

Belief, Belonging, or Both? The Interaction Between Supernatural Belief and Identity Fusion,  
and their Influence on Cooperative Behaviour

By

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### **Abstract**

Research within the psychology of religion has illustrated the importance of both religious belief and religious belonging for facilitating cooperative behaviour. Specifically, the supernatural punishment hypothesis (Johnson, 2016; Johnson & Krüger, 2004) and identity fusion (Swann et al., 2009; Whitehouse, 2018) discuss belief and belonging, respectively. This thesis examines the connection of these two areas, with a focus on the understudied religious concept of karma. In Study 1, 193 participants took part in an online questionnaire, with a five-condition between subjects design, that investigated the content of religious belief by using karma and god related religious priming stimuli (images and vignettes) to influence individual's belief. None of the four experimental conditions were found to change responses on belief in supernatural agents or karma. Belief in god/karma was associated with endorsement of both a punitive and benevolent god/karma. However, when both endorsements were included in the model, only benevolent endorsement was significant. In Study 2, 402 participants took part in a three-condition mixed-methods design with six repeated trials of a voluntary contribution task, which investigated how karma and god related religious priming stimuli (vignettes) influenced cooperative behaviour. Mixed methods analysis revealed that those in the karma condition had higher cooperative tendencies than those in the neutral condition, but did not differ from the god condition. Belief in supernatural agents did not affect how individuals were affected by the god condition. However, those with higher belief in supernatural agents and higher identity fusion were the least cooperative within the karma condition. Contrary to what was predicted, increased belief in karma predicted un-cooperative behaviour in the karma condition. These and other important findings are discussed with focus on the New Zealand context and how the findings from this

thesis contributes to the supernatural punishment and identity fusion literature, by highlighting implications, limitations, and areas of focus for future research.

## CHAPTER 1: Introduction

Throughout most of humanity's early history we lived together in small groups, where individuals thrived in tightly knit, highly interpersonal communities that were mainly composed of family. Many millennia later, we now live in vast, anonymous communities, that can even transcend geography via the internet. This transition has been accompanied by a variety of changes to how humans interact with one another. However, it is somewhat of an evolutionary mystery as to how this process has taken place and how these new, much larger, communities continue to function through cooperative action, despite our evolutionary roots of small, tightly knit groups. This transition presents numerous problems for the development of cooperation, considering the minimal time in which these changes have taken place, in terms of evolution.

The free-rider problem is one such difficulty. It refers to the members of a group who do not contribute to the group's cooperation, but gain the benefits of it (Baumol, 2004). This free riding can be done in secret and is detrimental to the group's development, whether it be free riders taking resources without providing any compensation, or free riders directly interfering with the groups success by making transgressions against other members. This problem is exacerbated as societies increase in complexity and anonymity (Norenzayan et al., 2016). With increased anonymity it is easier to get away with free riding without any other members of the group being aware and with increased complexity there is often more opportunities for free riders. Consequentially, societies needed to develop some way to deal with free riders. Thus, we punish those who do not contribute meaningfully to the group (Johnson & Krüger, 2004).

However, punishment itself comes with a variety of problems. Delivering punishment itself is a costly act that members of the group have to actively engage in, as is the active monitoring of transgressors (Johnson & Bering, 2006). These roles have been taken up by legal

and policing systems in the modern world. Throughout much of our history these systems have been interconnected with religious systems. In fact, the secularisation of much of these systems is largely a recent development in evolutionary terms, and religious systems still contribute or are utilised in many ‘secularised’ penal or government systems (Johnson & Krüger, 2004).

Johnson and Bering (2006) argue that these systems would fall short of their purpose in early history, as they relied on members with a limited capacity for monitoring and punishment, due to the pressure of other needs and commitments to the group. Therefore, members of the group can fail to deliver punishment, and this has introduced an additional complication to the problem. If members of the punishment system are transgressors in their punishment it creates another layer of complexity and further exacerbates these problems, as there is now a need for second-order punishment due to second-order free riding. As such, these systems alone cannot capture all transgressors and free riders and does not reduce the uncertainty and worry of cooperating members of the group of these and potential free riders. Thus, the same system that should remove or discourage free riding provides extra opportunities for free riders and does not solve the problem itself. Johnson and Bering posit that the supernatural punishment hypothesis provides a solution to this problem, such that beliefs in supernatural agents that have the power and ability to threaten punishment on transgressors supports the development of cooperation<sup>1</sup>.

These systems of religious belief do not exist in a vacuum. Individuals are part of groups which hold a shared belief systems and they often share time and space with each other, developing the bonds between group members. The identity fusion theory combines research

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<sup>1</sup> The term ‘supernatural’ has some problematic associations and assumptions over what is ‘natural’. For the purposes of this thesis this term will be used as it has been in the SPH literature. See Saler (1977) for further reading.

from anthropological perspectives on religious behaviour (Whitehouse et al., 2017) and social psychology research (Swann et al., 2009) from the social identity perspective to argue that individuals form a sense of identity with the members of the group and with the group itself through their shared beliefs, behaviours, and activities. These bonds between group members help to foster cohesion, cooperation, and dissuade free-riding or transgressions against the group (Whitehouse et al., 2017). The identity fusion theory offers an explanation through how these bonds are developed. Such that an intense feeling of belonging with the group drives individuals to engage in self-sacrifice on behalf of the group.

Thus, group selection mechanisms (for feelings of belonging within the group) as well as individual selection mechanisms (for belief that individuals hold) have purportedly contributed to the development of religious belief associated cognitions. Consequently, evolutionary pressures influenced both groups and individuals to select for both identity fusion and the cognitive biases that supported religious belief. This thesis will examine how these concepts influence cooperative behaviour together within an experimental context. The following chapter gives an overview of how religious belief is theorised to influence cooperation, namely, through the threat of supernatural punishment. It will also highlight how identity fusion is similarly related to cooperation, before giving an overview of Studies 1 and 2 and their hypotheses.

## CHAPTER 2: Review of the Literature

### **Belief: Supernatural Agents**

The supernatural punishment hypothesis (SPH) (Johnson, 2016; Johnson & Krüger, 2004) posits that belief in supernatural agents is a mechanism that has facilitated the evolution of cooperation. The SPH posits that people have developed beliefs in supernatural agents, in part as a solution to the problems of punishment and second-order free riding. The presence of a supernatural punisher removes second-order free riding, removes the cost of punishment, and introduces the threat of being both automatically caught and automatically punished for free riding (Johnson & Bering, 2006). The most common supernatural agent is the moralising high god (MHG) of the ‘prosocial religions’ (Christianity, Judaism, and Islam; Norenzayan et al., 2016). However, many other supernatural agents exist and have existed across the globe. For example, evidence of different supernatural agents across the Pacific suggests that supernatural punishment beliefs were widespread and varied throughout history (Watts, Sheehan, et al., 2015). In these contexts, the prosocial religions have often spread through cultural evolution mechanisms such as war, colonisation, and proliferation via missionaries. MHGs are usually concerned with many issues surrounding morality and punishment. One of the primary roles of a MHG, therefore, is the punishment of non-cooperators. For if you do not cooperate with the group you will be punished by god.

On the other hand, god does not just punish, but also rewards. Many researchers focus on either the benevolence of god or on god’s punitive nature and how these influence cooperation. For example, countries with higher levels of belief in heaven and lower levels of belief in hell have higher crime rates (Shariff & Rhemtulla, 2012). Additionally, DeBono et al. (2017) identified that being exposed to benevolence increased uncooperative behaviour, whereas being



exposed to punishment did not influence cooperative behaviour. Contrastingly, White et al. (2019) identified little effect of punitive or benevolent endorsement on cooperation or on moderating the effect of supernatural framing of cooperative tasks. As such, the nuanced systems behind the SPH are currently unclear and worthy of further investigation.

The SPH posits that belief in supernatural punishment has developed specifically for supernatural *agents* (such as gods or spirits), such that the agent is responsible for the threat and enactment of punishment. The MHG is an agent, as are ancestor spirits and other types of supernatural agents normally covered in the SPH. The importance of the *agent* of the SPH is highlighted first by Johnson and Bering (2006) and has been the basis of much of the research in this area (e.g., Norenzayan et al., 2016; Schloss & Murray, 2011). Researchers in the evolutionary psychology of religion argue that beliefs in supernatural agents have arisen as either a direct adaptation or as a by-product<sup>2</sup> from cognitive biases that extend our social cognition about other people to supernatural agents.

One of these biases is a tendency to detect agency that has adaptive functions. For instance, it is advantageous to falsely perceive that a nearby bush is rustling because it holds a rival group member. However, it is disadvantageous, with potentially deadly consequences, to falsely perceive the same rustling as a gust of wind (rather than a rival group member). Thus, an overly active tendency to perceive agency is argued to have led to supernatural beliefs to use agency to explain unexplainable events. When events that occur beyond one's control and it is beyond their understanding to be explained by 'natural' causes, it is easier – in terms of cognitive load – to explain the events with supernatural causes. Thus, extending our overly active agency

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<sup>2</sup> There is still much debate concerning the by-product vs. direct adaptation of religion. For further reading refer to Norenzayan et al. (2016).

detection, it is even easier to explain them as being enacted by supernatural agents (Guthrie, 1993; Johnson & Bering, 2006). When these supernatural agents are omnipotent, omnipresent, and omniscient as the MHG is, events that transpire are even easier to explain. With this belief, the role that these supernatural agents play in society can expand as societies develop and their beliefs expand.

Consequently, supernatural agents are effective punishers. By relieving cognitive load, the reliance on supernatural agents (that are often omnipotent, omnipresent, and omniscient) as punishers, allows members of the group to focus cognitive load on group action rather than on looking for potential free riders. Thus, the explanatory value of belief in supernatural agents that take the role of punishers is clear and reasonable as a contributing factor to the development of cooperation. While the exact pattern of the expansion of these beliefs is unclear, its prevalence is, by the success of the ‘prosocial religions’ across the globe.

However, most religions do not have a moralising, omnipotent, omnipresent, and omniscient supernatural agent (Watts, Greenhill, et al., 2015). Instead most religions that have existed alongside, or before, the ‘prosocial religions’ focus on more local agents such as sorcerers, spirits, or ancestor gods (Johnson & Bering, 2006; Watts, Greenhill, et al., 2015). Research has also been conducted on other types of supernatural agents such as those represented across the Pacific (Lang et al., 2019; McNamara & Henrich, 2018; Watts, Sheehan, et al., 2015). The agents within these religions and societies are more limited in their application of punishment, if they punish at all. For example, the *Kalou-vu* (root/ancestor god) of Yasawa, Fiji are concerned with punishing violations of the local customs and norms of villages. Whereas the *Kalou ni vola* (god of the book/Christian god) enforces universal issues and encourages cooperation through the more vague threat of punishment for not being a good Christian

(McNamara & Henrich, 2018). Thus, multiple supernatural agents – that might at first glance appear contradictory – can coexist in individuals’ beliefs, fulfilling different roles in their explanatory arsenal.

### **Belief: A Non-Agentive Approach**

The SPH is mostly based on research from ‘prosocial religions’ and focuses on MHGs as the ultimate punishers. Contrastingly, little research has been done on other religious concepts, such as those present in many Asian religions, such as Buddhism, Jainism, and many Chinese Folk Religions (world population of over 1.5 billion; Pew Research Center, 2017). This reflects a common trend in psychology to focus on Western Educated Industrial Rich Democratic (WEIRD) countries (Henrich et al., 2010). As such, recent research has focused on non-Abrahamic beliefs, that do not focus on supernatural agents, such as belief in Karma (e.g., White et al., 2019). Karma is a force without agency that both punishes and rewards. Karma focuses on the consequences of individual’s actions. A simplistic definition is that good actions will cause good consequences and bad actions will cause bad consequences. Therefore, this belief also serves the function of facilitating cooperation and punishing those who do not contribute. In fact, similar beliefs exist in a western context (Callan et al., 2006).

Importantly, the distinction between the ‘prosocial religions’ and karmic religions is that karma is not an agent and is – most of the time – not influenced by an agent. As the SPH relies on the cognitive biases that influence a tendency to perceive agents in situations in order to develop the beliefs in supernatural agents, how have Karmic religions also evolved to reach such prevalence? Interestingly, karma often does exist alongside supernatural agents (e.g., within Hinduism), but still plays an important role in facilitating cooperation. In fact, there is some evidence that Buddha and the buddhas may play the agent role in Buddhism (Purzycki &

Holland, 2018; Pyysiäinen, 2003). Due to the lack of research in this area, there are many unanswered questions about how belief in karma functions and whether it can fit within the framework of the SPH, despite a lack of a supernatural agent.

Recent research has focused on expanding the gap of research on karmic religions in the cognitive science of religion (e.g., Purzycki & Holland, 2018; Purzycki & Kulundary, 2018). For example, White et al. (2019) found that using supernatural framing to remind people of both god and karma increased cooperation on an economic game for those that believed in god and karma. This research indicates that karma may serve a similar role of threatening supernatural punishment without the agency component that god has. The framing paradigm explicitly asks participants to respond with consideration to the influence of god and karma. This is an adaptation of the commonly used religious priming paradigm, which research on the SPH often uses (see Shariff et al., 2016 for a meta-analysis of religious priming). Framing lacks generalisability due to the possibility of acquiescence bias but provides extensive experimental control over the concept that individuals are exposed to. Furthermore, religious priming has been under scrutiny since problems with replication have emerged (e.g., Gomes & McCullough, 2015; McCarthy et al., 2018). In saying that, priming allows for a balance between generalisability and acquiescence bias, as it allows the researcher to construct and target a specific aspect of the psychological phenomena under scrutiny, while also being beyond the participants awareness. As such, both paradigms have strength and pitfalls that must be considered when designing research.

Ultimately, the relationship between religious belief and cooperation is complex. One important aspect is the threat of punishment as discussed within the SPH. The SPH focuses on supernatural agents that enact punishment. Research in this domain has focused on ‘prosocial religions’ and MHGs, but recent research has investigated how the concept of karma might play a

similar role of threatening punishment. However, limited research investigates karma within the supernatural punishment hypothesis and how it might differ from supernatural agents. Similarly, SPH research typically focuses on belief. Yet, religious belief does not occur within a vacuum, but rather exists within confined groups that have distinct memberships based on shared belief systems. There is little research that investigates both belief and the group dynamics that take place within these religious groups, such as belonging.

### **Belonging: Identity Fusion**

Religious groups are often composed of individuals with feelings of belongingness with the group. These bonds are explained by the identity fusion theory. Identity fusion is described as a “visceral feeling of oneness with a group... [in which] one’s social identity are also considered to be essential features of one’s personal self” (Whitehouse, 2018, p. 4). Thus, identity fusion is the fusion of the collective and personal self. Identity fusion is argued to be distinct from the similar, extensively studied, concept of social identification: identification is depersonalising and relates to an abstract group category, whereas fusion is tied to personal experience and grounded in fusion of an individual with a larger, tangible group (Swann et al., 2009; 2012; Whitehouse, 2018). It is argued that identity fusion is often developed through shared experiences with other members of the group. This can take the form of ritualistic behaviour (Whitehouse et al., 2017) and experiences in unstable conflict zones (Whitehouse et al., 2014). Individuals in religious groups often engage in these shared experiences through ritual. The behaviours expressed in ritual also functions as a costly signal to other members of the group of one’s own commitment to the group (Bulbulia & Sosis, 2011). Through this experience group members develop kin-like bonds with the group and therefore with other members of the group. These behaviours can then

foster identity fusion amongst participants within the group due to these bonds and their shared experiences (Whitehouse et al., 2017).

Beyond ritual, research on identity fusion has focused on extreme pro-group actions, with a particular focus on self-sacrifice, in numerous contexts such as Spain (Swann et al., 2009), Lebanon (Sheikh et al., 2014), Poland (Besta et al., 2014), and Libya (Whitehouse et al., 2014). However, there is also evidence that identity fusion can be expressed in non-extreme circumstances and for non-violent extreme self-sacrifice, such as money donations (Swann et al., 2010). Similarly, Purzycki and Lang (2019) indicated that identity fusion with local groups predicted greater cooperation on an economic game with a cost to the self, across eight distinct field sites, supporting this claim. These findings suggest that identity fusion may be applicable in non-extreme situations as a mechanism that facilitates cooperation.

Largely, identity fusion research is conducted within local groups, but researchers argue that fusion can be extended to a more general context, as ‘extended fusion’ (Swann et al., 2009; Whitehouse, 2018). While less work has been conducted on larger groups such as ‘prosocial religions’, some evidence does identify the development of fusion with these groups (Swann et al., 2014). However, extended fusion likely follows the development of fusion within a local religious group that is then extended to the wider religious group. In fact, members tend to prefer the local group, though indicating shared core values can attenuate the connection between a member and the general group (Sheikh et al., 2014; Swann et al., 2014). As such, would individuals within religious groups that hold shared religious beliefs that support cooperation, through the threat of punishment via either supernatural agents or karma, behave more cooperatively in economic games?

In summary, identity fusion is linked to cooperation through the shared experiences of group members. It is argued that this can extend, but the extent of this is unexplored. As religious belief is also tightly linked to cooperation and these beliefs are shared amongst group members in religious groups, these two areas are likely highly linked. Recent research indicates the importance of shared values for enhancing extended fusion (Sheikh et al., 2014), but the extent of how specific religious beliefs interact with fusion and how it might extend to influence cooperation is largely unexplored.

**Both: Where to from here?**

Why do individuals behave in cooperative ways towards others within large-scale anonymous societies? Both the identity fusion and SPH literature explain cooperation as a result of a developed sense of belonging or evolved cognitive biases that facilitate in-group behaviour (Norenzayan et al., 2016; Whitehouse et al., 2017). These areas of research focus on the in-group, and how individuals within the in-group cooperate. While in modern societies we belong to a variety of these groups, there is an overarching system of cooperation that helps society function and progress. How then has this vast level of cooperative tendencies developed from both religious belief and belonging to religious group? This thesis focuses on this question by combining insights from each of these areas of research to build and expand upon the established literature.

As previously noted, research within both fields tends to focus on the MHGs of the ‘prosocial religions’. In particular, research on identity fusion has focused on the self-sacrificing behaviour of members of various religious groups, particularly in contexts where Islam (e.g., Whitehouse et al., 2014) or Christianity (Swann et al., 2010) is prevalent. Similarly, supernatural punishment research has largely focused on the MHGs (e.g., Johnson, 2016). However, there is

additional evidence of broad supernatural punishment across a variety of cultures in the Pacific (Watts, Greenhill, et al., 2015). This research indicates the influence of this type of belief but does not preclude it to belief in all powerful agents like the MHGs. Nonetheless, this research focuses almost exclusively on belief in supernatural agents. Karma does not include a focus on an agent, but still contains similar focus on punishment. Additionally, large groups that perform pro-group action have formed around religions that focus on Karma such as Buddhism, indicating that the fusion of identities may be present in these groups as well. Additionally, the identity fusion literature tends to focus on violent outcomes and ritualistic experiences, while side-lining the importance of belief to members of religious groups and its potential impact on cooperative behaviour. Sheikh et al. (2014) highlighted the importance of shared moralistic values for cooperation between different groups. These values share much common ground with religious beliefs but are distinct enough that further research on specific beliefs is much needed. Therefore, how does one's level of religious belief in religious concepts that are related to punishment, and therefore cooperation, interact with their level of belonging with religious groups? These are large gaps in the literature that can be bridged by investigating both concepts together within god-focused and karma-focused stimuli. As such, this thesis focused on the interactions between belief and belonging for both karma and god, within a New Zealand context.

It is important to note that Aotearoa New Zealand is a largely secular country with almost half of the population stating religious affiliation (48.2%; Stats NZ, 2019). However, those that are religious within New Zealand are mostly Christian, with over 35% represented by a wide variety of Christian-affiliated religions (Stats NZ, 2019). There is a variety of other religions across New Zealand, with a total of 157 religious affiliations in the most recent census. Of these,



the largest non-Christian or Christian-adjacent affiliations are Hinduism (2.5%) and for Islam (1.2%). Religion research is usually conducted in highly religious contexts such as USA or India. Due to this fact, New Zealand is an interesting location for the investigation of these relationships as they may be represented at a relatively lower level compared to other countries where previous research has been conducted.

Furthermore, Aotearoa New Zealand provides an even more unique setting for research on religious belief and belonging as it is a nation built upon colonisation and imperial dominance. Religion is an integral part of culture and has throughout history been used to push cultural agendas, enforce dominance, and promote cultural singularity. In Aotearoa New Zealand, Christianity was used for this purpose, as missionaries encouraged the indigenous Māori to join Christianity. The bible was published in te reo Māori (the Māori language) as Te Paipera Tapu (the full Māori Bible) as early as 1868. In 1898, some indigenous spiritual practices were outlawed and by 1907 the Tohunga (Māori spiritual healers) suppression act was put into law (Paterson, 2011). Within the last century, numerous branches of Christianity have developed as a result of indigenous movements within Aotearoa New Zealand, such as Rātana or Ringatū. As such, on a platform of both traditional and non-traditional Christian and Māori customs and beliefs, the history of religion within New Zealand is complex. Compared to the rest of the world – especially the US – where research has been conducted, the presence of Christianity is recent and limited. These aspects make New Zealand an interesting context to conduct research on religion and may provide some unique insights into the functioning of belief and belonging.

### **The Current Study**

This thesis investigated how religious belief and belonging influence cooperation within a student sample at Victoria University of Wellington, New Zealand. Study 1 investigated the

effects of religious priming through two different types of religious priming of both God and Karma concepts. Study 2 investigated the link between identity fusion, religious belief, and cooperative behaviour by using religious priming of God and Karma concepts.

### **Study 1: Unpacking Religious Priming and Belief**

A common paradigm utilised in religious belief research is religious priming. Priming is the presentation of religious concepts via religious-related stimuli that is intended to elicit people's religious beliefs and influence their behaviour in following tasks. A seminal experiment (Shariff & Norenzayan, 2007) had participants unscramble sentences that contained either religious or neutral coded words, utilising the sentence unscrambling task (Srull & Wyer, 1979) in a religious context. They found that unscrambling religious words led to increased cooperative behaviour in an economic game. Since this research, a variety of primes have been used such as bible verses (Rand et al., 2014), religious questions (Schumann et al., 2014), and religious locations (Xygalatas, 2013). Shariff et al. (2016) indicated that religious priming increased cooperative behaviour for believers, and not for non-believers in a meta-analysis. However, the effect of religious priming on cooperative behaviour is dependent on the meta-analysis methods that are used to analyse the body of research (van Elk et al., 2015), identifying the need for large scale replication to identify the validity of this paradigm. Similarly, the original sentence unscrambling task (Srull & Wyer, 1979) has recently come under criticism after a large-scale replication with 26 independent replications did not find evidence for a routinely replicable effect (McCarthy et al., 2018). Furthermore, a recent replication of the Shariff and Norenzayan (2007) experiment did not find the same results (Gomes & McCullough, 2015). These findings cast doubt on a very commonly used religious priming technique, which extends to doubt about religious priming as a paradigm.

This uncertainty surrounding the validity of religious priming warrants testing of any newly developed religious priming stimuli. This study developed and assessed three vignettes that focus on the supernatural punishment aspect of religious belief for both karma and god. These vignettes were developed using elements of two previously established religious priming studies (DeBono et al., 2017; Nosko et al., 2012). Study 1 also included two images that are associated with both god and karma. Participants were asked similar questions across all five conditions in order to facilitate their engagement with the associated concepts and to mask the purpose of their inclusion. The primary purpose of this study was to check the manipulation of the priming stimuli and whether these influenced belief in god and karma. It also investigated how the endorsement of the punitive or benevolent nature of god and karma affected how belief functions within the context of religious priming. The following hypotheses were made:

**Study 1 H1:** Individuals in the god vignette condition will have higher levels of belief in supernatural agents than in the neutral and karma vignette conditions.

**S1 H2:** Individuals in the karma vignette condition will have higher levels of belief in karma than those in the neutral and god vignette conditions.

**S1 H3:** The images will be too general to elicit change in belief, whereas the vignettes are more specifically targeting supernatural punishment, so those in the image conditions will not differ in god or karma belief from those in the neutral vignette condition.

This study will also unpack some aspects of religious belief by exploring how endorsement of god and karma as either punitive or benevolent is related to the effect of priming supernatural punishment and god and karma concepts. The following exploratory hypotheses are made:

**S1 H4:** As the god vignettes are priming the supernatural punishment aspect of god, we might expect that those who endorse god as punitive will have higher levels of belief in supernatural agents. Other interactions of punitive and benevolent god endorsement will also be explored.

**S1 H5:** Similarly, as the karma vignettes are priming the supernatural punishment aspect of karma, we might expect that those who endorse karma as punitive will have higher levels of belief in karma. Other interactions of punitive and benevolent karma endorsement will also be explored.

## **Study 2: Belief, Belonging, and Their Effect on Cooperation**

To untangle the connection between religious belief, identity fusion, and cooperative behaviour Study 2 used religious priming to influence participants' responses on an economic game to measure cooperative behaviour. This study followed a similar design to White et al. (2019), with a mixed methods design and a pre-post economic game. However, White et al. used supernatural framing, asking participants to respond in an economic game according to how their religious belief would want them to, whereas this study used priming to remind individuals of their religious belief without indicating that this was related to their cooperative behaviour. As framing is overt it could introduce problems of acquiescence bias. Although the use of priming can be explicitly about religion, it is not as clearly linked to the target behaviour, cooperation. Subsequently, an awareness probe was included to account for any acquiescence bias to the priming.

Furthermore, White et al. (2019) used a dictator game, whereas this study used the voluntary contribution game, a variant of the public goods game. The dictator game is representative of altruistic behaviour, a form of cooperation. Whereas the voluntary contribution

game is representative of pro-group action, where an individual has to consider the actions of other members of the group (Ostrom, Gardner, Walker, & Walker, 1994). According to economic theory, the default and rational decision in a voluntary contribution game is to free ride. In other words, the default choice is to do nothing by not donating any money to the public pool, but still reap the benefits of the groups cooperation (Ostrom et al., 1994). As such, the voluntary contribution game is more likely to capture the behavioural aspect of the cooperative behaviour that supernatural punishment should reinforce<sup>3</sup>. Additionally, the voluntary contribution game captures a group dynamic rather than a specific target, which could help to capture aspects of extended identity fusion, as well as the group dynamics of cooperation that religious belief should help influence. The following hypotheses were formulated:

**Study 2 H1:** Individuals who are presented with stimuli related to karma or god will display more cooperative behaviour (donate higher quantities of tokens to the public goods pool) after being presented with the prime compared to those presented with neutral stimuli.

**S2 H2a:** This relationship predicted in S2 H1 will be stronger for those who have a higher level of belief in supernatural agents for the god condition (i.e. belief in supernatural agents will moderate the effect of priming god on cooperative behaviour).

**S2 H2b:** Similarly, belief in karma will moderate the effect of priming karma on cooperative behaviour (i.e. The relationship predicted in S2 H1 will be stronger for those who have a higher level of belief in karma for the karma condition).

**S2 H3:** Individuals with higher levels of identity fusion with their religious group will display more cooperative behaviour compared to those who are less fused.

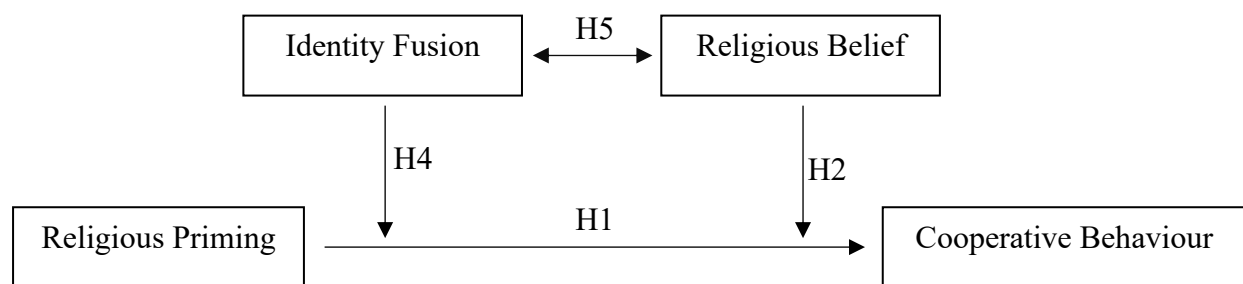
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<sup>3</sup> There is reason for scepticism of the generalisability of these tasks. See Galizzi & Navarro-Martinez, (2019) for a critique of the use of these tasks in laboratory settings.

**S2 H4a:** Individuals with higher levels of identity fusion with their religious group will be more affected by priming of god compared to those who are less fused. In other words, identity fusion will moderate the priming effect of priming god, such that god primes will lead to greater donations to the public goods game pool for those with higher levels of identity fusion to their religious groups.

**S2 H4b:** Due to likely underrepresentation of members of Karmic religious groups in our sample, we expect that this effect may only hold for ‘prosocial religions’. As such, identity fusion should have no effect in the karma condition. In other words, identity fusion will not moderate the priming effect of priming karma, such that being in the karma condition will lead to greater donations to the public goods game pool for those with higher levels of identity fusion to their religious groups.

**S2 H5a:** Individuals that are strongly fused with their religious group and have a higher level of belief in god will behave more cooperatively compared to those who are less fused and have less substantial belief. Such that for those in the god condition, higher levels in both supernatural agent belief and identity fusion will predict higher levels of donations.



*Figure 1.* Model of predicted interactions between primary variables and mapping of hypotheses.

The above hypotheses are established from the literature of supernatural punishment and identity fusion, particularly the findings of White et al. (2019). The following are exploratory

hypotheses that are informed by the general findings of the identity fusion and cognitive science of religion literature:

**S2 H5b:** Similarly to S2 H4b, we might expect low levels of Karmic affiliation within this sample. Thus, identity fusion should not influence the predicted interaction between belief in karma and the karma condition, influencing cooperation. Such that, when a three-way interaction of belief in karma, condition, and identity fusion is assessed, the belief in karma effect remains, but identity fusion has no significant effect. However, this was not preregistered, and is largely exploratory.

**S2 H6:** If agency detection is important to the effect of supernatural belief on cooperation, then those with a higher level of mentalising (theory of mind) should be more likely to be influenced by priming of God than priming of Karma (i.e. mentalising will moderate the effect of the god condition on donation level, but not the karma condition).

**S2 H7:** Individuals with higher degrees of endorsing perceptions of God as having human/agent-like capacities will be more likely to be influenced by priming of God than priming of Karma (i.e. higher levels of mental capacities will moderate the effect of the god condition on donation level, but not the karma condition).

**S2 H8:** If identity fusion is distinct from social identity, then it should differentially affect the relationship between priming and cooperative behaviour, such that it will moderate the effect of priming, whereas social identification should not.

## CHAPTER 3: Method

### Participants

Participants were recruited through the introduction to psychology research programme (IPRP) at Victoria University of Wellington for both studies. Study 1 included 198 participants (55 male and 143 female). 3 did not complete the gender question and were excluded for not completing the questionnaire. Participants were aged 17 to 40 (median age = 19,  $M = 19.80$ ,  $SD = 3.13$ ). Study 2 included 402 participants (124 male, 271 female, 7 neither) after exclusions for not completing the questionnaire. Participants were aged 17 to 47 (median = 18,  $M = 19.25$ ,  $SD = 3.14$ ).

### Design

Two studies were carried out on two different samples. Study 1 was conducted solely online and involved a between-subjects design. Study 2 was conducted both online and in lab and a mixed-subjects design was utilised. Study 1 took place in Trimester 2 2019 and Study 2 took place in Trimester 1 2019. The main distinction between these two studies is that Study 1 also included a wider variety of priming stimuli, whereas Study 2 included a measure of cooperative behaviour. As such, unless noted, materials were identical across studies.

### Materials

**Benevolent/Punitive Endorsement.** Individuals were also presented with six traits that were used in White et al. (2019) and asked much they agreed with each item on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). For benevolence, participants were presented with “Loving”, “Forgiving”, and “Compassionate” for both god and karma. For punitiveness, they were presented with “Punishing”, “Fearsome”, and “Vengeful” for both god and karma. This scale was only used in Study 1.



**Priming Picture.** Participants were asked to look at a picture and complete three questions about this vignette (see Appendix A). Participants saw one of two pictures (god or karma) and were instructed to pay attention to the details of the picture and answer the questions honestly. They were then asked, “What does this picture show?”, “How does this picture make you feel?”, and “Please write about a time or experience that this picture reminds you of.”

**Priming Vignette.** Participants were asked to read a vignette and complete three questions about this vignette (see Appendix A). Participants read one of three vignettes (god, karma, neutral) and were instructed to pay attention to the details of the story and answer the questions truthfully. They were then asked, “What is this story about?”, “How does this story make you feel?”, and “Please write about another time you may have experienced something similar to Jane [the target character in the vignette].”

**Belief in God.** A shortened 8-item version of the Supernatural Beliefs Scale (SBS) developed by (Jong et al., 2013) was used to assess belief in god. Only those items on the SBS that referred to supernatural agents were used. An example item is, “There exists an all-powerful, all-knowing, loving God.” Participants will rate on a 7-point Likert scale how much they agree with these items from 1 (strongly disagree) to 7 (strongly agree).

**Belief in Karma.** The Karma Belief Questionnaire (KBQ) is a 16-item scale, developed and validated by White, Norenzayan and Schaller (2018), was used to assess belief in Karma. An example item is “Karma is a force that influences the events that happen in other people’s lives.” Participants will rate on a 7-point Likert scale how much they agree with these items from 1 (strongly disagree) to 7 (strongly agree).

**Identity Fusion.** The identity fusion verbal scale (IFS) contains 7 items and was developed to assess identity fusion with one’s country (Gómez et al., 2011). This has previously

been adapted to assess fusion with one's religious group/community (e.g., Besta, Gómez, & Vázquez, 2014) which was used in this study. For the verbal scale, participants rated their agreement to each item, such as "I am one with my religious group", on a 7-point Likert scale ranging from 1 (totally disagree) to 7 (totally agree).

**Identification.** The 6-item social identification scale (SIS) developed by Mael and Ashforth (1992) was adapted to religious group. An example item is, "If a story in the media criticized my religious group, I would feel embarrassed." Participants will rate how much they agree with each of these items on a 7-point Likert scale of 1 (strongly disagree) to 7 (strongly agree).

**Mentalising.** The short-form Empathy Quotient (EQSF) assessed individuals' degree of mentalising (Wakabayashi et al., 2006). This is a short adaptation of the commonly used empathy quotient which assesses the intentionality system of theory of mind (Baron-Cohen & Wheelwright, 2004). An example of a reversed item of this scale is, "I often find it difficult to judge if something is rude or polite." Participants rated how much they agree with each item on a 5-point Likert scale from 1 (strongly disagree) to 7 (strongly agree).

**God's Mind.** The recently developed Mental Capacities Scale (MCS) measures individuals' perceptions of God as an agent in comparison to humans (McNamara et al., 2019). This scale is based on the dimensions of mind perception framework (Gray et al., 2007). It asks participants questions such as, "Compared to most people, how good is God at understanding how others are feeling?" or "Compared to most people, how much does God hope or wish for things?" Participants responded with how much they think God is like most people in this mental capacity on a scale of 1 (not at all) to 100 (very much).

**Public Goods Game.** The voluntary contribution game (VCG) is a variant of the public goods game. This involved each participant completing a series of tasks which they were told to imagine they were playing with fellow members of their course. Participants were told they would be presented with a certain number of tokens and that they would be able to donate as many or as little as they would like to the public pool (see Appendix B). This pool would then be doubled, and the total amount would be evenly distributed amongst the rest of the group. This task was completed six times across two blocks of three tasks each. One of these blocks took place before the prime, one after (see Figure 2). The amount in each trial varied (30, 45, 60). The order of the amount of tokens was randomised within each block so that each participant would do each different amount twice, once in each block. This measure was only used in Study 2.

**Funnelled Debriefing.** Before being debriefed, participants were asked open ended questions about the purpose of the study such as “Did anything you did on one task affect what you did on any other task?”. This task assesses whether participants are aware of the intended influence of the priming stimuli (Bargh & Chartrand, 2000).

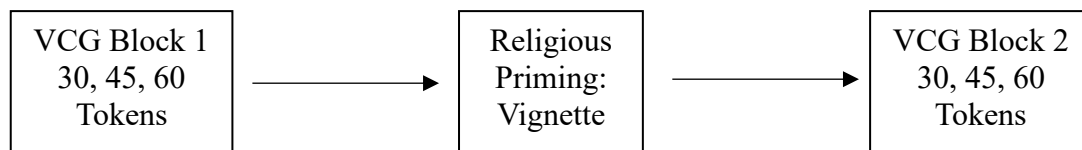
**Demographics.** Participants were also asked about their age, gender, ethnicity, religious group, SES, political orientation, and how religious (on a 7-point Likert scale from strongly disagree [1] to strongly agree [7]) they considered themselves to be.

## **Procedure**

**Study 1.** Participants answered questions on an online questionnaire. This took place online via Qualtrics. First, participants read information regarding the study and gave consent by continuing with the study. They then completed one of the five priming tasks (god picture, karma picture, god vignette, karma vignette, or neutral vignette), as per their condition. Participants then

completed the belief questionnaires, followed by the remaining individual difference and demographic measures. Before being debriefed, they completed the funnelled debriefing task.

**Study 2.** Participants took part either online via Qualtrics or on University computers via Qualtrics within the Easterfield building of Victoria University of Wellington. First, participants read information regarding the study and gave consent by continuing with the study. They were then presented with the instructions to the VCG and completed the first series of three games. They were told to imagine they were playing this game with other members of the IPRP subject pool and they were told that they can donate as much or as little as they would like to the public pool. Immediately following these tasks, they completed one of the three priming tasks (God, Karma, or Neutral), as per their condition. They then completed the second series of three VCG tasks (see Figure 2). Participants then completed the remaining individual difference and demographic measures, before completing the funnelled debriefing task and being debriefed.



*Figure 2.* Voluntary contribution game (VCG) with six trials. The number of tokens participants receive for each of the three trials within each block is randomised.

## Statistical Analysis

**Descriptive Statistics.** Means, standard deviations, and correlations were calculated to assess general trends across both studies. Additionally, due to recent debate around the utility of alpha as a measure of reliability and the different alternatives available (McNeish, 2018; Raykov & Marcoulides, 2019), reliability was assessed using both Cronbach's alpha and omega total.

**Study 1.** ANOVA and linear regression were utilised to assess the hypotheses for Study 1. An ANOVA was used with each belief scale as the dependent variable to identify any differences

between conditions. If any significant differences were found, post-hoc Tukeys' HSD was assessed to identify these. To assess if punitive/benevolent endorsement was a significant moderator of any potential differences, four regressions were performed with the two different belief scales and using each of a punishing or benevolent god or karma for the relevant belief scale as an interaction term.

**Study 2.** The analysis plan was preregistered on OSF prior to analysis being conducted<sup>4</sup>. Generalised Linear Mixed-effects models with a Poisson distribution were used for Study 2. The dependent variable in each model was the amount of tokens kept by participants, such that keeping less tokens indicates cooperative behaviour. Data was split into a long format using R, so that each participant had six entries for each of their responses to the VCG. This allowed for more power within the sample, as each participant had six entries for cooperative behaviour. Trial number was included in all models in order to account for learning effects or differences between the size of the tokens. For hypothesis 1, all six of these responses were used as the dependent variable, for the remaining hypotheses only the three post-prime responses were used as preregistered. The predictor variable across all models was the priming condition (neutral, god, or karma). The change between models is represented by using different moderators to identify any potential effects (see Table 1). Simple slopes analyses was conducted if any significant interactions are identified (Bauer & Curran, 2005; Dawson & Richter, 2006).

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<sup>4</sup> [https://osf.io/j93mh/?view\\_only=c0b6a42e1a9444a4ba90ade5769a6b4b](https://osf.io/j93mh/?view_only=c0b6a42e1a9444a4ba90ade5769a6b4b)

Table 1

## Moderating Variables in Study 2 Analysis

Model:	H1	H2a/b	H3/H4	H5a/b	H6	H7	H8
Moderators:	Trial Block	SBS; KBQ	IFS	SBS & IFS; KBQ & IFS	EQSF	MCS	SIS

*Note:* SBS = Supernatural Belief, KBQ = Karma Belief, IFS = Identity Fusion, SIS = Social

Identification, EQSF = Mentalising, MCS = Mental Capacities. All measures were included in the models as covariates if they were not included as moderators.

## CHAPTER 4: Results

### Study 1

#### Data Analysis

Data was analysed and manipulated in R (R Core Team, 2019) using R studio. The tidyverse package (Wickham, 2017) was used for data manipulation, userfriendlyscience (Peters, 2018) was used for reliability analyses, and Amelia (Honaker et al., 2011) was used to determine patterns of missingness.

#### Missing Data

Missingness across the sample was identified as 2%, enough to indicate MCAR (Missing Completely at Random). However, a pattern of over representation of missingness in the MCS questions was identified. Participants also indicated a reluctance to answer these questions due to not believing in god in the funnelled debriefing open questions. A correlation between belief in god (an item from the SBS) and the amount of missingness supported this,  $b = .43$ ,  $SE = .04$ ,  $z = -10.16$ ,  $p < .001$ , indicating increased levels of belief in god was strongly associated with decreased levels of missingness in the mental capacities questionnaire. This finding also highlights that imputation may be ill advised as data is likely not missing at random.

#### Reliability

All reverse scored items were reversed and Cronbach's alpha and omega were satisfactory for each scale; SBS ( $\alpha = .95$ ,  $\omega = .95$ ); KBQ ( $\alpha = .93$ ,  $\omega = .93$ ); IFS ( $\alpha = .94$ ,  $\omega = .94$ ); SIS ( $\alpha = .91$ ,  $\omega = .91$ ); EQSF ( $\alpha = .88$ ,  $\omega = .87$ ); MCS ( $\alpha = .96$ ,  $\omega = .95$ ); God as Punishing ( $\alpha = .87$ ,  $\omega = .87$ ); God as Benevolent ( $\alpha = .99$ ,  $\omega = .99$ ); Karma as Punishing ( $\alpha = .93$ ,  $\omega = .93$ ); Karma as Benevolent ( $\alpha = .93$ ,  $\omega = .93$ ). This indicates that the scales had good fit, with no discrepancies between reliability predicted by alphas and omega totals.

**Descriptive Statistics**

Table 2

Means and Correlation Coefficients for Primary Measures of Study 1

	SBS	KBQ	IFS	SIS	EQSF	MCS	BEN-G	PUN-G	BEN-K	PUN-K
KBQ	.39**									
IFS	.44**	.19**								
SIS	.46**	.17*	.69**							
EQSF	-.04	.04	.03	-.05						
MCS	.64**	.27**	.35**	.40**	-.05					
BEN-G	.76**	.25**	.34**	.43**	-.02	.74**				
PUN-G	.36**	.17*	.20**	.20**	.00	.35**	.46**			
BEN-K	.29**	.46**	.22**	.22**	-.01	.32**	.38**	.30**		
PUN-K	.44**	.50**	.18**	.31**	0.1	.34**	.48**	.38**	.67**	
M	3.17	3.42	2.45	2.5	5.05	32.71	3.78	2.89	3.25	3.65
SD	1.71	1.23	1.5	1.47	0.72	26.32	2.15	1.58	1.58	1.72

*Note:* SBS = Belief in Supernatural Agents, KBQ = Belief in Karma, IFS = Identity Fusion, SIS

= Social Identification, EQSF = Mentalising, MCS = Mental Capacities, BEN-G = Benevolent

God, PUN-G = Punishing God, BEN-K = Benevolent Karma, PUN-K = Punishing Karma.

\*\* < .01

**Differences in Supernatural Agent Belief**

ANOVAs were conducted to identify any differences between conditions. For belief in karma, no significant differences between conditions were identified,  $F(3) = 0.96$ ,  $p = .427$ . The same was found for belief in supernatural agents,  $F(3) = 1.62$ ,  $p = .172$ , indicating a lack of support for both hypotheses one and two, and supporting hypothesis three. Hypothesis one, that those in the god vignette condition would have higher levels of supernatural agent belief compared to those in the neutral and karma vignette conditions was not supported. Neither was



hypothesis two, that those in the karma condition would predict higher levels of karma than those in the neutral and god vignette conditions. Hypothesis three, that the image conditions would not differ in levels of supernatural agent or karma belief from the neutral vignette condition was supported. However, this may have been a result of a general finding of a lack of any differences, rather than differences between the vignette and image primes.

Linear models were conducted to identify if belief in a punitive god/karma influenced these findings. Endorsement of both a benevolent and punitive god were associated with increased belief in supernatural agents ( $t(189) = 7.67$ ,  $b_{benevolent} = 0.69$ ,  $SE = 0.09$ ,  $p < .001$ ;  $t(188) = 2.63$ ,  $b_{punishing} = 0.47$ ,  $SE = 0.18$ ,  $p = .009$ ). Also, endorsement of both benevolent and punitive karma was associated with increased belief in karma ( $t(185) = 4.12$ ,  $b_{benevolent} = 0.43$ ,  $SE = 0.10$ ,  $p < .001$ ;  $t(186) = 4.01$ ,  $b_{punishing} = 0.35$ ,  $SE = 0.09$ ,  $p < .001$ ). The interactions between benevolent endorsement and condition and punitive endorsement and condition were not significant for both karma and god. While these findings do not offer support for hypotheses 4 and 5, they do show that an endorsement of a punishing and benevolent god/karma is associated with belief in god/karma, as should be expected.

### Exploratory Analyses

Exploratory analyses were conducted to assess the extent that endorsement of god and karma as punitive or benevolent moderated the effects of the conditions on belief. Interestingly, when both benevolent and punitive god endorsement were present in the model (along with the remaining covariates and an interaction between benevolent endorsement and belief in supernatural agents), punitive endorsement had no relationship with belief,  $t(157) = -0.01$ ,  $b < -0.01$ ,  $SE = 0.06$ ,  $p = .994$ , whereas benevolent endorsement did,  $t(157) = 5.34$ ,  $b = 0.47$ ,  $SE =$

0.09,  $p < .001$ <sup>5</sup>. Belief in karma was also significantly related to belief in god,  $t(157) = 4.10$ ,  $b = 0.28$ ,  $SE = 0.07$ ,  $p < .001$ . This indicates that increased belief in karma, and increased endorsement of a benevolent god were associated with increased belief in supernatural agents, whereas increased endorsement of a punitive god had no such association in a more complete model. This was similar for belief in karma, where a significant relationship was identified with benevolent karma endorsement  $t(157) = 2.45$ ,  $b = 0.28$ ,  $SE = 0.12$ ,  $p = .016$ , but not for punitive karma endorsement,  $t(157) = 0.05$ ,  $b < 0.01$ ,  $SE = 0.06$ ,  $p = .959$ . These findings suggest that the believers in this sample were more likely to endorse a benevolent god than a punitive god as well as a benevolent karma over a punitive karma. However, these endorsements had no further effect on the negligible effect of the priming conditions. Additionally, believers in supernatural agents were also more likely to believe in karma and vice versa. These results provide further evidence for a lack of support for hypotheses 4 and 5. As only benevolence was associated with both belief in god and karma, this has significant implications for the use of supernatural punishment priming in Study 2.

### Discussion: Study 1

The supernatural punishment literature makes several key claims. Firstly, the importance of a punishing god supplants that of a forgiving god. Secondly, cooperation could only exist with the threat of punishment, for without any threat, individuals within groups would both free ride and transgress on group rules, inhibiting the performance of the group. Thirdly, cognitive biases

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<sup>5</sup> A model including an interaction between punitive endorsement and condition was also conducted and identified a significant relationship between belief in supernatural agents and benevolent god endorsement,  $t(157) = 7.53$ ,  $b = 0.45$ ,  $SE = 0.06$ ,  $p < .001$ . Belief in karma was also significantly associated with belief in supernatural agents,  $t(157) = 3.94$ ,  $b = 0.27$ ,  $SE = 0.07$ ,  $p < .001$ , as was identity fusion,  $t(157) = 2.15$ ,  $b = 0.16$ ,  $SE = 0.07$ ,  $p = .033$ . However, punitive endorsement was not significantly associated with belief in supernatural agents,  $t(157) = 7.53$ ,  $b = 0.45$ ,  $SE = 0.06$ ,  $p = .933$ .

have evolved in order to support the tendency for humans to detect agency in events. These biases are indicative of belief in supernatural agents.

**Religious Priming.** The first study did not identify any links between the priming conditions and changes in religious belief. This may not be too surprising, as evidence suggests religious belief is a relatively stable characteristic (Kirkpatrick, 1997) that likely cannot be changed through simply reading a paragraph-long story or looking at a picture, but rather changes over an extended period of time, such as when one progresses from school to a university environment. Another possibility is that the priming stimuli were not priming the concepts that the belief scales entail, as these scales include other religious concepts beyond supernatural punishment. The vignette primes developed in this thesis focused on the punishing aspect of religious belief, following the supernatural punishment hypothesis. Other primes – such as the images used in Study 1 – often focus on reminding individuals of religious belief using a more generic religious concept. But these were also not significant. As recent debate around the replicability of priming calls into doubt whether using priming in research is a valid research technique (Gomes & McCullough, 2015; McCarthy et al., 2018; Shariff et al., 2016). This lack of any priming effect in Study 1 might indicate support for this.

**Benevolence.** Alternatively, the similarity between samples (and potential overlap, as they occurred across two semesters) may indicate that those in Study 2 had a similar focus on the benevolent aspects of these concepts, rather than the punitive. This may have confounded the priming of supernatural punishment within both the karma and god vignettes. As such, these priming stimuli may still increase belief in supernatural punishment as represented in Study 2, but these effects are countered by individuals focusing on benevolence. Furthermore, if people's belief is more concerned with benevolence rather than punishment, then reminders of religious

concepts focused on punishment likely does one of two things. Firstly, if people are reminded of religious concepts they may be reminded of the benevolent aspect of these, and so think god is more forgiving, and act more selfishly. In fact, previous research has found a forgiving god, but not a punishing one, increases un-cooperative behaviour (DeBono et al., 2017), supporting this claim. Contrastingly, if one is reminded of the punishing aspects of religious concepts – which they don't agree with – this may prompt a reverse reaction as it directly opposes their understanding of their religious belief. Thus, there are two possible forces working against the predictions made for Study 2, based on the findings of Study 1. Individuals may have behaved less cooperatively than expected because of a lack of endorsement of punishment or because of an adverse reaction to instances of punishment, due to a focus on benevolence.

## Study 2

### Data Analysis

Data was analysed and manipulated in R (R Core Team, 2019) using R studio. The tidyverse package (Wickham, 2017) was used for data manipulation, userfriendlyscience (Peters, 2018) was used for reliability analyses, Amelia (Honaker et al., 2011) was used to determine patterns of missingness, and lme4 was used for generalised linear mixed-effects models (Bates et al., 2015).

### Missing Data

The amount of missingness in the data (2%) was deemed satisfactory to represent MCAR and to not require imputation. Like Study 1, there was a general trend of individuals missing the Mental Capacities Questionnaire to a larger extent than other measures and participants indicated a reluctance to answer these questions due to them not believing in God. A correlation between belief in God and amount of missingness supported this,  $b = -0.37$ ,  $SE = 0.03$ ,  $z = -14.22$ ,  $p$

< .001, indicating increased levels of belief in supernatural agents was strongly associated with decreased levels of missingness in the mental capacities questionnaire.

### Reliability

All reverse scored items were reversed, and Cronbach's alpha and omega were computed. These were satisfactory for each scale, SBS ( $\alpha = .96$ ,  $\omega = .96$ ); KBQ ( $\alpha = .91$ ,  $\omega = .90$ ); IFS ( $\alpha = .93$ ,  $\omega = .93$ ); SIS ( $\alpha = .91$ ,  $\omega = .91$ ); EQSF ( $\alpha = .89$ ,  $\omega = .88$ ); MCS ( $\alpha = .96$ ,  $\omega = .96$ ). This indicates that the scales had good fit, with no significant differences between reliability predicted by alphas and omega totals.

### Descriptive Statistics

Table 3

Means and Correlation Coefficients for Primary Measures of Study 2

	SBS	KBQ	IFS	SIS	EQSF	MCS
KBQ	.38**					
IFS	.60**	.32**				
SIS	.65**	.26**	.72**			
EQSF	-.02	.05	.00	.01		
MCS	.63**	.23**	.44**	.51**	.00	
M	3.11	3.27	2.34	2.41	5.12	29.74
SD	1.72	1.09	1.42	1.47	0.74	25.81

*Note:* SBS = Belief in Supernatural Agents, KBQ = Belief in Karma, IFS = Identity Fusion, SIS = Social Identification, EQSF = Mentalising, MCS = Mental Capacities.

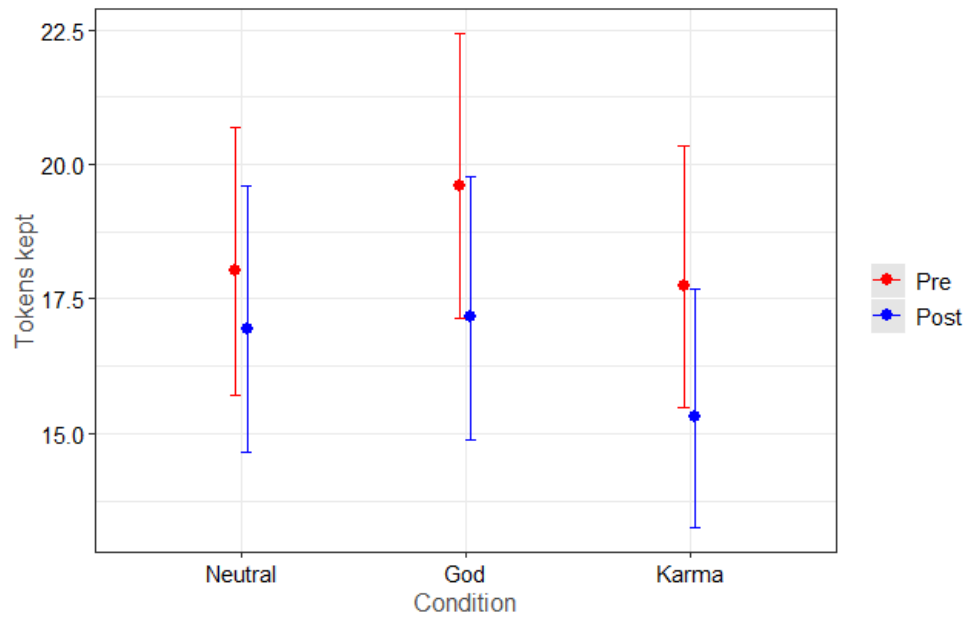
\*\*  $p < .01$

### Differences between pre- and post-prime

Several mixed effects models were assessed to test the hypotheses. The first model assessed if there were differences between conditions (with the neutral condition as the reference

group) in amount of tokens kept both prior to and after the prime (trial block). No significant influence of where participants completed the study was found,  $b = 0.03$ ,  $SE = 0.07$ ,  $z = 0.47$ ,  $p = 0.641$ , indicating no difference between completing the study online and in a university lab context. In the neutral condition, participants kept more tokens prior to the prime compared to after the prime,  $b = 0.06$ ,  $z = 2.19$ ,  $SE = 0.03$ ,  $p = .028$ . A significant interaction between the karma condition and trial block was also identified,  $b = -0.09$ ,  $z = -2.19$ ,  $SE = 0.04$ ,  $p = .028$ , indicating a significant pre-post difference between the amount of tokens kept in the neutral and karma conditions. No significant interaction was identified between the god condition and trial block,  $b = -0.07$ ,  $SE = 0.04$ ,  $z = -1.85$ ,  $p = .065$ , indicating no significant pre-post difference between the amount of tokens kept in the neutral and god conditions. Simple slopes analysis was used to untangle this interaction,  $b_{neutral} = -0.06$ ,  $SE = 0.03$ ,  $z = -2.20$ ,  $p = .028$ ;  $b_{god} = -0.13$ ,  $SE = 0.03$ ,  $z = -4.88$ ,  $p < .001$ ;  $b_{karma} = -0.15$ ,  $SE = 0.03$ ,  $z = -5.23$ ,  $p < .001$ . This indicates that in all three conditions, participants kept less tokens after the vignettes, and those in the karma condition kept even less than those in the neutral condition, as illustrated in Figure 3.

These results do not provide support for hypothesis 1, as the neutral condition also had a significant decrease in amount of tokens kept. However, those in the karma condition kept less tokens after the prime compared to those in the neutral condition, indicating a partial support for hypothesis 1. However, there were no identified differences between the karma and god or god and neutral conditions. This means that the following findings are not necessarily as indicative as if hypothesis 1 had been confirmed. However, as the study was preregistered with these analyses, they were still conducted to identify any other relationships that may be reflected.



*Figure 3.* Moderation of trial block and condition on amount of tokens kept. Less tokens kept means more donated to the public pool, indicating higher level of cooperative behaviour. Note that error bars do not represent significance within a generalised linear mixed effects model, but an independent measure of error, carried out by the sjPlot package in R (Lüdtke, 2019), that is overly conservative.

### **Moderations of belief and identity fusion**

Another model assessed hypothesis 2a with the god condition as the reference group. No significant effects of either belief in supernatural agents ( $b = 0.04$ ,  $SE = 0.04$ ,  $z = 1.06$ ,  $p = .288$ ) or of the god condition ( $b_{neutral} = -0.05$ ,  $SE = 0.07$ ,  $z = -0.66$ ,  $p = .507$ ;  $b_{karma} = -0.10$ ,  $SE = 0.07$ ,  $z = -1.43$ ,  $p = .153$ ) were found. The interactions between belief in supernatural agents and the condition were also not significant,  $b_{neutral} = -0.02$ ,  $SE = 0.04$ ,  $z = -0.46$ ,  $p = .645$ ;  $b_{karma} = 0.02$ ,  $SE = 0.04$ ,  $z = 0.58$ ,  $p = .562$ . As hypothesis 1 was not supported for the god condition, this was not unexpected and indicates a lack of support for hypothesis 2a. This suggests that those with

higher supernatural agent belief in the god condition were not more cooperative than those with lower levels of belief within the god condition.

The second model assessed hypothesis 2b with the karma condition as the reference group. A significant effect of belief in karma was identified,  $b = 0.14$ ,  $SE = 0.05$ ,  $z = 2.59$ ,  $p = .010$ . No significant effects of condition were identified,  $b_{neutral} = 0.05$ ,  $SE = 0.07$ ,  $z = 0.63$ ,  $p = .53$ ;  $b_{god} = 0.09$ ,  $SE = 0.07$ ,  $z = 1.29$ ,  $p = .197$ . An interaction with belief in karma was significant between the neutral and karma conditions,  $b_{neutral} = -0.15$ ,  $SE = 0.07$ ,  $z = -2.10$ ,  $p = .036$ ; but not between the god and karma conditions,  $b_{god} = -0.12$ ,  $SE = 0.07$ ,  $z = -1.69$ ,  $p = .091$ . Simple slopes analysis was conducted to untangle these findings. This analysis revealed that the effect of belief in karma on the amount of tokens kept was only significant in the karma condition,  $b_{karma} = 0.14$ ,  $SE = 0.05$ ,  $z = 2.59$ ,  $p = .010$ ;  $b_{god} = 0.02$ ,  $SE = 0.05$ ,  $z = 0.42$ ,  $p = .672$ ;  $b_{neutral} = -0.01$ ,  $SE = 0.05$ ,  $z = -0.19$ ,  $p = .846$ . This indicates that having an increased level of belief in karma influenced the effect of the karma prime on the amount of tokens kept, in the reverse direction as predicted in hypothesis 2b, such that higher belief in karma indicated decreased cooperation. This effect is depicted in Figure 4.

Another model was analysed to assess hypotheses 3 and 4, the effect of identity fusion moderating the relationship between priming and the amount of tokens kept. No significant effect of identity fusion was identified,  $b = 0.04$ ,  $SE = 0.04$ ,  $z = 1.03$ ,  $p = .300$ , indicating a lack of support for hypothesis 3. Within this model, no significant interactions were identified between condition and identity fusion,  $b_{neutral} = -0.01$ ,  $SE = 0.05$ ,  $z = -0.15$ ,  $p = .880$ ;  $b_{karma} = -0.05$ ,  $SE = 0.05$ ,  $z = -0.91$ ,  $p = .362$ , indicating a lack of support for hypothesis 4a, but support for hypothesis 4b. Such that, differences in identity fusion did not predict a change in tokens kept in either the god or karma condition, thus identity fusion had no effect on cooperation.



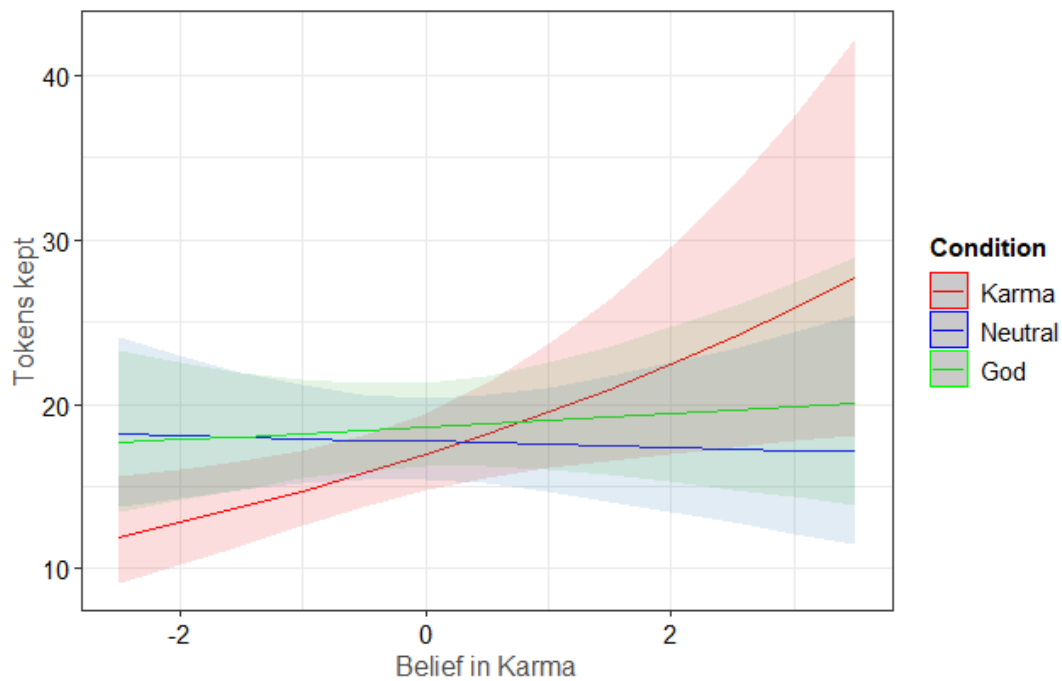


Figure 4. Moderation of belief in karma and condition on amount of tokens kept. Only the karma condition is a significant relationship.

### Three-way interactions of belief and identity fusion

Two models were assessed to test hypothesis 5. The first model assessed a three-way interaction between belief in supernatural agents, identity fusion, and condition with the god condition as the reference group. A significant effect of the karma condition,  $b = -0.21$ ,  $SE = 0.08$ ,  $z = -2.44$ ,  $p = .015$  and a significant effect of belief in karma,  $b = 0.07$ ,  $SE = 0.03$ ,  $z = 2.00$ ,  $p = .045$ , were identified. A significant interaction between identity fusion and the karma condition (compared to god) was also identified,  $b = -0.17$ ,  $SE = 0.07$ ,  $z = -2.42$ ,  $p = .016$ . The three-way interaction between belief in supernatural agents, identity fusion, and karma condition was not significant,  $b = 0.06$ ,  $SE = 0.03$ ,  $z = 1.94$ ,  $p = .053$ . Though this interaction was not significant, it was close to the arbitrary 0.05 threshold, indicating that there may be underlying

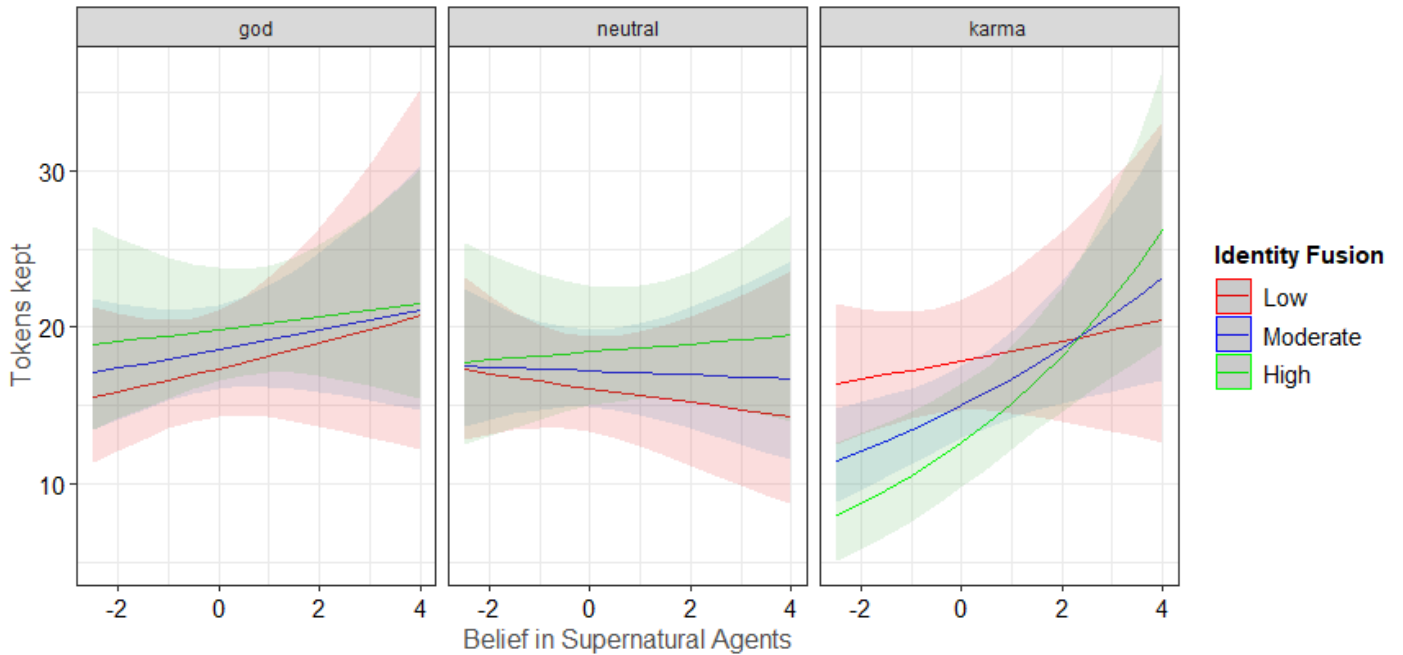
effects upon further analysis<sup>6</sup>. However, these analyses should be considered with caution. As such, simple slopes analyses were conducted to untangle these findings. These analyses revealed that the effect between belief in supernatural agents and amount of tokens kept was only significant in the karma condition when identity fusion was moderate,  $b = 0.11$ ,  $SE = 0.04$ ,  $z = 2.72$ ,  $p = .006$ ; and high,  $b = 0.18$ ,  $SE = 0.05$ ,  $z = 3.53$ ,  $p < .001$ , and not when it was low,  $b = 0.03$ ,  $SE = 0.05$ ,  $z = 0.69$ ,  $p = .490$ . It was not significant within any of the other conditions at any level of identity fusion. These findings indicate a lack of support for hypothesis 5a. Belief in supernatural agents appears to have no effect on the influence of the god prime on the amount of tokens kept. However, an interesting finding from the analysis of the karma condition indicates that those with high belief in supernatural agents and high identity fusion keep the most tokens, indicating a possible reactive effect to a non-agent stimuli. This model is depicted in Figure 5.

The second model assessed hypothesis 5b, testing a three-way interaction between belief in karma, identity fusion, and condition, with the karma condition as the reference group. A significant effect of belief in karma was identified,  $b = 0.18$ ,  $SE = 0.06$ ,  $z = 3.11$ ,  $p = .002$ . A significant interaction between the neutral condition and belief in karma was also identified,  $b = -0.20$ ,  $SE = 0.08$ ,  $z = -2.65$ ,  $p = .008$ , as was the case with the earlier model (without the interaction effects of identity fusion being included) further highlighting this difference. An additional interaction between the god condition and belief in karma was also identified,  $b = -0.17$ ,  $SE = 0.08$ ,  $z = -2.21$ ,  $p = .027$ . No other significant effects or interactions were identified.

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<sup>6</sup> This is not significant. However, three-way interactions are naturally complicated and rarely produce significant results. As such, this interpretation should be taken with caution. However, as the .05 threshold is arbitrarily defined, potential interpretations that could lead to further research to investigate this potential finding further will still be discussed with this as a caveat (see Amrhein et al., 2017; Benjamin et al., 2018; Olsson-Collentine et al., 2019 for various discussions of the problems with the .05 threshold).

The three-way interaction was not significant,  $b_{neutral} < 0.01$ ,  $SE = 0.05$ ,  $z = -0.05$ ,  $p = .957$ ;  $b_{god} = 0.03$ ,  $SE = 0.05$ ,  $z = 0.58$ ,  $p = .560$ . As such, hypothesis 5b was supported. This indicates that identity fusion did not influence the previously established effect of belief in karma moderating the influence of priming on cooperative behaviour (though this effect was still opposite to what was predicted).



*Figure 5.* Moderation of belief in supernatural agents, identity fusion, and condition on amount of tokens kept. Only the moderate and high identity fusion slopes within the karma condition are significant.

### Exploratory Analyses

Three models were created to assess the exploratory hypotheses of Study 2. The first assessed the interaction between mentalising and priming condition with the neutral condition as the reference group. A significant effect of mentalising was identified,  $b = -0.23$ ,  $SE = 0.08$ ,  $z = -3.09$ ,  $p = .002$ . Significant interactions with mentalising for the god condition,  $b_{god} = 0.23$ ,  $SE = 0.10$ ,  $z = 2.28$ ,  $p = .023$ ; and the karma condition,  $b_{karma} = 0.21$ ,  $SE = 0.10$ ,  $z = 2.11$ ,  $p = .034$ ,

were also identified. Simple slope analysis revealed that the influence of mentalising was only significant in the neutral condition ( $b_{neutral} = -0.23$ ,  $SE = 0.08$ ,  $z = -3.09$ ,  $p = .002$ ;  $b_{karma} = -0.02$ ,  $SE = 0.07$ ,  $z = -0.36$ ,  $p = .719$ ;  $b_{god} < 0.01$ ,  $SE = 0.07$ ,  $z = 0.03$ ,  $p = .980$ ). These results do not provide support for hypothesis 6, as there are no significant differences between the god and karma condition. However, they do provide an unexpected finding within the neutral condition, which may indicate the importance of mentalising in the neutral vignette, such that those with higher mentalising were more likely to keep less tokens compared to those with lower levels of mentalising. This model is represented in Figure 6.

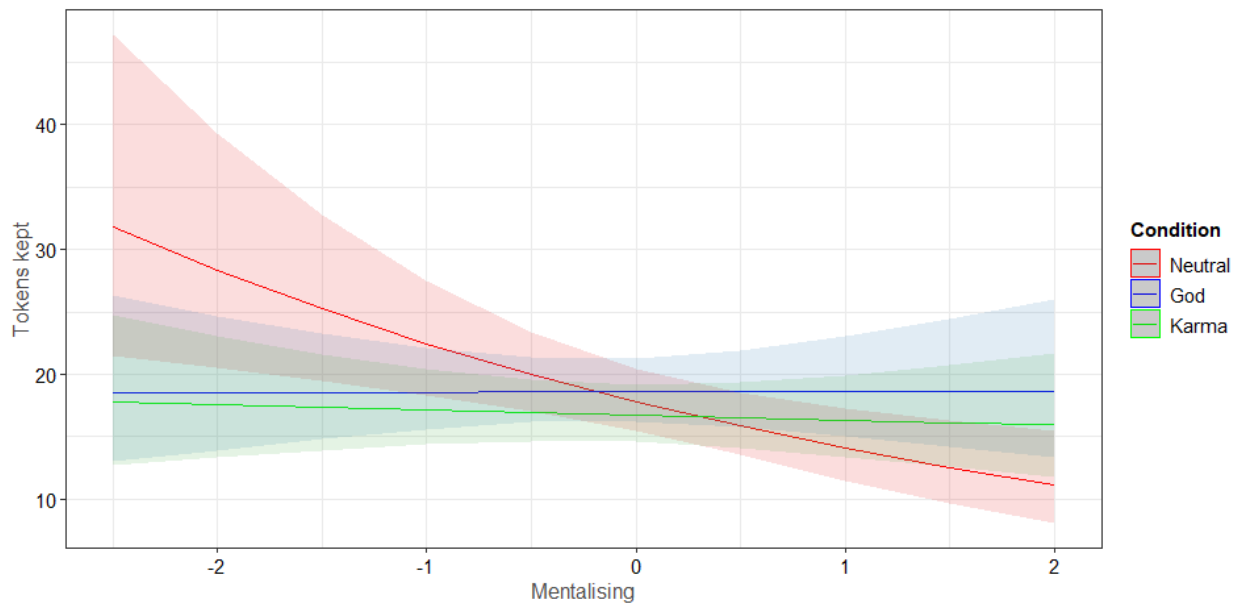


Figure 6. Moderation of mentalizing and condition on amount of tokens kept. Only the neutral condition slope is significant.

Another model assessed the interaction between endorsing god as having human-like mental capacities and priming condition, with the god condition as the reference group. No significant interactions were identified for condition and mental capacities,  $b_{neutral} < -0.01$ ,  $SE < 0.01$ ,  $z = -0.26$ ,  $p = .797$ ,  $b_{karma} < 0.01$ ,  $SE < 0.01$ ,  $z = 0.36$ ,  $p = .720$ , indicating that individuals

with higher endorsements of god as having human-like tendencies did not behave more cooperatively, thus hypothesis 7 was not supported.

The final model assessed the interaction between social identification/identity fusion with one's religious group and priming condition, with neutral as the reference group. No significant interactions were identified for social identification,  $b_{god} = -0.04$ ,  $SE = 0.05$ ,  $z = -0.82$ ,  $p = .414$ ;  $b_{karma} < 0.01$ ,  $SE = 0.05$ ,  $z = 0.09$ ,  $p = .929$ , indicating that social identification had no significant effects on cooperative behaviour. This did not differ from the lack of effects of identity fusion in hypothesis 3 and 4, indicating a lack of support for hypothesis 8.

### **Discussion: Study 2**

According to basic economic theory, the expected and 'rational' response to the cooperative task used in Study 2 would be to free ride and keep all the tokens, resulting in a tragedy of the commons situation (Ostrom et al., 1994). However, this was not the predominant response within this experiment, as individuals tended to donate more than zero. Furthermore, across all three conditions, participants donated more after being presented with the vignettes. While the main purpose of these vignettes was to prime supernatural punishment in the god and karma conditions, all three included situations that involved social interaction and cooperation. Therefore, participants may have been primed with the thought of cooperation and so behaved more cooperatively. However, individuals in the karma condition were more cooperative than those in the neutral condition, suggesting an additional effect of reminders of karma as punishing.

Together with the findings that individuals – within a similar sample (Study 1) to Study 2 – focused more on benevolent karma and god than punishing karma and god, this suggests that no significant effects of the god condition may have been found as a result of both a general priming of cooperation across all three conditions and an overt focus on punishment in the

experimental conditions. This led individuals that endorsed benevolence over punishment to not be primed. While this does not support the SPH, it does provide some evidence for why priming supernatural punishment might not increase people's cooperation. However, the lack of an interaction for belief in supernatural agents casts doubt on the efficacy of this prime, as previous research asserts that religious primes should only work on believers (Shariff et al., 2016).

Perhaps, a more nuanced approach is more appropriate; that religious primes should only work for those that hold the beliefs that are being primed. Such that, believers did not overwhelmingly believe in supernatural punishment – as demonstrated by study 1 – which meant that reminders of this specific aspect did not have any substantial effect on their behaviour.

Additionally, Study 2 found a lack of support for the influence of identity fusion on cooperation within this specific sample. Overall low levels of identity fusion were identified, which may have impacted the ability to find any significant effects. Similarly, social identification did not have any significant effects, with similarly low levels, suggesting that in contexts with low levels of religious affiliation, identity fusion and social identification do not appear to be sufficiently distinct.

## CHAPTER 5: General Discussion

The link between religion and cooperation is thoroughly established in the literature (e.g., Norenzayan et al., 2016; Whitehouse et al., 2017). As part of this evidence, the supernatural punishment hypothesis proposes that the belief in supernatural agents with the ability to deliver punishment to transgressors is a core belief that has developed to support cooperation amongst group members (Johnson, 2016). The agency of these supernatural agents is important as evidence of cognitive biases – such as a tendency to detect agency in events – is purported to be core evidence of the supernatural punishment hypothesis (Johnson & Bering, 2006). Similarly, the identity fusion theory posits that intense feelings of belongingness with a group reinforces cooperation amongst group members, either through extreme shared experiences (e.g., Whitehouse et al., 2017) or self-sacrifice (e.g., Whitehouse, 2018). The primary motivation of this thesis was to investigate the links between these two related, but distinct, research areas. While little support was found for the findings of previous research in either field, some interesting aspects of each may have been revealed as a result of the context this research was conducted in. The following discussion will cover the main findings of this thesis and what it can provide to the wider literature of supernatural punishment and identity fusion. In short, the relevance for each field will be discussed, as will how these fields relate, how future research can build on these findings, and the limitations of both studies.

### **Belief**

**Karma.** There is limited research on karma within the supernatural punishment hypothesis. However, recent research reveals that it may function similarly to supernatural agents (White et al., 2019). Interestingly, Study 2 identified that across all three conditions, participants kept less tokens after the prime, compared to before the prime, indicating that after reading all

three of the vignettes, individuals were more likely to behave cooperatively. Additionally, those in the karma condition kept even less tokens after the prime than those in the neutral condition, indicating that being in the karma condition was more predictive of increased cooperation than being in the neutral condition. Thus, the effect of reminders of karma appears to be more conducive to increasing cooperative behaviour. However, those in the karma condition did not differ the god condition in their cooperative behaviour from. This indicates that the karma prime was more effective in increasing cooperation than the neutral prime, but not more effective than the god prime.

Furthermore, when assessing interactions in the post-prime donations, a positive effect of belief in karma was identified, suggesting that in the karma condition, those with higher belief in karma kept more tokens compared to those with lower belief in karma. This opposes initial predictions. One explanation could be the focus on benevolence, that was identified in Study 1. DeBono et al. (2017) found that belief in a forgiving god increased selfish behaviour, thus decreasing cooperation. Perhaps this extends to belief in benevolent karma. If individuals expect karma to forgive them for a selfish act, perhaps they are more likely to act more selfishly when reminded of their karmic belief. Another possible explanation is that individuals thought that the target character (Jane) was acting selfishly and not behaving as someone who believes in karma would. This could have elicited a negative reaction to the stimuli, meaning individuals who believed in karma were less trusting after the prime and so kept more tokens. Another explanation could be that those in the karma condition did not think their peers would be fellow believers in karma and as so acted self-interestedly against a potential out-group. However, if this were the case, then those with higher levels of identity fusion should have kept more tokens. Identity fusion did not significantly influence this relationship, indicating that this is not the



likely explanation for this effect. Instead, the most likely explanation of these is that benevolence is more associated with belief in karma than punitiveness and thus individuals with higher belief think karma is more likely to forgive them for their acts.

The majority of research on religious belief focuses on ‘prosocial religions’ and the MHGs of these religions. This research, along with that of White et al. (2019), expands this to suggest that karma may function similarly to how religious belief does. White et al. (2019) illustrated that belief in karma may threaten punishment similarly to belief in supernatural agents. However, this study found that belief in karma negatively influenced cooperative behaviour in a more general cooperative task. Consequently, the link between belief and belonging is unclear and requires further research.

**Supernatural Agents.** The SPH would suggest that the presentation of the god condition (which has an overt focus on the supernatural punishment aspect of god) would increase individuals cooperative behaviour if they believed in god (Johnson, 2016), which was not supported by these findings. A partial explanation for this is participants focus on a benevolent god (as discussed above). Alternatively, it could indicate some problems with the SPH. Prior belief in supernatural agents was not found to influence cooperative behaviour, indicating that those who believed in supernatural agents were no more likely to be affected by god priming than those who did not believe. This may be a result of a relatively weak level of belief in supernatural agents across both studies (Study 1:  $M = 3.17$ ,  $SD = 1.71$ ; Study 2:  $M = 3.11$ ,  $SD = 1.72$ ), which may have resulted in an overrepresentation of non-believers or weak believers in these samples. Nonetheless, the lack of a belief moderation for those with high belief, casts doubt on the claims of the SPH and their suitability to this sample. Such that in this context, the effect of belief in supernatural agents does not influence cooperation in any significant way.

Furthermore, a near-significant interaction of belief in supernatural agents and identity fusion in the karma condition was identified. No specific predictions were made for any crossover effects of karma and supernatural agency belief in the other conditions. However, this finding indicates that those with higher belief in supernatural agents cooperate less when reminded of karma. However, when identity fusion is low, this effect disappears. This suggests that higher belongingness with religious groups drives this effect of decreased cooperation. One explanation is that individuals that believe in supernatural agents and belong to religious groups reacted negatively to a story about karma and so were reminded of an outgroup, which decreased their cooperative tendencies. Another explanation could be that those with higher identity fusion are also those with a higher endorsement of a benevolent god, and so they acted more selfishly as they expected to be forgiven. With that said, this interaction was not sufficiently significant for any clear implications to be derived, but its proximity to significance warrants further investigation to identify if studies with more power might find evidence for its existence.

**The importance of agency.** A core aspect of the supernatural punishment hypothesis is that supernatural punishers are supernatural agents, that actively engage in punishment. Research within this area emphasises the importance of supernatural agents (Guthrie, 1993; Johnson & Bering, 2006; Norenzayan et al., 2016). Despite a focus on ‘prosocial religions’ in most of this research, the prevalence of supernatural agents – though not necessarily a MHG – is also depicted across the Pacific (Watts, Greenhill, et al., 2015). A variety of cognitive biases such as theory of mind and mentalising are argued to be related to the evolution of belief in supernatural agents (Johnson & Bering, 2006; Norenzayan et al., 2016). Based on this body of research it was predicted that mentalising would moderate the god condition. It was also hypothesised that endorsing god as having more human-like tendencies would moderate the god condition.

However, the only significant moderation for both was within the neutral condition, such that those in this condition donated more tokens if they had higher levels of mentalising. This was not found in either the karma or god conditions. This indicates that agency detection was not important for the effect of these conditions on cooperative behaviour. Thus, neither mentalising nor seeing god as human-like significantly impacted the cooperative behaviour of those presented with religious concepts, indicating mentalising may not be as important for the facilitation of cooperative behaviour.

The moderation in the neutral condition supports the theory of mentalising (Wakabayashi et al., 2006), when considering the content of the vignette. Those who score higher on the EQSF should have higher levels of empathy. The neutral vignette depicted a cooperative action by an agent, with no aspect of punishment or supernatural concept. Therefore, mentalising likely drove how individuals empathised with Jane. In the other conditions, mentalising may have had no effect because individuals were focused on the supernatural aspect, which in turn drove their responses, rather than a focus on empathy for Jane. That said, it remains unclear from these findings how mentalising specifically fits into this paradigm.

In summary, little support for the supernatural punishment hypothesis was identified, despite a significant increase in cooperation for the karma condition compared to the neutral condition. Contrary to the claims of the SPH, reminders of the punishment of god and belief in supernatural agents had little influence on cooperative behaviour. Interestingly, higher belief in karma and higher belief in supernatural agents predicted less cooperation when reminded of karma which would not be expected if karma worked similarly to the SPH. However, increased identity fusion exacerbated the effect of belief in supernatural agents, suggesting that belonging might explain why individuals behaved more uncooperatively. For those who are associated with

religious groups that do not include karma, being exposed to this might elicit a negative reaction in cooperative tasks because it reminds individuals of out-groups rather than in-groups. As little research is done on karma, these findings show some interesting aspects of karma within the New Zealand context. Namely, that being reminded of the supernatural punishment aspects of karma decreased cooperation for those that were stronger believers in karma.

### **Belonging**

**Identity Fusion.** Identity fusion had little influence in cooperation across all three conditions. Though there is a hint of an effect in the three-way interaction of identity fusion and belief in supernatural agents in the karma condition, this was not significant, further highlighting the lack of any significant identity fusion. As identity fusion had substantially low levels, it may be the case that the identity fusion is unsuited to a context such as New Zealand due to low levels of extreme religious group affiliation. As such, there is a possibility that this effect being near significance is simply noise in the data due to relatively low levels of both belief and identity fusion within this sample. Alternatively, there may be an overrepresentation of lowly fused individuals within this sample that would not be reflected in wider New Zealand samples. This requires further research to assess the degree of identity fusion within the general New Zealand population to ascertain the level of fusion, and therefore belongingness, within New Zealand.

The target of the cooperative behaviour within Study 2 was left intentionally ambiguous. This could have tapped into the theory of extended fusion, which posits that the cooperative functions of identity fusion might extend beyond the fused group to other groups that an individual belongs to (Whitehouse, 2018). The low levels and effects of identity fusion limit the possibility of fusion being extended, as extended fusion is argued to occur after identity fusion is already developed (Swann et al., 2009; Whitehouse, 2018). As such, other tests of extended

fusion should be conducted in contexts where identity fusion is already developed at higher levels.

**Identification vs. fusion.** Identity fusion arose from research focusing on how self-sacrifice (e.g., Swann et al., 2009) and extreme rituals (e.g., Whitehouse et al., 2017) facilitate group cohesion. Previous research was built from social identity theory (Tajfel, 1974) to establish a theory of a more visceral feeling of fusion that is different to extreme social identities (Swann et al., 2012). The actions of those with extreme social identities are “depersonalised” so only their social self is reflected, whereas those with extreme fusion have a fused personal and social self, so both are reflected (see Swann et al., 2012 for further differences between social identity and identity fusion). However, in Study 2 no significant effects were found for either social identification or identity fusion, indicating a lack of support for identity fusion or social identification moderating the effect of the priming conditions on cooperative behaviour. This is likely a result of a relatively low overall level of identity fusion ( $M = 2.34$ ,  $SD = 1.42$ ) and social identification ( $M = 2.41$ ,  $SD = 1.47$ ) within the sample. As identity fusion is only active at the extreme ‘fused’ higher end of the scale, the lack of any effects makes perfect sense. Thus, though hypothesis 8 was not supported, further research on more highly fused samples may find different results.

Ultimately, identity fusion and identification seem to either be unsuitable measures of belonging within this sample, or religious belonging is low within this sample. In either case, this suggests that researchers should consider the contexts within which they are studying identity fusion and how groups are experienced within these contexts. This might suggest that identity fusion is limited to contexts with extreme circumstances. This warrants further research within both extreme and non-extreme contexts to ascertain the effects of identity fusion.

**Implications and future directions**

Study 2 identified that – for those in the karma condition – having higher levels of identity fusion and belief in supernatural agents predicts increased cooperation in an economic game. These individuals are possibly those who belong to Christian-associated religions and when reminded of a belief that is not necessarily within that religious doctrine, such as karma, they are less likely to behave in a generally cooperative way. However, as this result was only close to significance, and not actually significant, this claim should be considered with caution. As such, a future study could look at different religious groups across New Zealand and how these mechanisms work within it, to discern whether there is any weight to this claim. For example, matching belief and belonging to specific religious groups could untangle mechanisms that provide different explanations for religious concepts.

The findings from Studies 1 and 2 indicate that belief and belonging do not appear as highly linked as was predicted. Although this research investigated potential moderating effects of belief and identity fusion in an experimental context, other effects might exist. For instance, it is unclear how belief and belonging arise and whether one influences another. Future research would benefit from longitudinal studies assessing the degree to which belonging and belief are related over time. Is it that increased belief drives further engagement and thus increased belonging, or is it the reverse direction, that belonging and the engagement it entails drives increased belief? As this is likely dependent on the context and religion that individuals belong to, more diverse research – that offers focus on using different methodologies, concepts, and samples – within the cognitive science of religion, the supernatural punishment hypothesis, and identity fusion is necessary.

A significant trend from both studies is that both identity fusion and belief in supernatural agents had relatively low levels and in Study 2, low or nonsignificant moderating effects on cooperative behaviour. The importance of an agentic god was not highlighted by the god condition as it did not differ from the neutral condition. Belief in karma had similarly low levels, but those in the karma condition were more cooperative, potentially indicating the influence of karma on cooperative behaviour. However, belief in karma negatively impacted this effect, such that higher belief in karma meant less cooperation. This suggests that the threat of punishment by karma is not conducive to cooperation, but the reminder of karma and its possible benevolence, might increase selfish behaviour for those with stronger belief. As these conclusions are unclear – and derived from separate studies – further research is required in both SPH and identity fusion research in contexts and samples with decreased levels and prevalence of religious belief and belonging. Furthermore, research focusing on karma should be a focus of future research efforts within the SPH.

Most research on religious belief focuses on the ‘prosocial religions’ that focus on the MHG (Norenzayan et al., 2016; White et al., 2018). As such, little is known about belief in karma across the world and how it fits into theories in the cognitive science of religion, such as supernatural punishment. For instance, how does belief in karma relate to different cognitive biases that are theoretically fundamental to religious belief within the cognitive science of religion. These include mentalising, which this research found was only significantly related to increased cooperation in the neutral condition. Other cognitive biases are teleological thinking and mind-body dualism (Norenzayan et al., 2016). Future research should investigate how these cognitive biases might be related to belief in karma to provide further insight to the SPH.

Most importantly, there is a need for cultural and indigenous research concerning karma. Although research on karma is lacking within the cognitive science of religion, researchers must resist the common pitfalls of imposing WEIRD methodologies and understandings of experiences when investigating karma. While this thesis used WEIRD methodologies such as self-report scales and online experiments, future research within this domain should also consider qualitative research informed by practitioners and individuals that experience karma in their life. Any research considering karma must also consider these issues. An excellent example for researchers to consider is research within the Kaupapa Māori framework such as work conducted by Ahuriri-Driscoll (2014), where practitioners and researchers work collaboratively<sup>7</sup>.

Ultimately, the links between belief and belonging still require further research. Identity fusion is only one limited way to measure belonging, as are other self-report measures for both belonging and belief. Future research should go beyond these measures of belief and belonging to see other ways in which belief and belonging may be related. Additionally, it would be important to extend how belief and belonging relate to constructs beyond cooperation to see how they may explain other phenomena such as pro-group extreme action, out-group attitudes, and actual real-world behaviours.

## **Limitations**

Study 2 used a measure of cooperative behaviour that places the default choice as free riding. This means that the default choice is keeping the highest amount of tokens. As such, participants must actively move their donation, so those that decide to skip or ignore this task behave uncooperatively. While this somewhat captures free riding it also cannot distinguish

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<sup>7</sup> Other relevant examples include (but are not limited to) Barnes et al., (2017); Florence & Mikahere-Hall, (2019); Mark and Lyons, (2010); NiaNia et al., (2017).



between these instances and between individuals that actively keep the most tokens. Additionally, the target of this cooperative behaviour is an ambiguous ‘other’ from within the same sample. So, while it does measure cooperation with a group that the members belong to, it is not a religious group or one that they have strong feelings towards. Furthermore, the situation itself is hypothetical, with no real consequences, actual tokens, or monetary incentive used. Thus, the external validity of the task is rather limited. Additionally, all three conditions had significant decreases after the vignettes, which might indicate that there is a learning effect that leads to decreased keeping of tokens. While these problems are not major – and were indeed necessary for experimental control within this research design - they offer helpful avenues for future research to expand on the findings of this research. For instance, having the target of the behaviour as either an in-group or out-group member may untangle some of the finer mechanisms of the interrelationships between belief, identity fusion, and cooperation. It would also be interesting for future research to use real money or real tokens to see if the inclusion of tangible differences would alter these findings. However, it might be more important to focus on a wide array of cooperation tasks to capture a more general sense of cooperation, rather than focusing on economic games (Galizzi & Navarro-Martinez, 2019; McAuliffe et al., 2019). This would benefit future research, as economic games are widely used with little consideration for their external validity or other measures of cooperative behaviour.

An additional limitation is the homogeneity of the samples used in both studies. All those within these samples are taking a first-year psychology course. For many of these individuals, this is their first year at university and first year away from home and most are aged between 18 and 20. This limits the generalisability of these findings. Furthermore, first year students are a largely secular subpopulation (Pew Research Center, 2018), within the already rather secular

context of Aotearoa New Zealand. Additionally, first year of university is normally a monumental period of change and solidification of beliefs. As such, many individuals may have recently changed their beliefs or are currently undergoing changes in their belief systems that lead to them being different to the wider population. For instance, many may have grown up in religious households, but have changed their beliefs since leaving these houses, and so have negative views towards religious systems that could exacerbate their reactions to the stimuli in this research. As such, these results provide some interesting implications for this particular sample that can be extended with further research within New Zealand. However, the caveat is that this may have caused some interesting changes in the results and implications compared to what would have been expected. This is because most of the research has been conducted in the US, a much more Christian focused society with increased levels of belief and belonging to religious groups compared to New Zealand. As such, these results should not be compared to the US, but instead taken within the context of New Zealand and its cultural history with regard to religion. Future research would benefit from using samples from a variety of different groups as well as a general community sample across New Zealand and the world.

An important limitation is the WEIRDness (Henrich et al., 2010) of this studies sample, measures, and design. For karma specifically, the measures for belief and belonging are all self-report and in English. While this may capture aspects of a contemporary concept of karma it likely misses out on the nuanced concepts that occur within contexts with which karma has been a core part of society, culture, and history. An online experimental study is a specific way of studying these beliefs and will miss out on some of the dynamics that in-person experiments would present. For instance, karma and supernatural agent belief is likely experienced in real world situations and locations – a particularly convincing case for priming studies used

contextual stimuli to elicit religious belief (Xygalatas, 2013) – rather than within the confines of one’s home, university, or other quiet place someone would take an online survey. Furthermore, the KBQ developed by White et al. (2018) was developed within an American context, though it was also tested on an Indian sample. To further our understanding of karma we must avoid reducing it in these ways exclusively. Instead, research should investigate karma using both traditional western methods and methods that are relevant to the cultural contexts that karma shares a history with.

With that said, both the identity fusion and supernatural punishment literature have a vague assumption of the universality of their claims. However, most of the research in both fields has been conducted on the world’s large ‘prosocial religions.’ Consequently, this research has largely been conducted in areas with high levels of religious affiliation (e.g., US: Shariff & Norenzayan, 2007; Poland: Besta et al., 2014). New Zealand is unique because, while having a history of religious influence, it has high levels of non-belief relative to other countries with similar histories. As such, the lack of support within this research for these two research areas may be a result of the specific low-religiosity context and may instead support theories of cultural relativism that researchers in both areas should consider. This is supported by previous evidence of broad supernatural punishment – rather than the god of ‘prosocial religions’ – within the Pacific (Watts, Greenhill, et al., 2015) and a lack of support for replicability of some religious priming studies (Gomes & McCullough, 2015). This thesis expanded the research of these unique fields by including the understudied religious concept of karma, which originates from outside of these ‘prosocial religion’. However, it was conducted from outside of where this concept was

originally developed<sup>8</sup>. As such, future research should consider theories of cultural relativism (Dueck et al., 2017) from cultural psychology and beyond that could inform theories of supernatural punishment and identity fusion.

A final limitation was identified by the responses of some participants within the funnelled debriefing process. They revealed that the god and karma vignettes may have had a detrimental effect for some participants as some participants indicated that they believed the target was acting in a selfish manner rather than acting in adherence with their religious belief. In fact, this may have been directly against their religious beliefs. This calls into question some of the findings of both studies. For instance, the lack of difference between the control condition and god conditions may be a result of these interpretations. Some individuals may have had a negative response to the vignettes and focused on the act of the target character instead of the supernatural concepts. This suggests the need for further refinement of these vignettes and other priming stimuli that may be similarly affected. As these stimuli were particularly focused in their targeting of supernatural punishment, more general stimuli may elicit similar, unexpected effects that yet to be identified. In fact, the use of priming stimuli has received much criticism recently. For instance, recent replications of the much used sentence unscrambling task have seen a lack of replicability (religion: Gomes & McCullough, 2015; general: McCarthy et al., 2018). Perhaps then, future research should focus on more applicable stimuli such as contextual stimuli (e.g., Xygalatas, 2013). Ultimately, this largely relies on the outcomes that researchers are hoping to

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<sup>8</sup> It should be noted that the study also took place within a context that the religious concept of supernatural agents (but not necessarily ‘god’) was developed. That is, the beliefs in supernatural agents that extend from indigenous Māori beliefs and customs (Marsden & Royal, 2003). There is also cultural transmission of Christian concepts from a history of colonisation by Europeans (Smith, 2012). Whereas the cultural transmission of non-Christian religious concepts is much less prevalent.

achieve with their research. Any understanding of the concept of karma in its traditional state should be conducted with relevance to the contexts that hold its cultural history. But, research into karma within WEIRD contexts and with WEIRD methods can still help to develop insights into how it has been culturally transmitted and disseminated within a wider context. As such, future research should learn from cultural (Dueck et al., 2017; Kim & Park, 2006) and indigenous psychology (Aikenhead & Ogawa, 2007; Walker et al., 2006; Yang, 2000) by focusing on engaging with practitioners, believers, and those who experience karma in their everyday life in order to capture an understanding of these lived experiences.

## **Conclusion**

This thesis has identified some interesting insights about belief and belonging within the context of Aotearoa. Study 1 sought to investigate how different types of priming stimuli influence belief in supernatural agents and karma. The priming stimuli used did not impact belief, indicating either a problem with the stimuli or with using belief as a manipulation check. Insights into the content of belief were also identified, as benevolent endorsement of god and karma were associated with increased belief, whereas punitive endorsement of god and karma were not, indicating an important insight about this low-belief context – that benevolent endorsement is more important in predicting belief in supernatural agents and belief in karma than punitive endorsement. This provides doubt over the applicability of the supernatural punishment to this context.

Study 2 sought to investigate this further. All conditions (neutral, god, and karma) influenced cooperative behaviour with karma having a stronger effect than neutral, but no difference from god. Surprisingly, higher belief in karma predicted decreased cooperative behaviour solely in the karma condition, contradicting the hypothesised relationship. Thus, the

effects of karma within the predictor framework of the SPH remain uncertain. Furthermore, higher belief in supernatural agents had the same effect of decreasing cooperative behaviour only in the karma condition. This is potentially explained by including belonging in the mechanism. When identity fusion was low the effect of belief in supernatural agents decreasing cooperative behaviour in the karma condition disappeared. Perhaps this effect is driven by those in Karmic religious groups that react more positively to karma related stimuli and that of the latter by those in Abrahamic religious groups that react more negatively to karma related stimuli. This is one of many areas for further research on belief and belonging within New Zealand and beyond.

Ultimately, the link between belief and belonging was very limited within this thesis. While this may be a result of limitations of sample, context, or measurement, it still casts doubt on how these might work together to influence cooperation. In fact, this thesis found little support for either belief or belonging increasing cooperation on their own, casting doubt on the applicability of both the identity fusion theory and the supernatural punishment hypothesis. Perhaps they serve separate functions, where belief has a more general effect, while belonging is specifically concerned with pro-group action, and this design tried to find a middle ground that does not exist. Future research may uncover this if researchers continue to expand beyond WEIRD concepts, samples, and methodologies.

The mystery surrounding how humans cooperate is barely a mystery anymore. Plethora of evidence suggests that cooperation is supported by a variety of different mechanisms, such as through religion. Both the SPH and identity fusion theory present arguments for how belief and belonging, have developed as ways to support cooperation. As these areas develop, they must consider contexts beyond the WEIRD context that they have been derived. As research often focuses on the ‘prosocial religions’ of the west, the Karmic religions of Asia offers an interesting

avenue for future research in both domains. Ultimately, this thesis has provided evidence that suggests that the context in which research of belief is conducted is important.

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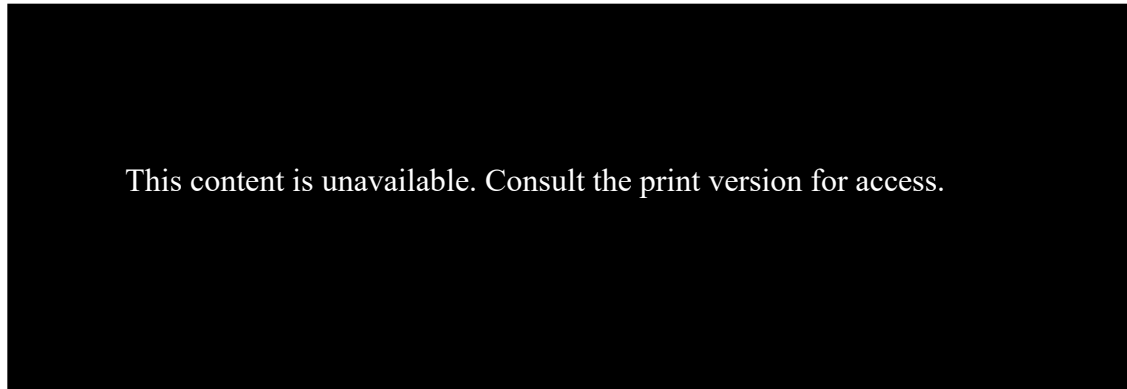
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## Appendices

### Appendix A



*Figure A.* Priming pictures used in Study 1. Left is the god condition, right is the karma condition

#### God and *Karma* Priming Vignettes:

“Jane is a little concerned. She is a firm believer in [God/*Karma*]. At work yesterday, she was selfish and did something bad to Peter. Now she thinks that [God will punish her/*her actions will come back to hurt her*] because of her behaviour and her belief that [God judges all actions/*all actions are connected*]. Jane is now determined to apologise to Peter and make things right so [that God doesn’t punish her/*her actions don’t come back to hurt her*]. Today, Jane went into work and helped Peter with a few tasks. Now she thinks that [she won’t get punished by God/*her actions won’t come back to hurt her*].”

#### Neutral Priming Vignette:

“Jane is a little concerned. She believes that she is a good worker. At work yesterday, she was interviewing a new employee with her colleague Peter. Now she is unsure if the new worker will help contribute to the work environment. Jane is now determined to make sure that this new employee is a right fit for the job. Today, Jane and Peter went into work and helped the new worker with a few tasks. After helping with these tasks, Jane feels that her concern is alleviated.”

**Appendix B**

Participants are presented with the following statement:

“For the first part of this study you are going to take part in several rounds of the same hypothetical task. In this task you will be playing with 5 hypothetical participants. We ask you to imagine you are playing with 5 fellow participants who are doing the same task and to think about how they might respond. In this task you will be granted a certain number of tokens. You will then be able to donate as many or as little of the tokens as you want to a public pool. The total amount of tokens that are donated by yourself and the other 5 hypothetical participants will then be doubled and evenly distributed among all members of this task.”

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## Appendix C



### ***Belief and Belonging Reactions Study***

#### **INFORMATION FOR PARTICIPANTS**

You are invited to take part in this research. Please read this information before deciding whether or not to take part. If you decide to participate, thank you. If you decide not to participate, thank you for considering this request.

#### **Who am I?**

My name is *Samuel Twitchin* and I am a Masters student in *cross-cultural psychology* at Victoria University of Wellington. This research project is work towards my thesis.

#### **What is the aim of the project?**

This project aims to explore how what we think about certain types of beliefs (such as religious ones) might influence how we behave in certain situations (such as ones that involve cooperating with others). This will involve responding to several questionnaires about certain This research has been approved by the Victoria University of Wellington School of Psychology Human Ethics Committee [REDACTED]

#### **What will happen if you agree to participate?**

You have been invited to participate because you have been selected to take part through IPRP. If you agree to take part, you will complete a survey and some tasks that involve reading, writing, and hypothetical situations. The survey will ask you questions about your beliefs, including your beliefs about other people, workplace interactions, and your beliefs about religious topics. For example, you might be asked a question about whether you think people go to hell when they die. It will also ask you questions about groups you might belong to, such as religious groups. You will also take part in a task where you will be making choices about money in a hypothetical situation with your fellow participants. No real money will be used in these situations, but you will be asked to treat them like there is. The survey will take you approximately 15-30 minutes to complete. You will receive .50 IPRP credits for your participation

**What will happen to the information you give?**

This research uses deidentified data. This means that your ID is linked between Qualtrics and Sona systems. This information will only be used for this purpose and will be deleted once your credits are distributed. Your answers will remain completely anonymous and unidentifiable. Once you submit the survey, it will be impossible to retract your answer. Please do not include any personal identifiable information in your responses.

**What will the project produce?**

The information from my research will be used in my master's dissertation and academic publications and conferences. Data from this research may also be shared with other researchers by request or through online data repositories such as the open science framework.

**If you have any questions or problems, who can you contact?**

If you have any questions, either now or in the future, please feel free to contact me:

**Student:**

**Supervisor:**

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**Human Ethics Committee information**

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**Statement of Consent (Online recruitment)**

I have read the information about this research. I agree to participate in this research. I understand that I am able to cease participating and have my data excluded by closing this browser window at any time.

If you agree to continue participation, please click the next arrow below.

If you do not wish to continue participation, please exit out of this browser window or tab now.

## **Belief and Belonging Reactions Study**

### ***Debriefing***

#### **Overview**

Researchers have tried to understand why people cooperate with each other even when there is sometimes a cost to themselves. A particular line of research has focused on understanding how religion may have played a part in the fostering of cooperation between individuals. Some research argues that religious beliefs and thoughts are linked to cooperation (e.g., Norenzayan et al., 2016). Another area of research focuses on how ones feelings of belongingness -which is defined as the fusion of their personal and collective/group identities- are linked to cooperation (e.g., Swann et al., 2014). This research has often focused on extreme, combative behaviour, rather than specifically cooperative behaviour. Additionally, much of the research in both of these areas has focused on Abrahamic religions, such as Christianity. However, there are many other religious faiths that do not include an Abrahamic God, such as Buddhism, which is one of the world's largest religions.

This study brings together these two areas of research to assess how both religious belief and belonging to religious groups may influence cooperative behaviour. This study also looks at the understudied belief in Karma, as well as belief in God. In this study we used a technique called priming to illicit religious beliefs. We hypothesised that both belief and belonging would influence how strongly one's cooperative behaviour was affected by this technique. The dependent variable is the difference between the amount donated to the pool in the first cooperation task compared to in the second. Our independent variable is the group you were allocated to, which dictated what type of vignette you received (God, Karma, or Neutral). There were also some predictor variables: 1) belief in God, 2) belief in Karma, and 3) fusion with the religious group. These variables are also predicted to influence the dependent variable in some way, but we did not manipulate these as they are obtained by your answers on the various questionnaires.

The results of this study are intended for publication in peer-reviewed academic outlets. If you would like to know more about the results of this study and about similar research, more information can be found at the following website:

<https://mindsincontextlab.wordpress.com/>. Results of this study will be posted there following publication.

#### **Contact Information**

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**Further Reading**

*If you'd like to read more about research of this type, we recommend:*

- Norenzayan, A., Shariff, A. F., Gervais, W. M., Willard, A. K., McNamara, R. A., Slingerland, E., & Henrich, J. (2016). The cultural evolution of prosocial religions. *Behavioral and Brain Sciences*, 39. <https://doi.org/10.1017/S0140525X14001356>
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## Appendix D

*Scale items for each measure:*

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