0.075) and never married (b = 0.038 to 0.043) did not

								significantly differ from the married in suicide acceptability across all models The employed did not significantly differ from the unemployed in suicide acceptability across all models (b = -0.024 to -0.014)
23	Saiz *et al.* (2021)	Cross-national	Describe the role of religiosity for suicide, measured by different subjective and behavioural indicators	Sampled group: general population of people aged 18+ across 60 countries N = 82898 • Age: not reported • Sex: not reported • Ethnicity: not reported	Cross-sectional	SJI – 10-point item on justifiability of suicide	Individual level • Importance of religion • Frequency of church attendance • Religious affiliation Country level • Unemployment rate • Importance of religion • Frequency of church attendance • Importance of God • Prayer Frequency	In pairwise comparisons, Buddhists, Christians, Hindus, Muslims and those classed as other held less justifying attitudes toward suicide than the unaffiliated ($p < 0.001$ for all comparisons). Compared to Buddhists, Christians ($p < 0.05$) and Muslims ($p < 0.05$) held less justifying attitudes. Compared to Christians, Muslims ($p < 0.001$) held less justifying attitudes and those classed as other ($p < 0.01$) held more justifying attitudes. Compared to Hindus, Muslims ($p < 0.001$) and those classed as other ($p < 0.05$) held less justifying attitudes. Compared to Muslims, those classed as other held more justifying attitudes ($p < 0.001$) Significant differences in suicide attitudes by religious affiliation across five ANOVA models ($F = 33.375$ to 142.567, $p < 0.001$); Muslims had the least justifying attitudes while the unaffiliated had the most justifying attitudes Significant interaction between religious affiliation and religious self-description ($F = 22.454$, $p < 0.001$), such that unaffiliated atheists expressed the most justifying attitudes toward suicide Significant interaction between religious affiliation and importance of God ($F = 10.120$, $p < 0.001$), such that the effect of importance was strongest for the unaffiliated and weakest for Muslims Significant interaction between religious affiliation and prayer frequency ($F = 10.842$, $p < 0.001$), such that the effect of payer

								frequency was more mixed for Muslims, Hindus and Buddhists Significant differences in suicide attitudes by religious importance ($F = 127.983$, $p < 0.001$), such that individuals who attribute more importance to religion held less justifying attitudes toward suicide Significant interaction between importance of religion and religious affiliation ($F = 3.657$, $p < 0.001$), such that the effect of importance was strongest for the unaffiliated and weakest for Muslims Significant differences in suicide attitudes by church attendance ($F = 20.694$, $p < 0.001$); individuals who attended church more often held less justifying attitudes toward suicide Significant interaction between frequency of church attendance and religious affiliation ($F = 3.657$, $p < 0.001$), such that the effect of attendance is more mixed for Muslims and Hindus Unemployment rates not significantly associated with country levels of suicide attitudes in bivariate analyses ($r = 0.068$, p N.S.) or multiple regression Country levels of attendance negatively associated with suicide attitudes in bivariate analyses ($r = -0.336$, $p < 0.05$) but not in multiple regression Country levels of religion importance negatively associated with suicide attitudes in bivariate analyses ($r = -0.578$, $p < 0.001$) but not in multiple regression Country levels of God importance negatively associated with suicide attitudes in bivariate analyses ($r = -0.643$, $p < 0.001$) and in multiple regression ($b = -0.258$, $p < 0.001$)

								Country levels of prayer frequency negatively associated with suicide attitudes in bivariate analyses ($r = -0.443$, $p < 0.01$) but not in multiple regression
24	Foo *et al.* (2014)	Malaysia	Identify socio-cultural factors that may contribute to suicide risk, including ethnicity, religious affiliation, religious commitment and attitudes toward suicide	Sampled group: College students N = 139 • Age: M = 20.16 SD = 1.36 • Sex: women = 61.20% men = 38.8% • Ethnicity: Malay = 38.80% Chinese = 39.60% Indian = 20.15% Other = 1.45%	Cross-sectional	ATTS: Acceptance of Suicide– gauges views of suicide as an acceptable response to incurable illness and a right	Religious affiliation	Suicide acceptance varied by religious affiliation ($F = 3.92$, $p < 0.01$). Buddhists (95 % CI = [22.37, 26.20]) were more accepting of suicide than Muslims (95 % CI = [18.28, 21.58])
25	Amini-Tehrani *et al.* (2020)	Iran	Design, validate, and examine the psychometric properties of the social-ecological resilience measure for students (Student-SERM)	Sampled group: Undergraduate students in various schools N = 487 • Age: Not reported • Sex: Not reported • Ethnicity: Not reported	Cross-sectional	Suicide acceptability – single item on acceptability of suicide for escaping pain and suffering	Family support subscale of Student-SERM Interpersonal bonds subscale of Student-SERM Peer support subscale of Student-SERM Partner support subscale of student-SERM Feelings of loneliness	Family support negatively correlated with suicide acceptability ($r = -0.28$, $p < 0.001$) Peer support not significantly correlated with suicide acceptability ($r = -0.05$, $p = 0.244$) Partner support not significantly correlated with suicide acceptability ($r = -0.07$, $p = 0.444$) Loneliness previously tested in Amini-Tehrani *et al.* (2021) Interpersonal bonds not tested.
26	Nath *et al.* (2018)	USA	1. Assess what South Asians in the United States believe about reasons for living compared to the US general population. 2. Investigate which demographic factors	Sampled group: South Asians living in the USA N = 564 • Age: 18–24 = 17.2% 25–34 = 12.8% 35–44 = 24.2% 45–54 = 33.0%	Cross-sectional	RFLI: Moral Objections– gauges religious and moral reasons for rejecting suicide	Marital status Number of children Religious affiliation	Number of children positively correlated with moral objections ($r = 0.18$, $p < 0.01$) No other variables tested in relation to moral objections

			are predictive of reasons for living 3. Determine whether help-seeking attitudes and acculturation explain reasons for living above and beyond demographics	54–64 = 12.6% • Sex: women = 49% men = 51% • Ethnicity: Not reported				
27	Kawashima *et al.* (2022)	Cross-national	1. Examine cross-cultural differences in suicide attitudes between Japanese and US suicide-loss survivors 2. Determine how these attitudes are associated with mental deterioration and sense of community safety	Sampled group: Japanese and American adults who had lost someone to suicide Japanese N = 193 • Age: M = 42.33 SD = 12.72 • Sex: women = 59.07% men = 40.93% • Ethnicity: not reported US N = 232 • Age: M = 45.87 SD = 13.38 • Sex: women = 89.18% men = 10.82% • Ethnicity: white = 91.3% Asian = 1.7% Latino/Hispanic = 2.6% Native American = 0.9% Other = 3.5%	Cross-sectional	SAS: Justification (Kawashima *et al.* 2020) – three items on justifiability of suicide for the greater good, preserving honour, and getting even with someone Attitudes Toward Suicide Scale: Right to Die (Kawano *et al.* 2010) – consists of 3 items such as "People have the right to choose death"	Closeness to deceased Perceived community safety for people who have lost someone to suicide Whether the deceased was first degree kin or not	Closeness to deceased not significantly associated with justification attitudes among Japanese ($r = -0.083$, $p = N.S$) or Americans ($r = -0.014$, $p = N.S.$) Association between perceived community safety and justification attitudes was positive among Japanese ($r = 0.178$, $p < 0.05$) but negative among Americans ($r = -0.190$, $p < 0.05$) Degree of kinship not associated with justification attitudes among Japanese ($r = -0.015$, $p = N.S.$) or Americans ($r = 0.101$, $p = N.S.$) Association between closeness to deceased and right to die attitudes not significant among Japanese ($r = -0.027$, $p = N.S.$) but positive among Americans ($r = 0.249$, $p < 0.001$) Perceived community safety not significantly associated with right to die attitudes among Japanese ($r = 0.120$, $p =$ N.S.) or Americans ($r = -0.117$, $p = N.S.$) Degree of kinship not associated with justification attitudes among Japanese ($r = -0.029$, $p = N.S.$). Americans who lost a first degree relative to suicide more strongly endorsed suicide as a right compared to Americans who lost someone else to suicide ($r = 0.205$, $p < 0.01$)
28	Zhang and Sun (2014)	China	Examine suicidal ideation and suicide acceptability among	Sampled group: Women aged 15-34 living in rural areas of China	Cross-sectional	GSS items – gauges the acceptability of	Marital status Religious affiliation	No bivariate association between marital status and suicide acceptability. Results unchanged when controlling for other

			females aged 15-34 in rural China	N = 1039 • Age: M = 24.94 SD = 4.68 • Sex: women = 100% • Ethnicity: Han = 96.8% Other = 3.2%		suicide in four different circumstances (dichotomised)	History of suicide in family Lone living Duke Social Support Index scale	variables (OR = 0.736, 95% CI = [0.226, 2.396]) No bivariate association between religious affiliation and suicide acceptability. Results unchanged when controlling for other variables (OR = 2.143, 95% CI = 0.541, 8.491) Bivariate association between family history of suicide and suicide acceptability ($p < 0.05$); women with a family history of suicide were more likely to accept suicide. When controlling for other variables, family history of suicide was no longer significant (OR = 0.361, 95% CI = [0.044, 2.983]) No bivariate association between lone living and suicide acceptability. Results unchanged when controlling for other variables (OR = 1.441, 95% CI = [0.169, 12.263]) Bivariate association between suicide acceptability and social support ($p < 0.01$); women with lower levels of social support were more likely to accept suicide. When controlling for other variables, social support was no longer significant (OR = 0.990, 95% CI = [0.933, 1.050])
29	Nathan and Nathan (2020)	Social media	Understand the attitudes of social media platform users towards suicide and whether they correlate with demographics and suicide-related experiences	Sampled group: Reddit and Facebook users N = 152 • Age: 18–29 = 63.09% 30+ = 36.91% • Sex: Not reported • Ethnicity: White = 59.33% Other = 40.67%	Cross-sectional	Suicide as a right Suicide as an escape	Knowledge of suicide death of someone close to participant	No significant differences in suicide as a right by knowledge of suicide death No significant differences in suicide as an escape by knowledge of suicide death
30	Lund *et al.* (2016)	USA	1. Understand how suicide acceptability differs in vignettes depending on whether the hypothetical person has a disability or not.	Sampled group: general population of US adults aged 18+ N = 500	Cross-sectional	Right to Kill Oneself – participants administered vignettes on a hypothetical	Frequency of church attendance Religious affiliation Marital status	Higher church attendance negatively associated with right to die attitudes when suicide is seen to be motivated by disability ($b = -0.663$, $p < 0.000$) or other precipitants ($b = -0.578$, $p < 0.001$)

			2. Examine what predictors help to explain differences in suicide acceptability between disability and no-disability conditions 3. Examine what predictors help to explain variations in suicide acceptability in disability and no-disability conditions	• Age: M = 35.92 SD = 13.85 • Sex: women = 60.4% men = 39.6% • Ethnicity: White = 74.4% Black/African-American = 10.4% Hispanic/Latino/a = 4.6% Asian/Pacific Islander = 7.4% Other = 2.0%, Prefer not to disclose = 1.2%		suicidal person and asked whether the person has the right to kill themselves	Employment status Knowledge of suicide death/attempt in friends/family not tested	Religious affiliation not tested against right to kill oneself Marital status not tested right to kill oneself Employment status not tested right to kill oneself Knowledge of suicide death/attempt in friends/family not tested right to kill oneself
31	Gill *et al.* (2018)	India and various English-speaking countries	1. Examine whether suicide-related beliefs are associated with perceived stress 2. Examine whether suicide-related beliefs are moderated by depression status among Indians and Caucasians seeking information on depression	Sampled group: Indians living in India and Caucasians living in predominantly English-speaking countries Indians N = 374 • Age: M = 28.3 SD = 9.2 • Sex: women = 50.3% men = 49.7% Caucasians N = 326 • Age: M = 36.9 SD = 14.4 • Sex: women = 75.8 % men = 24.2%	Cross-sectional	SBQ-14: Suicide Belief Items – includes 3 items asking whether suicide would be a solution, a good option if quality of life did not change, and a solution if quality of life were to decline	Marital status Employment status	Compared to the married, the single were more inclined to view suicide as a solution ($F = 9.03$, $p < 0.01$), a good option if quality of life does not change ($F = 9.11$, $p < 0.01$) and a solution if quality of life declines ($F = 5.15$, $p < 0.05$). Follow-up analyses indicated the positive effect of single status was only observed among Caucasians for suicide as an solution ($F = 12.08$, $p < 0.01$) and as a solution for declining quality of life ($F = 12.63$, $p < 0.01$) Compared to the employed, the unemployed were more inclined to view suicide as a good option if quality of life does not change ($F = 25.93$, $p < 0.01$) and a solution if quality of life declines ($F = 6.94$, $p < 0.05$); there were not significant differences in viewing suicide as solution in general by employment status. Follow-up analyses indicated the positive effects of unemployment status were only observed among Caucasians for suicide as a solution if qualify of life declines ($F = 3.83$, $p < 0.05$)
32	Choi and Noh (2020)	South Korea	Examine how social isolation, social support and psychological wellbeing mediate the association between	Sampled group: general population of South Korean adults N = 1500	Cross-sectional	Attitude toward suicide – 4 items on whether suicide is an appropriate	Social media use Social support	No significant direct association between social support and suicide attitudes (b – 0.01, p = N.S.)

			social media use and negative attitudes toward suicide	• Age: 19–24 = 8.9%, 25–34 = 19.9% 35–44 = 23.6% 45–64 = 43.6% 65 or more = 4.0% • Sex: women = 49.3% men = 50.7% • Ethnicity: not reported		choice in response to pain, stress and suffering	Social isolation (reverse coded)	Social isolation directly and negatively associated with suicide attitudes (b = -0.36, p < 0.001) Social media use indirectly associated with suicide attitudes through social isolation (b = -0.05, 95% CI = [−0.07, −0.02]) Social media use indirectly associated with suicide attitudes through psychological wellbeing (b = - 0.03, (-0.03, 95% CI = [−0.05, −0.02]) No association between social media use and suicide attitudes through social support (b = -0.00, 95% CI = [−0.01, 0.01])
33	Stecz *et al.* (2020)	Poland	Examine whether psychological well-being predicts attitudes toward suicide and suicide prevention among students of the helping professions	Sample group: university students in the helping professions N = 239 • Age: M = 22.84 SD = 5.15 • Sex: women = 69.5% men = 40.5% • Ethnicity: Caucasian = 100%	Cross-sectional	ATTS: Suicide as a Right – gauges the acceptability of suicide in response to physical illness and views of suicide as a right ATTS: Suicide as a Solution – gauges views of suicide as a solution and a relief	Positive relations subscale of Ryff Psychological Wellbeing Scale Marital status	No significant differences in suicide as a solution attitudes by marital status (t = 0.82, p = 0.41) No significant association between positive relations and suicide as solution in bivariate analyses(r = 0.136, p = N.S.) or in multiple regression (b = 0.020, p = 0.464) Suicide as a right not tested
34	Chiu *et al.* (2019)	Taiwan	1. Translate and confirm the factor structure and psychometric properties of the RFL Inventory among Ethnic Chinese psychiatric patients 2. Investigate associations of different patients characteristics with the RFLI	Sampled group: Patients aged 19-65 diagnosed with depressive disorder, dysthymia, bipolar disorder, schizophrenia, personality disorder, or substance use disorders N = 254 • Age: 18-25 = 19.7% 26-35 = 33.9% 36-45: 29.1%	Cross-sectional	RFLI: Moral Objections– gauges religious and moral reasons for rejecting suicide	Marital status Parental status Religious affiliation	No significant differences in moral objections by marital status (p = 0.817) No significant differences in moral objections by parental status (p = 0.979) Significant differences by religious affiliation (p < 0.001). Post-hoc tests indicated that individuals affiliated with Christianity (p < 0.05) or Traditional Chinese religions (p < 0.05) endorsed moral objections more strongly than the unaffiliated.

			3. Examine whether Chinese suicidal psychiatric patients attached less importance to these life-maintaining beliefs than non-suicidal ones	46-55: 13.8% 56+ = 3.5% • Sex: women = 57.1% men = 42.9% • Ethnicity: not reported				
35	Eskin *et al.* (2019)	Cross-national	Test whether religious affiliation and beliefs are associated with (1) psychological wellbeing, (2) nonfatal suicidal behaviour, and (3) attitudes toward suicide and suicidal individuals	Sampled group: University students from 12 different counties N = 5572 • Age: M = 22.1 SD = 3.5 • Sex: women = 55.3% men = 44.7% • Ethnicity: not reported	Cross-sectional	E-ATSS: Suicide Acceptance – gauges the acceptability of suicide under various circumstances and views that suicide may be a solution	Religious affiliation	Significant differences in suicide acceptance by religious affiliation ($F = 95.29$, $p < 0.0001$). Compared to Buddhists, Muslims were lower in acceptance and the unaffiliated were higher. Compared to Hindus, Muslims were lower in acceptance. Compared to Muslims, the unaffiliated, Protestants, Catholics and those belonging to other religions were higher in acceptance. Compared to the unaffiliated, Orthodox Christians and Catholics were lower in acceptance. Compared to Orthodox Christians, Protestants and Catholics were higher in acceptance
36	Tong and Phillips (2018)	USA	1. Examine attitudes toward suicide using the General Social Survey 2. Identify individual characteristics associated with suicide attitudes 3. Determine whether the association of these characteristics with suicide attitudes has changed over time	Sampled group: general population of adults aged 18+ N = 5607 • Age: 18-34 = 30.5% 35-64 = 52.5% 65+ = 17.0% • Sex: women = 54.6% men = 45.4% • Ethnicity: white = 75.1%, non-white = 24.9%	Cross-sectional	GSS items – gauges the acceptability of suicide in four different circumstances.	Marital status Religious affiliation Church attendance	In the 1980s, the married ($b = -0.08$, $p < 0.05$) and widowed ($b = -0.14$, $p < 0.05$) were less accepting of suicide than the unmarried. In the 2010s, the married ($b = -0.07$, p = N.S.) and widowed ($b = -0.07$, p = N.S.) did not significantly differ from unmarried in acceptability. An Oaxaca Decomposition indicated that decreasing numbers of married ($p < 0.05$) but not widowed (p = N.S.) contributed to a rise in suicide acceptability from 1980s to 2010s. In the 1980s, Protestants ($b = -0.42$, $p < 0.05$) and Catholics ($b = -0.47$, $p < 0.05$) were lower in acceptability than the unaffiliated; those classed as other did not differ from the unaffiliated ($b = 0.14$, p = N.S.). In the 2010s, Protestants ($b = -0.37$, $p < 0.05$) and Catholics ($b = -0.47$, $p < 0.05$) were lower in acceptability than the unaffiliated; people classed as other ($b = -0.12$, p = N.S.) did not significantly differ from the unaffiliated. An Oaxaca Decomposition indicated that decreasing

								numbers of Protestants ($p < 0.01$) but not Catholics (p = N.S.) or those classed as other (p = N.S.) contributed to a rise in suicide acceptability from 1980s to 2010s. In the 1980s, individuals who attended church often ($b = -0.25$, $p < 0.05$) and daily ($b = -0.55$, $p < 0.05$) were lower in suicide acceptability than those who attended rarely. In the 2010s, individuals who attended church often ($b = -0.14$, $p < 0.05$) and daily ($b = -0.50$, $p < 0.05$) were lower in acceptability than those who attended rarely. An Oaxaca Decomposition indicated that decreasing numbers of people attending church often ($p < 0.001$) and daily ($p < 0.01$) contributed to a rise in suicide acceptability from 1980s to 2010s.
37	Kim *et al.* (2021)	South Korea	1. Explore the factor structure of attitudes toward suicide among Korean adolescents 2. Determine the impact of socio-demographic and clinical variables on suicide attitudes	Sampled group: Adolescent eighth grade students N = 1292 • Age: Not reported • Sex: women = 47.4%, men = 52.6% • Ethnicity: not reported	Cross-sectional	ATTS: Permissiveness–gauges the acceptability of suicide in response to physical illness and views of suicide as a right	Religious involvement	Religious involvement not significantly associated with suicide permissiveness ($b = -0.05$, p = N.S.)
38	Proulx and Savage (2020)	Netherlands	Determine which socio-demographic indicators influence individual attitudes to suicide and euthanasia	Sampled group: General population of Dutch adults N = 4795 • Age: Not reported • Sex: Not reported • Ethnicity: Not reported	Cross-sectional	SJI – 10-point item on justifiability of suicide	Marital status Religious affiliation Employment status	During 1981-1990 and 1999-2008, the divorced ($b = -0.376$ to -0.270, p = N.S.), separated ($b = -0.326$ to -0.163, p = N.S.), widowed ($b = 0.296$ to 0.347, p = N.S.) single ($b = -0.358$ to 0.881, p = N.S.) and people living together as married ($b = -0.223$) did not significantly differ from married in suicide attitudes. The religiously affiliated did not significantly differ from unaffiliated in suicide attitudes during 1981-1990 ($b = 0.0710$, p = N.S.) or 1999-2008 ($b = 0.0953$, p = N.S.)

								During 1981-1990 and 1999-2008, part-time workers (b = -0.111 to 0.0841, p = N.S.), those who were retired (b = -0.256 to 0.148, p = N.S.), housewives (b = -0.244 to 0.247, p = N.S.), the unemployed (b = -0.0788 to 0.557, p = N.S.) and those classed as other (b = -0.573, p = N.S.) did not significantly differ from employed in suicide attitudes. The self-employed had more justifying attitudes than the employed in 1981-1990 (b = 1.966, p < 0.01) and less justifying attitudes in 1999-2008 (b = -0.848, p < 0.01). Students had less justifying attitudes than the employed in 1981-1990 (b = -0.880, p < 0.001) but not 1999-2008 (b = -0.483, p = N.S.).
39	Siau *et al.* (2019)	Malaysia	Examine attitudes toward suicide and suicidal patients among nurses from Malaysian hospitals	Sampled group: nurses N = 189 • Age: 21–29 = 35.4% 30–39 = 39.7% 40–49 = 9.5% 50–59 = 12.7% • Sex: women = 94.2% men = 5.8% • Ethnicity: not reported	Cross-sectional	SOQ: 22 Items – e.g., people should not have the right to take their own lives	Marital status Number of suicidal patients cared for	No significant differences in suicide approval items by marital status Findings for number of suicidal patients not reported
40	Nebhinani *et al.* (2016)	India	Examine medical students' attitudes toward suicide attempters	Sampled group: Final year medical students N = 205 • Age: M = 21.90 SD = 1.35 • Sex: women = 45.9% men = 54.1% • Ethnicity: not reported	Cross-sectional	SOQ: 52 Items – e.g., suicide is an acceptable means to end an incurable illness	Marital status Family type (nuclear or extended) Religious affiliation Professional experience managing a suicidal patient Experience of a patient suicide attempt	No significant differences in suicide approval items by religious affiliation Marital status could not be tested due to no variability among participants No results reported for family type No results reported for professional experience with suicidal patients No results reported for experience of a patient suicide attempt
41	Nebhinani *et al.* (2013)	India	Examine nursing students' attitudes	Sampled group: Nursing students	Cross-sectional	SOQ: 52 Items – e.g., suicide is an	Marital status	Compared to students from nuclear families, students from extended families were in less

			toward suicide attempters	N = 308 • Age: M = 20.83 SD = 1.90 • Sex: women = 95.1% men = 4.9% • Ethnicity: not reported		acceptable means to end an incurable illness	Family type (nuclear or extended) Religious affiliation Professional experience managing a suicidal patient Experience of a patient suicide attempt Experience of a patient death by suicide	agreement that suicide is an acceptable means to end an incurable illness (t = 2.0) Compared to Hindus, Sikhs were more likely to believe suicide clinics should be established (t = 2.38) Marital status not tested No results reported for professional experience with suicidal patients No results reported for experience of a patient suicide attempt No results reported for experience of a patient death by suicide
42	Lee *et al.* (2022)	South Korea	Examine how suicide loss, attitudes toward suicide, and suicidal thoughts are associated via structural equation modelling	Sampled group: General population of Korean adults aged 19+ Participants not exposed to suicide N = 2672 • Age: M = 46.29 SD = 15.06 • Sex: women = 52.7% men = 47.3% • Ethnicity: not reported Participants exposed to suicide N = 301 • Age: M = 44.78 SD = 13.32 • Sex: women = 50.5% men = 49.5% • Ethnicity: not reported	Cross-sectional	ATTS: Suicide as a Right – gauges the acceptability of suicide in response to physical illness and views of suicide as a right ATTS: Resignation– gauges views of suicide as a solution and a relief	Exposure to suicide	Right to suicide attitudes varied significantly by exposure status ($p < 0.001$) and were positively correlated with exposure ($r = 0.070$, $p< 0.001$) in bivariate analyses In a SEM model, right to suicide attitudes were significantly associated with suicide loss ($b = 0.088$, se = NA, $p < 0.001$) Resignation attitudes did not vary significantly by exposure status (p = N.S.) in bivariate analyses and were not subjected to further tests
43	Canetto *et al.* (2021)*	Italy	Expand knowledge of lesbian, gay and	Sampled group: LGB and heterosexual youth	Cross-sectional	Suicide Attitude Vignette	Relationship status	Relationship status not significantly associated with acceptability

			bisexual (LGB) suicide scripts by examining LGB suicide attitudes	N = 150 • Age: M = 20.20 SD = 1.47 • Sex: women = 50.7% men = 49.3% • Ethnicity: not reported		Experience: Suicide Acceptability – acceptability of a fictional character's suicide on a scale of 1-7	Frequency of church attendance Friends with suicidal behaviour history Family with suicidal behaviour history	Frequency of church attendance significantly associated with acceptability (b = -0.154, p= 0.008) Friends with a suicidal history not significantly associated with acceptability Family with a suicidal history not significantly associated with acceptability
44	Attell (2020)	USA	1. Examine changes in attitudes toward suicide and euthanasia for the terminally ill over time 2. Break these changes down by age, cohort and period effects 3. Examine whether established socio-demographic predictors of attitudes remain significant	Sampled group: Non-institutionalised adults living in the USA and aged 18+ N = 81 • Age: M = 45.75 SD = 17.43 • Sex: women = 56% men = 44% • Ethnicity: Black = 14% Other = 5% White = 81%	Cross-sectional	GSS item – gauges view of suicide as a right in response to terminal illness.	Religious affiliation	Compared to Protestants, Catholics did not differ in suicide attitudes (OR = 0.99, p = N.S.) when excluding selected predictors. When including interactions with age, Catholics were more approving than Protestants (OR = 1.31, p < 0.01). Significant interaction between Catholic affiliation and age, such that older Catholics were less approving of suicide than younger Catholic (OR = 0.055, p < 0.001). Compared to Protestants, Jews were more approving of suicide when excluding selected predictors (OR = 3.58, p < 0.001). When including interactions with age, there were no significant differences between Jews and Protestants (OR = 2.34, p = N.S.). There was no significant interaction between Jewish affiliation and age (OR = 2.16, p = N.S.). Compared to Protestants, the unaffiliated were more approving of suicide when excluding (OR = 3.43, p < 0.001) and including (OR = 1.92, p < 0.001) interactions with age. Significant interaction between unaffiliated status and age, such that older individuals unaffiliated with any religion were more approving of suicide (OR = 4.33, p < 0.001). Compared to Protestants, those belonging to other religions were more approving of

								suicide when excluding interactions with age (OR = 1.16, p < 0.05) but not when including interactions (OR = 0.78, p = N.S.) Significant interaction between other affiliation and age, such that older individuals belonging to other religions were more approving of suicide (OR = 2.76, p < 0.05)
45	Blosnich and Bossarte (2013)	USA	Determine whether veterans with a history of active duty service report more suicide acceptability than the non-veteran general population	Sampled group: general population of adults aged 18+ Veteran sample N = 153 • Age: M = 59.4 SE = 1.5 • Sex: women = 10.4% men = 89.6% • Ethnicity: White = 83.5% Black = 10.9% Other = 5.6% Non-veteran sample N = 1275 • Age: M = 45 SE = 0.5 • Sex: women = 61.4% men = 38.6% • Ethnicity: White = 73.4% Black = 15.7% Other = 10.9%	Cross-sectional	GSS items – gauges the acceptability of suicide in four different circumstances.	Frequency of church attendance	Church attendance negatively associated with suicide approval in response to terminal illness (OR = 0.79, 95% CI = [0.75, 0.83]), feeling tired of life (OR = 0.86, 95% CI = [0.81, 0.92]), dishonouring family (OR = 0.88, 95% CI = [0.81, 0.96]) and bankruptcy (OR = 0.88, 95% CI = [0.81, 0.95])
46	Godi and Neredumilli (2023	India	1. Compare attitudes toward suicide in medical and nonmedical groups. 2. Compare attitudes toward a suicide based	Sampled group: Medical personnel and nonmedical civilians N = 200	Cross-sectional	E-ATSS: Suicide Acceptance – gauges the acceptability of suicide under various circumstances	Marital status	The married were less approving of suicide than the unmarried (p < 0.05)

			on age, gender, and marital status.	• Age: < 30 = 55% > 30 = 45% • Sex: Female = 49% Male = 51% • Ethnicity: Not reported •		and views that suicide may be a solution		
47	Lee *et al.* (2023)	South Korea	1. Identify attitudes toward suicide in the Korean population using the Attitudes toward Suicide Scale (ATTS) 2. Determine the sociodemographic factors in groups with different attitudes 3. Explore whether the influence of each sociodemographic factor has changed over time	Sampled group: General population of Korean adults aged 19+ in 2013 and 2018 2013 sample N = 1473 • Age: 19–29 = 16.6% 30–39 = 21.2% 40–49 = 21.7% 50–59 = 19.4% ≥60 = 21.1% • Sex: Women = 53.8% Men = 46.2% • Ethnicity: Not reported 2018 sample N = 1500 • Age: 19–29 = 17.4% 30–39 = 17.7% 40–49 = 21.7% 50–59 = 21.7% ≥60 = 21.5% • Sex: Women = 51.1% Men = 48.9% • Ethnicity: Not reported	Cross-sectional	ATTS: Suicide as a Right – gauges the acceptability of suicide in response to physical illness and views of suicide as a right ATTS: Resignation–gauges views of suicide as a solution and a relief	Marital status Religious affiliation Employment status Knowledge of someone who died by suicide	Latent Profile Analysis (LPA) identified three profiles of suicide attitudes: incomprehensible, permissive and mixed. Bivariate analyses indicated no significant association between marital status and permissive group membership. Results unchanged when controlling for other variables. Bivariate analyses indicated that, compared to the unaffiliated, the religiously affiliated were less likely to be in the permissive in 2013 but not 2018. When controlling for other variables, the unaffiliated were more likely to be in the permissive group in 2013 (OR = 1.63 [1.13–2.35], $p < 0.009$) and 2018 (PR = 2.00 [1.33–3.00], $p < 0.001$). Bivariate analyses indicated no significant association between suicide exposure and permissive group membership. When controlling for other variables, individuals exposed to suicide were more likely to be in the permissive group in 2013 (OR = 2.22 [1.09–4.53], $p = 0.028$) but not 2018 (OR = 0.95 [0.47–1.90], $p = 0.879$) Employment status not tested.
48	Kawashima *et al.* (2020)	Japan	Explore suicide acceptance and related factors in Japan	Sampled group: General population of Japanese adults aged 20-69 N = 2051	Cross-sectional	SAS: Justification (Kawashima *et al.* 2020) – three items on	Bereavement Experiencing suicide loss among family members or friends	Compared to bereaved individuals, those who had not experienced bereavement held more justifying attitudes toward suicide ($t = -2.313$, $p < 0.05$)

				• Age: Mean = 44.64 SD = 13.96 • Sex: Women = 50.7% Men = 49.3% • Ethnicity: Not reported		justifiability of suicide for the greater good, preserving honour, and getting even with someone	Employment status	No significant difference in justification attitudes by suicide loss status (t = 1.663, p = N.S.) Significant difference by working status (F = 5.820, p < 0.001). Compared to the employed, the unemployed expressed less justifying attitudes (p = 0.005, d = 0.17)†
49	Hsu *et al.* (2024)	Taiwan	1. Identify socio-demographic factors associated with normative beliefs around suicide 2. Examine whether mental health status is associated with normative beliefs 3. Examine whether individuals endorsing certain normative beliefs around suicide are less supportive of government suicide prevention measures	Sampled group: Taiwanese adults aged 20+ N = 1087: • Age: 20-39 = 33.5% 40-59 = 45.9% ≥ 60 = 20.6% • Sex: Women = 50.8% Men = 49.2% • Ethnicity: Not reported	Cross-sectional	Suicide as a Right – single item inquiring into whether the suicide is a right.	Marital status Employment status	In bivariate analyses, marital status was associated with views of suicide as a right (p < 0.001). When controlling for other factors, the single (OR = 1.5, 95% CI = [1.0, 2.1], p = 0.045) and other marital groups (OR = 1.9, 95% CI = [1.0, 3.3], p = 0.034) were more likely to view suicide as a right than the married. In bivariate analyses, employment status was associated with views of suicide as a right (p < 0.001). When controlling for other factors, the unemployed (OR = 0.7, 95% = [0.2, 2.2], p = 0.521), students (OR = 1.4, 95% CI = [0.5, 4.1], p = 0.503), homemakers (OR = 0.7, 95% CI = [0.4, 1.1], p = 0.090) and the retired (OR = 0.6, 95% = [0.4, 1.1], p = 0.107) did not differ from the employed.
50	Raj *et al.* (2024)*	Jammu and Kashmir	1. Determine attitudes toward suicide and help-seeking behaviour among medical undergraduates in the union territory of Jammu and Kashmir	Sampled group: Medical students N = 275 • Age: M = 22.05 Range = 17-28 • Sex: Women = 57.8% Men = 42.2% • Ethnicity: Not reported	Cross-sectional	ATTS: Suicide as Acceptable – gauges the acceptability of suicide in response to physical illness and views of suicide as a right	Religious affiliation	Religious affiliation associated with suicide approval (p < 0.001). Muslims scored lowest on ATTS-Suicide as Acceptable, followed by Hindus and people belonging to other religions.

Notes:
* Results retrieved by contacting author(s)
† In the original article, the authors report that the unemployed held more justifying attitudes toward suicide. However, the authors later amended their statement in an erratum (Kawashima *et al.* 2021).

Appendix 3C – Data Extraction Sheet

General Information	
Title	
Author(s)	
Date of publication	
Study Design	
Research aim(s)	

Sampling Procedure	
Primary or secondary data	
Data source (for secondary data)	
Time of data collection	
Location	
Sample size	
Target population	
Sampling strategy	

Participant Characteristics	
Age	
Gender	
Ethnicity	

Primary Outcome	
Aspects of suicide approval measured	
Measure of suicidal approval	
Single- or multi-item	
Internal consistency (for multi-item measures)	

Secondary Outcome	
Aspects of stigma measured	
Measure of suicide stigma included	
Single- or multi-item	

Internal consistency (for multi-item measures)	

Exposure	
Aspect(s) of social relationships studied	
Measurement of social relationships	
Single- or multi-item	
Internal consistency (for multi-item measures)	

Analysis Methods	
Statistical method used	
Control variables included	

Findings	
Association(s) with suicide approval	
Interaction(s) with other covariates	
Association(s) with suicide stigma	

Limitations	
Sources of bias	
Author Noted Limitations	

Notes:

Appendix 5A – Variable Details

No.	*Variable*	*WVS Code*	*Question*	*Coding Scheme*
1	Suicide Approval	V207/F123	Please tell me for each of the following whether you think it can always be justified, never be justified, or something in between, using this card: Suicide	1 = Never justifiable 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 7 = 7 8 = 8 9 = 9 10 = Always justifiable
2	Family Trust	V102/ d001_b	I would like to ask you how much you trust people from various groups. Could you tell me for each whether you trust people from this group completely, somewhat, not very much or not at all? Your family	1 = Do not trust at all 2 = Do not trust very much 3 = Trust somewhat 4 = Trust completely
3	Neighbour Trust	V103/ g007_18_b	I would like to ask you how much you trust people from various groups. Could you tell me for each whether you trust people from this group completely, somewhat, not very much or not at all? People in your neighbourhood	1 = Do not trust at all 2 = Do not trust very much 3 = Trust somewhat 4 = Trust completely
4	Personal Trust	V104/ g007_33_b	I would like to ask you how much you trust people from various groups. Could you tell me for each whether you trust people from this group completely, somewhat, not very much or not at all? People you know personally	1 = Do not trust at all 2 = Do not trust very much 3 = Trust somewhat 4 = Trust completely

5	Stranger Trust	V105/ g007_34_b	I would like to ask you how much you trust people from various groups. Could you tell me for each whether you trust people from this group completely, somewhat, not very much or not at all? People you meet for the first time	1 = Do not trust at all 2 = Do not trust very much 3 = Trust somewhat 4 = Trust completely
6	Religion Trust	V106/ g007_35_b	I would like to ask you how much you trust people from various groups. Could you tell me for each whether you trust people from this group completely, somewhat, not very much or not at all? People of another religion	1 = Do not trust at all 2 = Do not trust very much 3 = Trust somewhat 4 = Trust completely
7	National Trust	V107/ g007_36_b	I would like to ask you how much you trust people from various groups. Could you tell me for each whether you trust people from this group completely, somewhat, not very much or not at all? People of another nationality	1 = Do not trust at all 2 = Do not trust very much 3 = Trust somewhat 4 = Trust completely
8	Marital Status	V57/X007	What is your current legal marital status?	1 = Married 1 = Living together as married 2 = Divorced 2 = Separated 3 = Widowed 4 = Single
9	Number of children	V58/X011	How many children do you have?	0 = 0 1 = 1 2 = 2 3 = 3 4 = 4 5 = 5+

10	Religious Person	V147/F034	Independently of whether you go to church or not, would you say you are...	0 = Not a religious person/a convinced atheist 1 = A religious person
11	Church Attendance	V145/F028	Apart from weddings, funerals and christenings, about how often do you attend religious services these days?	1 = Never, practically never 2 = Less often 3 = Once a year 4 = Other specific holy days 5 = Only on special holy days/Christmas/Easter days 6 = Once a month 7 = Once a week 8 = More than once a week
12	Abortion Attitudes	V204/F120	Please tell me for each of the following whether you think it can always be justified, never be justified, or something in between, using this card: Abortion	1 = Never justifiable 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 7 = 7 8 = 8 9 = 9 10 = Always justifiable
13	Divorce Attitudes	V205/F121	Please tell me for each of the following whether you think it can always be justified, never be justified, or something in between, using this card: Divorce	1 = Never justifiable 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 7 = 7 8 = 8 9 = 9 10 = Always justifiable
14	Men Jobs	V45/C001	Jobs scarce: Men should have more right to a job than women	1 = Agree 2 = Neither 3 = Disagree
15	Men Politics	V51/D059	On the whole, men make better political leaders than women do	1 = Agree strongly 2 = Agree 3 = Disagree 4 = Strongly disagree

16	Men University	V52/D060	A university education is more important for a boy than for a girl	1 = Agree strongly 2 = Agree 3 = Disagree 4 = Strongly disagree
17	Independence	V12/A029	Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Independence	0 = Not mentioned 1 = Mentioned
18	Imagination	V15/A034	Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Imagination	0 = Not mentioned 1 = Mentioned
19	Faith	V19/A040	Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Religious faith	0 = Mentioned 1 = Not mentioned
20	Obedience	V21/A042	Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Obedience	0 = Mentioned 1 = Not mentioned
21	Life Satisfaction	V23/A170	All things considered, how satisfied are you with your life as a whole these days? Please use this card to help with your answer.	1 = Dissatisfied 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 7 = 7 8 = 8

				9 = 9 10 = Satisfied
22	Perceived Control	V55/A173	Some people feel they have completely free choice and control over their lives, and other people feel that what they do has no real effect on what happens to them. Please use the scale to indicate how much freedom of choice and control you feel you have over the way your life turns out?	1 = None at all 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 7 = 7 8 = 8 9 = 9 10 = A great deal
23	Age	V242/X003	Age of respondent (constructed)	Age in years
24	Sex	V240/X001	Sex of respondent	0 = Male 1 = Female
25	Education Level	V248/ X025A_01	Highest educational level attained (CASMIN/ISCED-11)	*CASMIN* 0 = No formal education 0 = Incomplete primary school 1 = Complete primary school 1 = Incomplete secondary school: technical/ vocational type 1 = Incomplete secondary school: university-preparatory type 2 = Complete secondary school: technical/ vocational type 2 = Complete secondary school: university-preparatory type 2 = Some university-level education, without degree 3 = University - level education, with degree

				ISCED-11 0 = Less than primary 1 = Primary 1 = Lower secondary 2 = Upper secondary 2 = Post-secondary non tertiary 2 = Short-cycle tertiary 3 = Bachelor or equivalent 3 = Master or equivalent 3 = Doctoral or equivalent

Appendix 5B – Self-Expression Value Index

The self-expression value index used in the present study is taken from Welzel (2010, pp.157-9). Welzel combined items through a formative index logic to acknowledge that, while the three domains of self-expression values are complementary to one another, they are nevertheless distinct. Thus, to remain consistent with Welzel's original formulation of this index, his procedures are applied in the present analysis and are outlined below:

1. Convert all items to 0-1 scale:
   a) For binary items: leave on original scale
   b) For ordinal/continuous items: subtract 1 from all scores and divide by maximum value
2. Construct self-expression subindices
   a) Sum items 12-3 for sexual liberty subindex
   b) Sum items 14-6 for gender equality subindex
   c) Sum items 17-20 for personal autonomy subindex
   d) Divide each subindex by number of items used in its construction
3. Sum each subindex to form overall index

Appendix 6A – Summary of Trust Items

Variable	Median	Mode	IQR	Min	Max
Family Trust	4	4	0	1	4
Neighbour Trust	3	3	1	1	4
Personal Trust	3	3	1	1	4
Stranger Trust	2	2	2	1	4
Religion Trust	2	3	1	1	4
National Trust	2	3	1	1	4

N = 221265
Statistics calculated after removing missing values

Appendix 6B – Fit Indices from Ordinal Analyses

	Model 1	**Model 2**	**Model 3**	**Model 4**
Communalities				
Family Trust	0.043	0.294	NA	0.419
Neighbour Trust	0.212	**0.7**	**0.616**	**0.636**
Personal Trust	0.305	0.502	0.525	0.513
Strangers Trust	0.493	0.509	0.53	**0.77**
Religion Trust	**0.753**	**0.775**	**0.774**	**0.74**
National Trust	**0.777**	**0.813**	**0.818**	**0.859**
Fit Indices				
RMSEA	0.244	0.103	0.016	NA
RMSEA (95% CI)	(0.242, 0.245)	(0.100, 0.105)	(0.012, 0.020)	NA
TLI	0.648	0.938	0.999	NA
RSMR	0.147	0.029	0.002	0

Notes:
EFA with OBLIMIN rotation applied to polychoric correlation matrix
Good fitting items emboldened
N = 221265

Appendix 6C – Model 3 with Group-Mean Centring

Trust Item	**Factor 1**	**Factor 2**	**h^2**
Neighbours	-0.042	0.723	0.493
Personal	0.069	0.584	0.387
Strangers	0.395	0.306	0.373
Religious Outgroups	0.814	0.012	**0.673**
National Outgroups	0.859	-0.026	**0.716**
% Var Explained	0.325	0.204	
Fit Indices			
RMSEA (95% CI)	0.004 (0.000, 0.009)		
TLI	1		
RMSR	0.001		

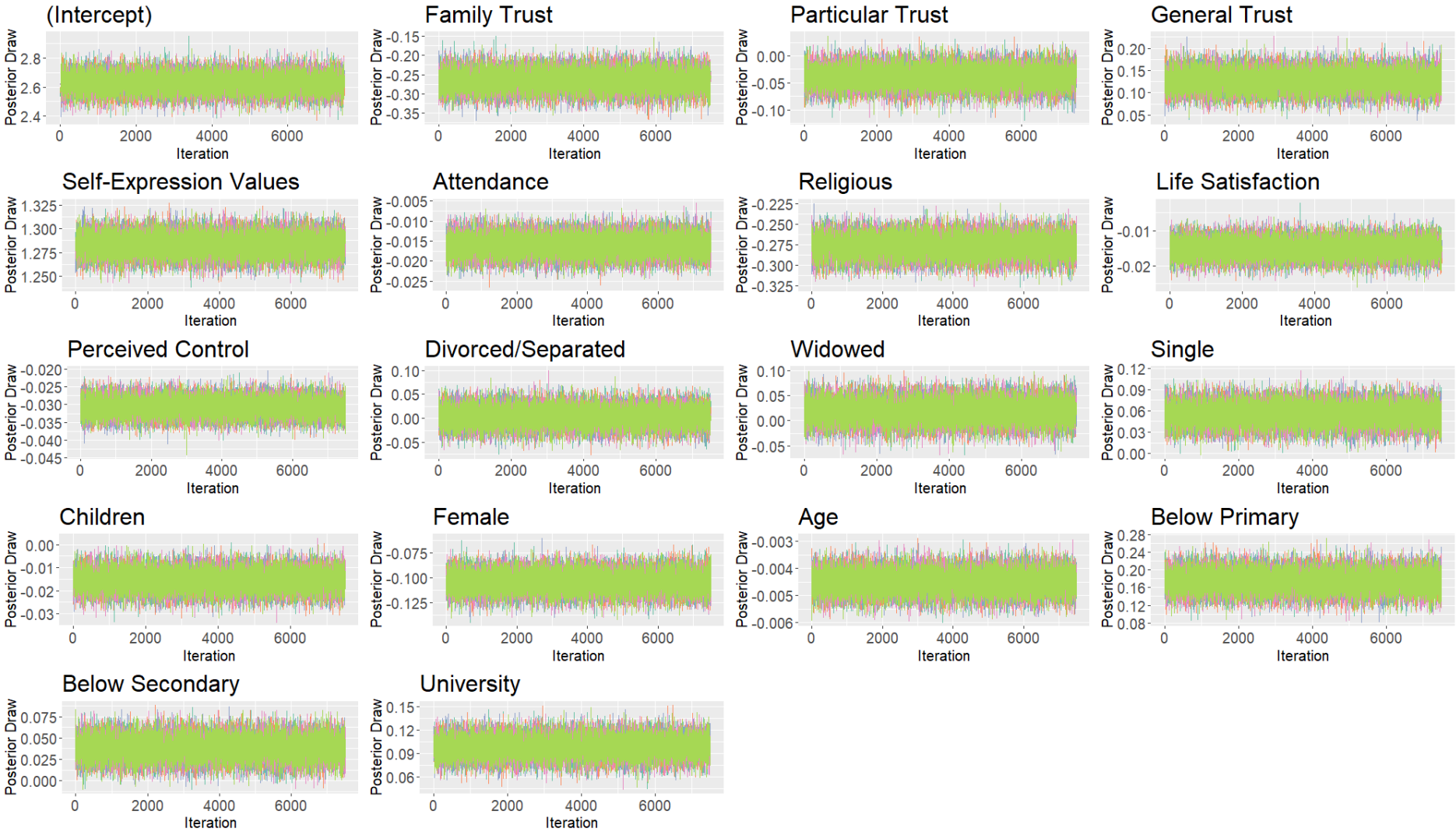
Notes:
EFA with OBLIMIN rotation applied to Pearson correlation matrix
Good fitting items emboldened
N = 221265

Appendix 7A – Descriptive Statistics for Variables

Variable	Mean	Median	Mode	SD	IQR	Min	Max
Suicide Approval	2.55	1.00		2.43	3.00	1	10
Family Trust		4.00	4		0.00	1	4
Particular Trust	2.93	3.00		0.68	1.00	1	4
General Trust	2.22	2.00		0.72	1.00	1	4
Self-Expression Values	1.49	1.44		0.64	0.92	0	3
Religiousness			1				
Church Attendance		5.00	1		5.00	1	8
Life Satisfaction	7.10	7.00		2.20	3.00	1	10
Perceived Control	7.22	8.00		2.20	3.00	1	10
Marital Status			1				
Children		2.00	0		3.00	0	5
Age	43.78	42.00		16.84	27.00	16	99
Sex			1				
Education Level			2				

Notes:
N = 185459
Statistics calculated after removing missing values

Appendix 7B – Trace Plots of Regression Coefficients from Model 3



Notes: Chains = 5, Iterations per chain = 7500

Appendix 7C – Estimates from Model 3

Parameter	Mean	SD	Lower 95%	Upper 95%	$\widehat{R}$
Intercept	2.628	0.064	2.502	2.753	1.0000
Family Trust	-0.265	0.026	-0.315	-0.214	1.0001
Particular Trust	-0.039	0.018	-0.075	-0.003	1.0000
General Trust	0.127	0.022	0.083	0.171	1.0000
Self-Expression Values	1.283	0.011	1.261	1.305	1.0001
Church Attendance	-0.016	0.003	-0.021	-0.011	1.0000
Religiousness	-0.276	0.013	-0.301	-0.252	1.0001
Life Satisfaction	-0.015	0.003	-0.02	-0.01	1.0000
Perceived Control	-0.031	0.002	-0.036	-0.026	1.0000
Marital Status					
Married/Together (*ref.*)					
Divorced/ Separated	0.004	0.02	-0.035	0.043	1.0000
Widowed	0.018	0.022	-0.024	0.062	1.0000
Single	0.055	0.015	0.026	0.085	1.0001
Children	-0.016	0.004	-0.024	-0.007	1.0000
Sex					
Male (*ref.*)					
Female	-0.104	0.01	-0.124	-0.084	1.0000
Age	-0.005	0	-0.005	-0.004	1.0001
Education Level					
Below Primary	0.175	0.023	0.129	0.22	1.0000
Below Secondary	0.038	0.013	0.013	0.064	1.0001
Below University (*ref.*)					
University	0.098	0.013	0.073	0.124	1.0000

Notes:
N = 185459 individuals, 99 countries
Deviance = 799025.435
DIC = 799431.8

Appendix 7D – Country-Specific Trust Effects

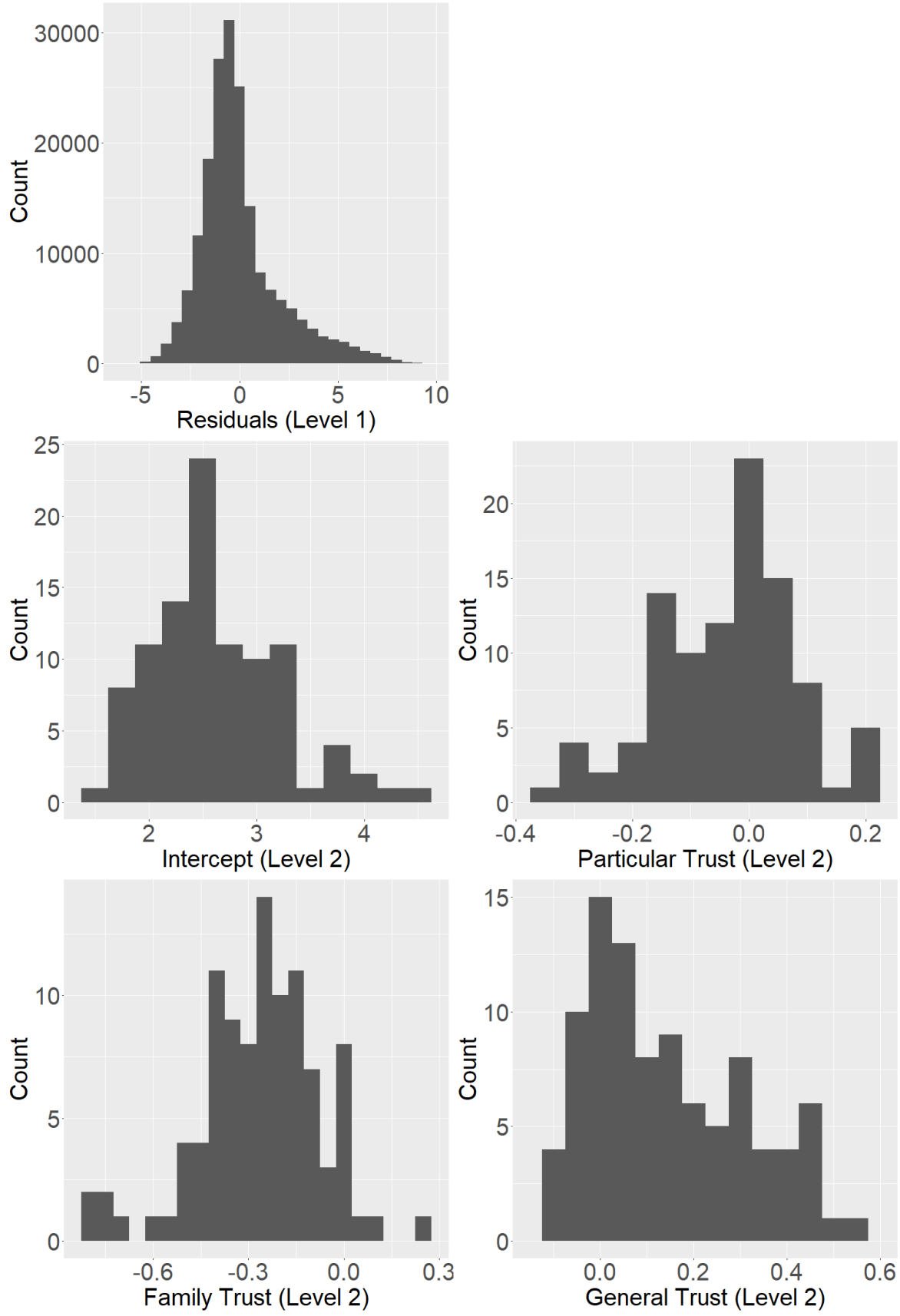
Country	Family Trust	Particular Trust	General Trust
Albania	-0.158	0.025	-0.064
Algeria	-0.438*	0.2*	0.292*
Andorra	-0.263*	-0.153	0.291*
Argentina	-0.407*	-0.057	-0.018
Armenia	-0.315*	0.057	0.011
Australia	-0.512*	-0.145	0.287*
Austria	-0.361*	-0.295*	0.43*
Azerbaijan	-0.161*	-0.133*	0.198*
Bangladesh	-0.214	-0.091	0.045
Belarus	-0.229*	0.03	0.032
Bolivia	-0.157*	0.055	0.026
Bosnia Herzegovina	-0.154	0.129	-0.062
Brazil	-0.237*	-0.015	0.1
Bulgaria	-0.376*	-0.183	0.031
Canada	-0.505*	-0.299*	0.35*
Chile	-0.776*	-0.058	0.147
China	-0.229*	-0.096	0.075
Colombia	-0.095	-0.022	-0.032
Croatia	-0.331*	0.013	0.002
Cyprus	-0.261*	0.057	0.109
Czechia	-0.353*	-0.233*	0.135
Denmark	-0.752*	-0.142	0.425*
Ecuador	-0.192*	0.023	-0.144*
Egypt	-0.254	0.003	-0.041
Estonia	-0.355*	-0.07	0.15
Ethiopia	0.007	-0.129	-0.093
Finland	-0.734*	-0.302*	0.239*
France	-0.208*	0.067	0.343*
Georgia	-0.005	0.035	-0.168*
Germany	-0.377*	-0.133*	0.463*
Ghana	0.025	-0.018	-0.043
Greece	-0.329*	0.008	0.065
Guatemala	-0.153	-0.15	0.423*
Haiti	-0.096	0.125*	-0.095
Hong Kong	-0.599*	-0.131	0.284*
Hungary	-0.361*	-0.109	0.172*
Iceland	-0.41*	-0.303*	0.306*
India	-0.379*	-0.11	0.284*
Indonesia	-0.113	0.005	0.001
Iran	-0.161	0.096	0.012
Iraq	-0.402*	-0.036	0.22*
Italy	-0.385*	0.056	0.256*
Japan	-0.432*	-0.144	0.114
Jordan	-0.1	0.11	-0.056
Kazakhstan	-0.142	0.044	-0.256*
Kenya	0.098	-0.006	0.049
Kyrgyzstan	-0.308*	0.072	0.07

Latvia	-0.324*	-0.024	0.069
Lebanon	-0.777*	0.063	0.398*
Libya	-0.294*	0.081	-0.091
Lithuania	-0.023	-0.164	0.006
Macau	-0.394*	-0.152	0.18
Malasia	-0.158	-0.154*	0.45*
Maldives	-0.291*	0.045	0.153
Mexico	-0.378*	0.001	0.115*
Mongolia	-0.469*	0.017	0.34*
Montenegro	-0.302*	-0.063	0.104
Morocco	-0.146	-0.043	0.049
Myanmar	-0.058	0.124	-0.085
Netherlands	-0.157*	-0.033	0.484*
New Zealand	-0.253	-0.173	0.205
Nicaragua	0.013	-0.033	0.123
Nigeria	0.226*	-0.025	-0.051
North Macedonia	-0.388*	0.092	-0.072
Norway	-0.245	-0.255*	0.453*
Pakistan	-0.083	-0.063	0.138*
Palestine	-0.223	-0.109	0.01
Peru	-0.036	0.075	-0.061
Philippines	-0.165	-0.023	0.241*
Poland	-0.263*	-0.212*	0.289*
Portugal	-0.08	-0.083	0.024
Puerto Rico	-0.017	0.013	0.003
Romania	-0.197*	0.083	0.005
Russia	-0.484*	-0.018	0.125*
Rwanda	-0.084	-0.039	0.072
Serbia	-0.466*	-0.005	0.198*
Singapore	-0.271*	-0.003	0.355*
Slovakia	-0.271*	-0.037	0.023
Slovenia	-0.197	-0.084	0.449*
South Africa	-0.711*	-0.35*	0.556*
South Korea	-0.267*	-0.167*	0.05
Spain	-0.537*	-0.214*	0.4*
Sweden	-0.284*	-0.112	0.262*
Switzerland	-0.327*	-0.076	0.395*
Taiwan	-0.389*	-0.062	0.083
Tajikistan	-0.18	0.108	-0.166
Thailand	-0.211*	0.014	0.191*
Trinidad	0	-0.014	-0.023
Tunisia	-0.332*	-0.018	0.06
Turkey	-0.291*	0.055	0.172*
UK	-0.243*	0.183*	0.116
Ukraine	-0.481*	-0.216*	0.257*
Uruguay	-0.209*	0.035	-0.011
USA	-0.26*	-0.106	0.153*
Uzbekistan	-0.068	0.191*	-0.035
Venezuela	-0.359*	0.04	0.286*
Vietnam	0.041	0.199	-0.181

Yemen	-0.213	-0.01	-0.004
Zimbabwe	-0.018	0.195	-0.003

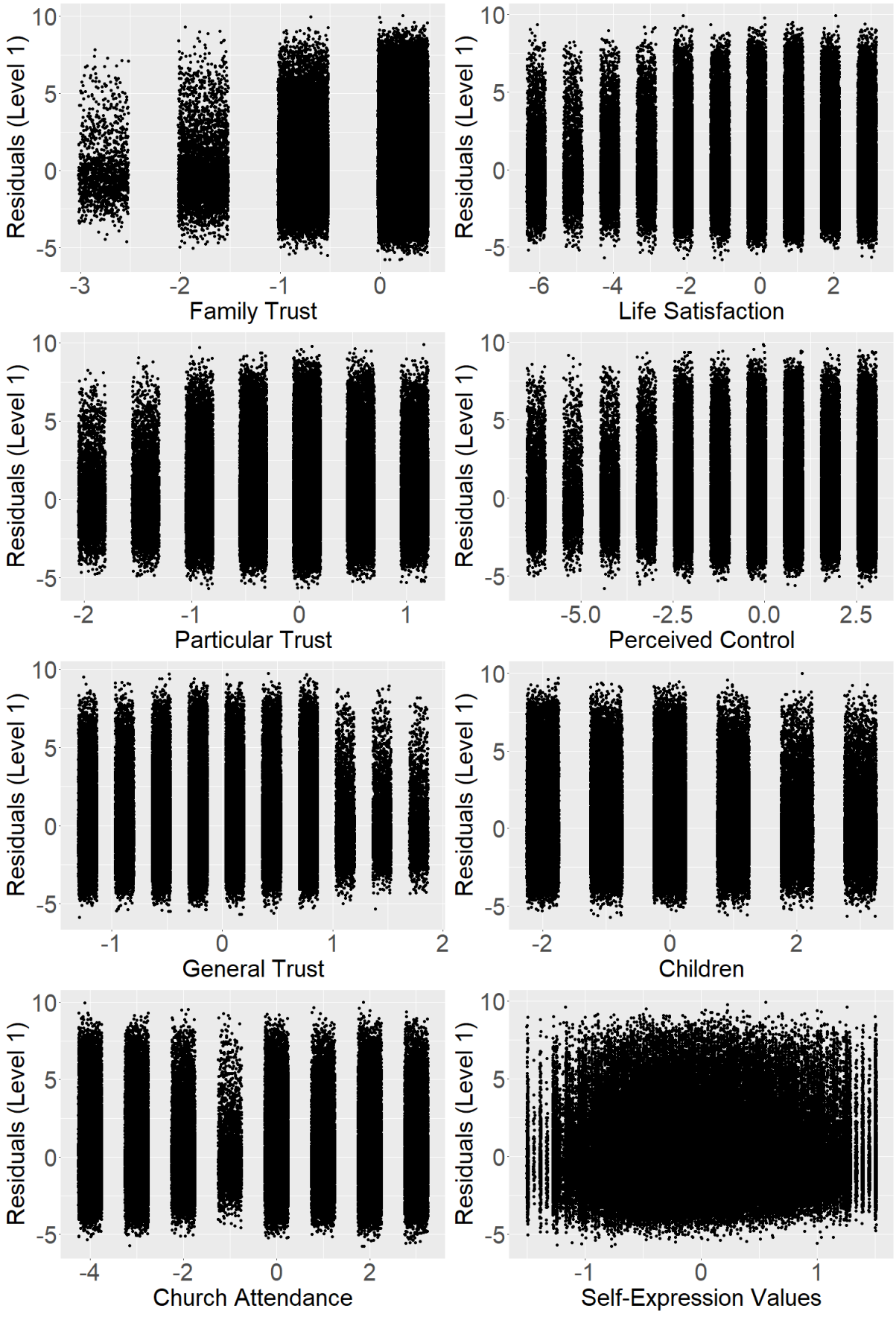
Notes:
N = 185459 individuals, 99 countries
* = Statistically significant at 95% level
Estimates taken from Model 3

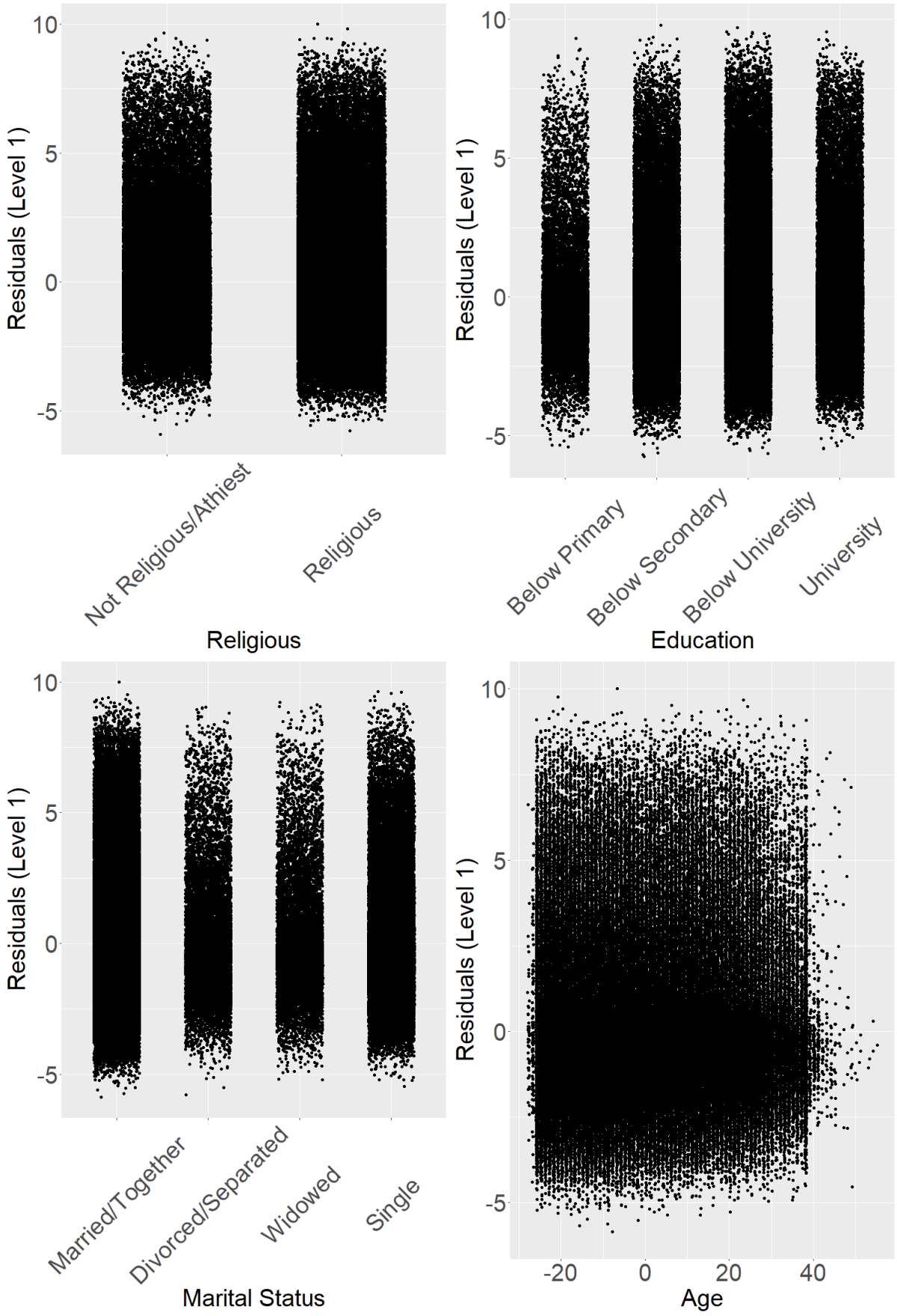
Appendix 7E – Distribution of Residuals from Model 3



Data represents posterior means of residuals

Appendix 7F – Model 3 Residuals by Predictor Values





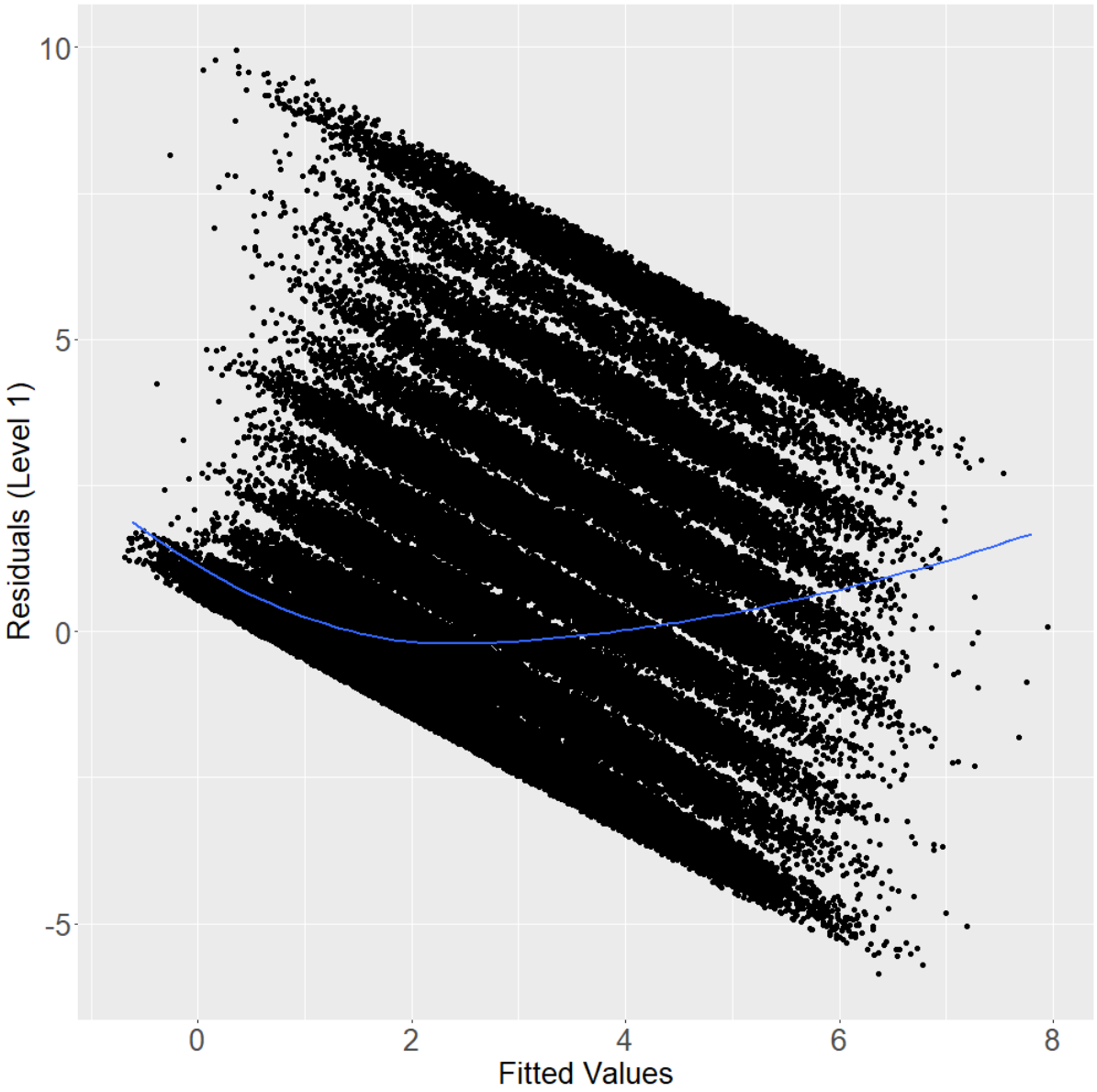
Jittering applied to data points
Data represents posterior means of residuals

Appendix 7G – Estimates from Maximal Model

Parameter	**Mean**	**SD**	**Lower 95%**	**Upper 95%**	$\widehat{R}$
Intercept	2.523	0.078	2.369	2.674	1.0001
Family Trust	-0.25	0.027	-0.302	-0.197	1.0000
Particular Trust	-0.044	0.02	-0.083	-0.005	1.0000
General Trust	0.121	0.021	0.079	0.163	1.0000
Self-Expression Values	1.175	0.062	1.052	1.296	1.0001
Church Attendance	-0.013	0.012	-0.036	0.01	1.0001
Religiousness	-0.222	0.033	-0.287	-0.157	1.0001
Life Satisfaction	-0.023	0.012	-0.045	-0.000	1.0000
Perceived Control	-0.033	0.011	-0.055	-0.011	1.0000
Marital Status					
Married (*ref.*)					
Divorced/ Separated	0.014	0.03	-0.044	0.072	1.0000
Widowed	0.03	0.032	-0.034	0.092	1.0000
Single	0.052	0.027	0.000	0.104	1.0000
Children	-0.025	0.014	-0.052	0.001	1.0000
Sex					
Male (*ref.*)					
Female	-0.085	0.025	-0.134	-0.037	1.0002
Age	-0.004	0.01	-0.023	0.015	1.0000
Education Level					
Below Primary	0.103	0.045	0.014	0.192	1.0003
Below Secondary	0.015	0.025	-0.034	0.064	1.0000
Below University (*ref.*)					
University	0.038	0.031	-0.023	0.098	1.0000

Notes:
N = 185459 individuals, 99 countries
Deviance = 791953.487
DIC = 793404.4

Appendix 7H – Residuals by Fitted Values



Blue line = LOESS smoother
Jittering applied to data points
Data represents posterior means of residuals

Appendix 7I – Estimates from Probit Model

Predictor	**Mean**	**SD**	**Lower 95%**	**Upper 95%**	$\widehat{R}$
Family Trust	-0.072	0.003	-0.078	-0.066	1.0000
Particular Trust	-0.019	0.004	-0.026	-0.011	1.0001
General Trust	0.066	0.004	0.059	0.073	1.0000
Self-Expression Values	0.462	0.004	0.454	0.471	1.0006
Church Attendance	-0.013	0.004	-0.021	-0.006	1.0016
Religiousness	-0.131	0.007	-0.145	-0.116	1.0013
Life Satisfaction	-0.028	0.003	-0.035	-0.021	1.0011
Perceived Control	-0.063	0.003	-0.069	-0.056	1.0009
Marital Status					
Married/ Together (*ref.*)					
Divorced/ Separated	-0.009	0.011	-0.03	0.014	1.0010
Widowed	-0.001	0.013	-0.027	0.025	1.0002
Single	0.02	0.009	0.004	0.038	1.0010
Children	-0.02	0.004	-0.028	-0.013	1.0013
Sex					
Male (*ref.*)					
Female	-0.065	0.006	-0.076	-0.053	1.0007
Age	-0.049	0.004	-0.056	-0.041	1.0012
Education Level					
Below Primary	0.069	0.015	0.04	0.097	1.0022
Below Secondary	0.009	0.008	-0.006	0.024	1.0008
Below University (*ref.*)					
University	0.041	0.007	0.026	0.055	1.0019
Thresholds					
No | Low approval	0.229	0.043	0.118	0.339	1.0004
Low | Medium approval	0.941	0.043	0.830	1.051	1.0013
Medium | High approval	1.805	0.043	1.693	1.915	1.0034

Notes:
N = 185459 individuals, 99 countries
Deviance = 190608.652
DIC = 243623.1
Thinning interval of 10 applied to MCMC chains

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