Perceptions of religious people and atheists in Sweden and the USA

Nathalie Hallin
Perceptions of and behaviour toward religious people and atheists in Sweden and the USA

Nathalie Hallin
Abstract

Religiosity has been present in societies throughout history and several theories hold that religion serves to foster trust and a sense of community within the religious ingroup. In many societies today, it is not uncommon to lack religious beliefs and religion is no longer a natural part of everyday life. The studies included in this thesis investigated how religious groups perceive each other or how generous they are to each other, both in the more secular Sweden and in the more religious USA.

Paper 1 examined Swedes’ perceptions of atheists and religious people. Specifically, how often they associated atheists or religious people with extreme immoral behaviour by making a conjunction error. Previous studies using the same methodological paradigm have found that more people associate atheists, rather than religious people, with immoral behaviour. We found no significant association between target (atheist or religious person) and conjunction errors, indicating that Swedes do not associate immoral behaviour with atheists to a greater degree than they associate immoral behaviour with religious people. We compared the results to those presented in a previous study and found that the Swedish participants in our study made significantly fewer conjunction errors when the target was an atheist than a sample from the USA. They also made significantly more conjunction errors when the target was a religious person than a Finnish sample and the American sample. The results suggest that anti-atheist bias is lower in Sweden compared to the USA, but anti-religious bias is higher than in both Finland and the USA. However, it is also possible that the type of sample used affected the results – we recruited participants from social media while the other two samples were solely or mainly student samples. The study shows that the clear anti-atheist bias found in similar studies is not universal.

Paper 2 investigated Christians’ and atheists’ perceptions of Christian, Muslim, and atheist job applicants in four studies, two with Swedish samples (studies 1 and 3) and two with samples from the USA (studies 2 and 4). Participants rated the perceived competence and likeability of a target applicant (Christian, Muslim, or atheist) and a control applicant (with no information about religious affiliation). In the last two studies, participants also specified if they would have hired the target or control applicant. Participants generally rated the control applicant as being more competent (USA) and more likeable (Sweden
and USA) than the target applicant. Both Christian and atheist participants rated targets with the same religious affiliation higher in likeability than targets from one or both religious outgroups in two of the studies. The only significant difference in competence ratings between the targets were in study 3, where Christians rated Muslims as less competent than Christians. However, Christians’ likeability ratings in study 3 did not differ between targets. More atheists in study 3 hired the control applicant than the Christian applicant, but no other group differed in which applicant they hired. In conclusion, when people perceived one religious group to be more likeable, it was their ingroup. However, these results do not translate to perceptions of competence and seldom to hiring decisions.

Paper 3 investigated generosity toward religious ingroup and outgroup members in three studies conducted in Sweden (study 1), the USA (study 2), and Egypt and Lebanon (study 3), using an adapted Dictator Game. Participants allocated a sum of money between themselves and three potential recipients. In the most relevant round, these were a Christian, a Muslim, and an atheist. We found that in studies 1 and 2, there was no significant difference in overall generosity between religious people, agnostics, and atheists in the rounds where they did not know the religious affiliation of the recipients. In the round where they knew the affiliation of recipients, religious people gave significantly more than atheists (studies 1 and 2) and agnostics (study 2). Study 3 had too few agnostics and atheists to compare their generosity to that of religious people. Christians, Muslims, and atheists in all three studies gave significantly more money to their respective religious ingroups than to the outgroup that was given the largest amount. This ingroup generosity was found in the other rounds as well. However, the ingroup minus outgroup amount was larger in the religion round compared to most other rounds. The exceptions were the ideology round in study 1 and 2, which did not differ significantly from the religion round. In study 2, the difference between ingroup and outgroup generosity was larger for Muslim participants than for Christians and atheists. In conclusion, religious people seem to be more generous only when they know the religious affiliation of recipients, but atheists, Muslims, and Christians are all more generous toward religious ingroup members than toward outgroup members.
The papers together show that religious affiliation seem to be an important group category that affects perceived likeability and generosity in several contexts.

Keywords: religion, atheism, generosity, ingroup favouritism, evolutionary psychology
Acknowledgement


Tack Sandra Nyberg-Akremi för all din hjälp under våra units genom åren. Att jobba ihop med dig har varit så mycket roligare än att jobba ensam. Du har hjälpit mig att bearbeta allt när jag har haft mycket att tänka på och vi har pushat varandra när motivationen har minskat.

Thank you, Ieva Biliunaite, for our weekly goals meetings, where we reflect on the past week and plan for the coming week. It has been great to keep in contact after you moved abroad and to hear about your work with the post doc.


De två forskargrupperna JEDI-lab och Internet health and clinical psychology group har också varit viktiga. Jag har fått höra om andra intressanta studier och projekt, som har väckt nya idéer hos mig. SAHA-projektet, som har finansierat största delen av doktorandprojektet, har varit en förutsättning för att jag skulle kunna göra detta arbete. Stort tack! Tack också George Vlaescu, som har programmerat de flesta av mina studier.
Jag tackar också alla som har deltagit i mina studier. Vissa har gjort det för en liten summa pengar och andra har gjort det helt utan kompensation, men ni alla har bidragit till att göra mina studier möjliga.

Tack till mina vänner och min familj, som har lyssnat på mina idéer och funderingar under min doktorandtid. Tack mamma, pappa och Ro för ert stöd.

Oscar, tack för att du har stöttat mig, utmanat mig, avlastat mig och uppmuntrat mig.
List of Papers


Table of Contents

Abstract ................................................................................................................... iii
Acknowledgement ............................................................................................... vii
List of papers ....................................................................................................... ix
Table of Contents ................................................................................................. xi
Introduction .......................................................................................................... 1
  Religion and atheism ......................................................................................... 1
  Psychology of religion ..................................................................................... 2
  Evolutionary framework ................................................................................... 3
  Theories in Psychology of Religion ................................................................. 7
    By-Product Theories .................................................................................... 8
    Adaptationist Theories .............................................................................. 12
  Social, cognitive, and evolutionary psychology ............................................. 17
  Prosocial behaviour and morality .................................................................... 19
  Perceptions and biases .................................................................................... 22
Aims ...................................................................................................................... 23
  Paper 1 ........................................................................................................... 24
  Paper 2 ........................................................................................................... 24
  Paper 3 ........................................................................................................... 24
Summaries of Studies ............................................................................................ 25
  Paper 1 Summary .......................................................................................... 25
    Background and Aim .................................................................................. 25
    Method ........................................................................................................ 25
    Results ........................................................................................................ 26
    Discussion ................................................................................................... 26
  Paper 2 Summary .......................................................................................... 27
    Background and Aim .................................................................................. 27
    Method ........................................................................................................ 27
    Results ........................................................................................................ 27
    Discussion ................................................................................................... 28
  Paper 3 Summary .......................................................................................... 28
    Background and Aim .................................................................................. 28
    Method ........................................................................................................ 28
    Results ........................................................................................................ 29
    Discussion ................................................................................................... 30
Methods .................................................................................................................. 33
  Main Measures .................................................................................................. 33
    Religious Affiliation ..................................................................................... 33
    Belief in God(s) ......................................................................................... 34
Participants ............................................................................................................ 35
Methodological Paradigms .................................................................................... 39
Paper 1: Conjunction Fallacy Test .......................................................... 40
Paper 2: Ratings in a Recruitment Context ............................................ 40
Paper 3: Dictator Game ........................................................................ 41
General Discussion .................................................................................. 43
Methodological Discussion ..................................................................... 44
  Online Studies ...................................................................................... 44
  Preregistrations ................................................................................... 47
  Ethical Considerations ......................................................................... 47
Theoretical Discussion ............................................................................. 48
Conclusion ............................................................................................... 50
References ............................................................................................... 52
Introduction

Some form of religiosity has been part of all past and present human societies that we know of (Bendixen et al., 2023). The proportion of religious people in the world was increasing until recently, largely driven by the higher fertility rates of religious people. Parallel with this, people in advanced industrial societies were becoming more secular, with church attendance declining and the role of religion in everyday life diminishing (Norris & Inglehart, 2011). In the last decade, however, researchers have noted a decline in religiosity in most of the world. Sweden is one of the countries that is highest in self-expression and secular-rational values, as well as individual-choice as opposed to religiosity values, according to the World Values Survey (Inglehart, 2020). Inglehart (2020) argues that the culture of the Nordic countries, which is characterised by a strong welfare state as well as falling religiosity, shows the future trajectory of other countries, including the USA. However, being religious is still the norm in the world (Keysar, 2017). This thesis will examine how religious people and atheists perceive each other and how people act towards those who belong to the same (non)religious group and those who belong to a different group.

Religion and Atheism

There is no consensus about how religion should be defined. Some suggested definitions focus on the belief in and worship of a divine or superhuman power, while some instead claim that religion is an individual experience of “the beyond”, questions about life and death, or existence. Others focus on the community where people together search for the sacred or practice traditions (Zinnbauer & Pargament, 2005). An early influential definition was offered by Durkheim (1915/1964). He divided religious phenomena into beliefs and rites, but argued that both were concerned with the sacred domain, as opposed to the profane. Any object or idea can be sacred and should be isolated from the profane. Rites are rules describing how people should interact with sacred objects.
Belief in the supernatural is a common definition of religion (Sosis & Alcorta, 2003). Atran (2004) defined religion as “(1) a community’s costly and hard-to-fake commitment to (2) a counterfactual and counterintuitive world of supernatural agents (3) who master people’s existential anxieties, such as death and deception” (p. 4). Thus, in addition to the common idea of belief in the supernatural, Atran specified that this is a community-wide commitment to supernatural agents, that this commitment should demand some sacrifices from the believers to dissuade individuals from faking belief, and that the commitment serves to give people tools and frameworks to handle existential anxieties (Atran, 2004).

Atheism is another concept without a clear definition. Some have suggested that atheism implies a lack of a belief in a god or gods (Norenzayan & Gervais, 2013), while others have suggested that it implies a denial of the theistic claim that a god exists (Cliteur, 2009).

In this thesis, the terms religious and atheist will be defined as self-identification with these concepts. The main reason for using religious/non-religious categories is to identify which targets people view as ingroup members and outgroup members. Religiosity will be conceptualised in several ways, including strength of belief in God(s) and participation in religious activities. The terms religious affiliation, religious ingroup and religious outgroups will encompass atheism as well as religious groups, for the sake of convenience.

Psychology of Religion

The field of psychology of religion consists of various kinds of research, which have in common that they study religion or religiosity from a psychological perspective. This broad field started developing in the beginning of the 20th century and studies psychological aspects of religiousness in different ways (Emmons & Paloutzian, 2003). This includes empirical and analytical research, hermeneutical research (Belzen & Hood, 2006), as well as clinical research (Shafranske, 2005). There is also multidisciplinary research done, as in the cognitive science
Introduction

of religion, neurobiology of religious experience and evolutionary psychology of religion (Emmons & Paloutzian, 2003). One common aspect being studied is religious prosociality (Tsang et al., 2021). The papers included in this thesis all fall under social and cognitive quantitative research, with an evolutionary perspective as the overarching framework.

Evolutionary Framework

In this thesis, I will use evolutionary psychology as an overarching framework. This perspective is not necessary for understanding the papers, but serves to put the papers presented here in the larger context of the possible function(s) of religiosity. Below, I will give a short explanation of the field, and discuss some critique against research within evolutionary psychology as well as solutions suggested by researchers.

The rules for conducting research within evolutionary psychology are still developing. The field is entirely built on theories, which are ideally well-developed and entail many specific predictions, which can be tested in empirical studies. These theories are intended to explain a psychological mechanism by the conditions that we have faced during our evolutionary history. The field focuses on universal human traits and not differences between groups of people, with the exception of sex differences. Evolutionary theories can be consistent with other psychological theories, since they operate on different levels of explanation.

While theories within evolutionary psychology aim to explain how the biological basis of psychological traits have spread, some of them also aim to explain how cultural evolution have used that biological basis to spread certain ideas or cultural practices.

Human traits can be adaptations to specific challenges that humans have faced, but they can also be by-products of other adaptations or a result of a mutation that was neither beneficial nor adverse.
In an influential article, Gould and Lewontin (1979) argue that evolutionary research tends to focus on adaptationist explanations, while other possibilities are ignored. They point out that some traits might be by-products of other adaptations (e.g. the navel is a by-product of the umbilical cord).

They argue that adaptationist theories are accepted too easily – sometimes merely because they are consistent with natural selection – and not discarded when evidence for them is lacking. Instead, they claim, one adaptationist theory is often replaced with another, when falsification of the initial theory should lead researchers to question whether a different kind of theory might explain the trait better. The authors protest the exclusive focus on adaptationist explanations (Gould & Lewontin, 1979). As a response to this critique and critique from others, several researchers have suggested guidelines for research in evolutionary sciences (Andrews et al., 2002; Lewis et al., 2017; Simpson & Campbell, 2005).

Simpson and Campbell (2005) write that researchers need to distinguish between four levels of analysis: adaptive function, ontogenetic development, proximate determinants and evolutionary history. The adaptive function, or ultimate explanation, focuses on the importance of a trait for reproductive success. Ontogenetic explanations concern the onset and termination of a trait during development. Proximate explanations describe cues that trigger a process, the process itself and the behaviour it might lead to. Finally, the explanations of evolutionary history concern how a trait varies across species, to better understand its ancestral roots. They argue that especially the last level of analysis has been neglected in research and if it would be utilised more in theories, it could lead to novel predictions (Simpson & Campbell, 2005).

Simpson and Campbell (2005) also suggest that research should be structured around predictions. There are often multiple theories or models – nonevolutionary or evolutionary – which predict different results. If possible, research programmes should be designed to test these conflicting predictions, the authors propose. They argue that evolutionary
Introduction

researchers sometimes fail to make their theories or models clear and specific enough, which leads to some hypotheses being generated based on the theories, while not being directly derived from them. In other words, the theory still stands if the hypothesis is not supported, since the ambiguity of the theory means that the hypothesis is not necessary for the theory to be true.

Lewis et al. (2017) aim to guide researchers who want to utilise an evolutionary perspective. They explain that evolutionary theory refers to the overall framework describing how psychological mechanisms, as well as all other traits, evolved. This framework can be used to derive middle-level theories, which try to explain specific domains of life using the principles of evolution. They distinguish between top-down approaches and bottom-up approaches. The former starts with identification of an adaptive problem, which leads the researcher to propose an adaptation that would solve the problem. The latter starts with an observation of a trait, which is then used to generate a theory of an adaptive problem that the trait could have evolved to solve. From this theory, novel predictions can be made. The authors stress that no special methods, materials, or measures are needed to test these theories, even if such tools can be utilised (e.g., cross-species analyses, cross-cultural studies, and principles from evolutionary developmental psychology). Features such as motivation, cognition, emotion, and behaviour, which are studied in nonevolutionary psychology and behavioural sciences, can be investigated to test predictions from middle-level evolutionary theories.

When results are interpreted, researchers have to consider alternative explanations. Other adaptationist explanations might be possible, as well as by-product explanations. Sociocultural explanations exist solely at the proximate level and can thus be either consistent with or in conflict with the adaptationist theory being tested. Similarly, developmental explanations constitute one of the four levels of analysis and they could thus be consistent with the theory. They further argue that one middle-level theory can generate conflicting hypotheses, since a mechanism evolved to solve a specific adaptive problem could manage
this in different ways. Thus, a hypothesis can be falsified without the theory being discredited, if there are other possible hypotheses within the theory (Lewis et al., 2017). Thus, Lewis et al. (2017) argue for some leniency of how specific a theory needs to be, in contrast to Simpson and Campbell (2005).

Simpson and Campbell (2005) point out several validity problems within evolutionary research. They argue that measures, operations, and procedures often lack close correspondence with the theoretical constructs they are used to study. Consequently, large inferential leaps are often required. Especially important for evolutionary sciences is the part of external validity called robustness, i.e. to which degree an effect can be replicated across contexts and populations. The authors encourage theorists to specify to which contexts and populations an effect should generalise. Particular focus should be placed on differences between hunter-gatherer populations and modern populations. Construct validity should also be considered in evolutionary research. A manipulation might intend to induce a specific state in a participant, but unintentionally create another state—or multiple states. This results in ambiguity regarding what state is producing an effect. Simpson and Campbell (2005) suggest that conceptual replications would address this problem and are necessary to demonstrate sufficient construct validity. They propose that researchers use a multitrait-multimethod approach, where both traits that are theorised to produce an effect and traits expected not to are studied using multiple methods. This makes it possible to test both convergent validity (effect detected by different methods) and discriminant validity (measurement of unrelated constructs producing different results using the same method).

The same article also discusses problems with low statistical power. First, true effects might not be discovered if a low-powered study fails to get significant results, discouraging further studies on the same effect. If a true effect is small, several studies with too low power to detect the effect will produce the impression that the effect does not exist. Second, low-powered studies are more likely to produce false positives. Third, low-powered studies can only detect large effects, which means that real
Introduction

effects detected in such studies will be estimated to be larger, even if they are small. Consequently, subsequent studies with the same sample size will often fail to replicate the result. The authors recommend that fewer, high-powered studies are conducted, as that will be a more cost-effective way to collect evidence (Simpson & Campbell, 2005).

Theories in Psychology of Religion

Theories about religion include both adaptationist explanations and byproduct explanations. The latter type of theories often propose that religions have evolved culturally from the original non-adaptive religions in hunter-gatherer groups to world religions of today, which can facilitate cooperation in larger groups. There are plenty of theorists and research investigating byproduct theories of the evolutionary origin of religiosity. According to Sosis (2009), this is due to the fact that cognitive scientists were the first to start studying evolutionary foundations of religion and other researchers joined the field much later. Even though the praxis in evolutionary biology is to propose byproduct theories only as a last resort, cognitive scientists studying religion accepted byproduct theories before adaptationist theories had even been evaluated, Sosis argues. Now, this position has become axiomatic among these researchers. When adaptationists joined the discussion, their theories were not given much attention, even though they incorporated the research done by cognitivists (Sosis, 2009).

The first part of this section will describe the by-product perspective. This view consists of several theories of how mechanisms that are used by religion evolved for other purposes. By-product theorists argue that these mechanisms together make up different aspects of religiosity. In the second part of the section, adaptationist theories will be presented. Some adaptationist theories focus on a specific aspect of religion, which leaves room for theories of other aspects of religion, while other theories attempt to explain how religion as a whole evolved due to having a specific adaptive advantage.
By-Product Theories

Boyer (2001) proposes a by-product theory about religion which does not presume that religion would be adaptive in any way. He builds on theories proposed by other researchers and cognitive research. Boyer starts his book by pointing out that the mind is not a blank slate – it does not simply absorb the information in the environment. Instead, the mind consists of complex mental equipment which decides which information is relevant and how it should be treated. The mind is prepared for certain concepts which have always existed in humans’ environments, but it allows for some variation in these concepts. This flexibility is what makes religiosity possible. Humans are not born with religion, but we are born with dispositions which make it possible to acquire religion.

Boyer holds that there is no single factor which can explain human religiosity. However, the idea of a single factor is a common notion which has hampered our understanding of the phenomenon. To explain religion, he claims, we must combine knowledge about several mental systems.

One of those systems is the ability to decouple our thoughts from our current situation, for instance, to make plans or consider counterfactuals. This means that humans have the ability to naturally conceive of and communicate about objects and thoughts which are not directly observable. Some non-observable concepts are attention-grabbing, because they violate intuitions about ontological categories. Ontological categories are part of the architecture of the human mind. The mind intuitively sorts newly discovered objects into these categories and automatically make assumptions for these objects which is true of all objects belonging to the category, even if these characteristics have not been confirmed of a specific newly discovered object. This helps speed up information acquisition. For instance, when introduced to a new animal, one does not have to question whether this particular species, as all other animals, possesses a body, reproduces, and eventually dies. Examples of ontological categories are person, animal, tool, plant, and natural object. The attention-grabbing concepts that violate ontological categories (e.g., a hearing tree or a person without a body) often become
part of fictional stories, but since there is often a fine line between fiction and real stories, some concepts are believed to be true.

Some of these concepts are even more salient, because they are about agents. Concepts of agents lead to many possible inferences – what these agents see, know, plan and how they are – similar to unseen predators. Some of these agents are thought to have full strategic information about the social situations people are in. This idea of full strategic knowledge allows people to assume that these agents can determine the moral rightness of actions, since such judgement is intuitively thought to depend on strategic information. Since humans intuitively assume that any case of misfortune is caused by an agent (which is often true), the moral knowledge of supernatural agents makes it easy to infer that they cause misfortune as a response to moral transgressions. This power further contributes to their salience.

When religious concepts exist, they are likely to be associated with dead people, since dead bodies create incompatible intuitions (i.e., a person I know, but a lifeless body). Religious concepts are also likely to be inserted into rituals, which are meaningless actions performed to deter danger from occurring. Since rituals are often used to mark changes in social standing, supernatural agents are easily inserted to explain how these social processes can occur.

In large enough groups with literate specialists, such people will likely create an abstract, less contextual, and less local form of religion, which they use to compete with others for religious customers. This also likely includes forming a guild with political goals. However, religious concepts in this form will not be optimal and will therefore be combined with spontaneous inferences in people’s minds, which are sometimes incompatible with the doctrine.

Boyer stresses that he does not claim that there are many aspects to religion – instead, religiosity exists as a result of the various mental systems described above. Religious concepts trigger specific inference systems. This can explain why religions persist when they are challenged by science. Moreover, not all mental systems are activated in all situations – merely the ones necessary to make sense of the event happening. For
instance, if a person is sacrificing an animal to get protection from an ancestor, the social-exchange system is activated, but not necessarily the system in charge of determining if an exchange partner really exists. This also illustrates Boyer’s idea that inferences lead to belief and not the other way around – inferences make sense of what is happening and the resulting belief is consistent with the inferences.

Finally, Boyer explains that religious concepts go through a process of cultural selection. Unsuccessful variants of religious concepts are discarded or forgotten – that is why the existing concepts are so successful and seem designed to fit the human mind.

Atran and Henrich (2010) claim that the cognitive mechanisms required for religiosity have evolved for other adaptive functions. They posit that religiosity was not adaptive in the environment it evolved in (hunter-gatherer groups). However, when human beings started to form larger societies, religion had a cultural function. In small groups, individuals often benefit from choosing to cooperate, because their reputation affects how others will act towards them. However, as the population size increases, reputational information degrades. Thus, a different mechanism is needed to promote cooperation. Potent and morally concerned gods is a possible solution – if people in a society believe that their actions are seen, judged, and possibly punished by a god, they have an incentive to follow moral rules and cooperate.

The cognitive mechanisms suggested by Atran and Henrich to create religion as a by-product are Theory of Mind module(s) (ToM), hyperactive agency detection device (HADD), faith in tradition and minimally counterintuitive beliefs as a mnemonic tool. ToM allows people to interpret the beliefs, desires, and intentions of others from their behaviour. This ability could be used to interpret the motivations of actions by a god. HADD exists to ensure that people recognise behaviour performed by agents, which has the effect of agency attribution to inanimate objects and natural phenomena (e.g. as performed by gods). The cost of failing to recognise agency is believed to be higher than the cost of falsely attributing agency.
Introduction

Another cognitive mechanism aiding religious belief is faith in tradition. Experience can be built over generations if the younger generation adheres to the rules known by the older generations to be superior (e.g. to prepare food in a way which removes toxins, even if information about the purpose of the preparation steps is lacking). Minimally counterintuitive concepts are remembered better than intuitive concepts, which means that beliefs or stories containing an animate plant or an animal with the properties of a person are remembered better because of their counterintuitive aspects. However, the mnemonic advantage is offset by the credibility disadvantage which comes with a counterintuitive belief. Atran and Henrich suggest that this disadvantage is counteracted by rituals as a display of devotion. Rituals demand time, energy, but often also material sacrifices, which can function as a costly signal which a non-believer would not engage in, thus proving commitment to religious beliefs.

These four mechanisms can be used to build a religious society, which would facilitate cooperation within the society. Compared to other societies, the religious society would have an advantage and thus survive longer. Atran and Henrich thus propose that religions have evolved through cultural group selection, with the aid of cognitive mechanisms evolved for other functions (Atran & Henrich, 2010).

Norenzayan et al. (2016) agree with the theory presented by Atran and Henrich (2010) and add that secular societies might substitute punishing gods with secular rule of law, thus achieving the same cooperative advantage without using religion.

Henrich (2020) also explains how the strong kin-based institutions which have been the norm throughout history were successfully undermined by religious rules (specifically, by the Christian Church). By prohibiting cousin marriage, changing inheritance practices, and encouraging newlyweds to live in independent households, Henrich argues that the Church successfully changed human psychology to pave the way for institutions not based in kinship (Henrich, 2020).
Adaptationist Theories

Sanderson (2008) discusses several adaptationist approaches to explain religion. In the ancestral environment of humans, he points out, shamans seem to have been common. The shaman was the only religious practitioner, who helped members of the group by curing them in various situations. This caused reduced stress, among other possible physiological effects, which was beneficial for reasons such as improved immune system function and higher likelihood of impregnation for women. He mentions McClenon (2002) who suggests that the altered state of consciousness that shamans induce people in is hypnosis. About 15% of people are highly susceptible to hypnosis and would, according to McClenon and Sanderson, have greater reproductive success, since they would benefit more from shamanic curing.

Another benefit discussed by Sanderson is that religiosity seems to produce health benefits. Sanderson mentions a few results from the comprehensive survey of research on religiosity and health by Koenig et al. (2001). Religiously active people living in the USA in the 1960s were less likely to die from various diseases as well as suicide. Several studies also found that more religious people had lower blood pressure. An examination of 93 studies on religion and depression found that 65 percent reported negative correlations between religiosity and depression. Koenig et al. (2001) conclude that religiosity seems to alleviate stress by decreasing anxiety and uncertainty and by making people believe that they have control. Sanderson (2008) interprets this as religion providing coping mechanisms which affect physical health positively through improved mental health.

Sanderson also points out the higher reproductive success of religious people. He mentions Frejka and Westoff (2008), who found a significant correlation between women’s religiosity and their number of children.

Finally, Sanderson (2008) mentions that the idea of a single omnipotent god focused on love and mercy emerged during a time period characterised by increased warfare and urbanisation. Thus, this god could be viewed as an attachment figure when attachment to kin was disrupted.
Introduction

These religions were founded by prophets, who fulfilled the same role as shamans had done in earlier religions.

Sanderson argues that these four points together indicate that religion evolved as an adaptation. However, he acknowledges that some features of religion, such as belief in evil supernatural beings, likely are by-products (Sanderson, 2008).

Granqvist (2020) also argues that religious people can use God as an attachment figure, but not merely when attachment to kin is disrupted. While it is debatable whether a god can be considered an individual and there is limited research on people’s reactions to loss of relationship with their god, people tend to perceive their relationship with their god in a way that reaches most of the criteria for an attachment figure. Granqvist builds on the attachment theory developed by Bowlby (1969) as well as Kirkpatrick and Shaver's (1990) work of applying attachment theory to religion. Granqvist (2020) argues against the separation of theories into adaptationist and byproduct theories and instead holds that genes and culture evolve together. The attachment system has evolved, according to Granqvist, through genetic evolution and made us predisposed to develop strong affectional bonds. These bonds include an inclination to develop generalising cognitive-affective biases that make us perceive others as benevolent or malevolent. The tendency to form these bonds is general enough that they are applied to God and other spiritual entities. Ideas about God are often provided by the surrounding community and since the ideas developed from the same genetic basis, they are often in line with the cognitive-affective biases that the person has. Thus, if the surrounding community perceives God as a benevolent attachment figure, it is easy for a person growing up in the community to adopt that view, not only due to the tendency to believe what one is taught, but also due to the fact that the ideas are consistent with genetically evolved psychological traits that the idea of God as an attachment figure fits into. This theory is not intended to explain religion altogether, but rather the specific aspect of using religious entities as attachment figures (Granqvist, 2020).
Sosis and Alcorta (2003) hold that religion can consist of several different phenomena, such as myths, altered states of consciousness, rituals, and belief in noncorporal beings. These phenomena vary enormously between cultures. While rational choice and other egoistic-based models might find religion difficult to explain as adaptive, due to the time, energy and material spent as well as physical and psychological pain being endured seemingly without reward, precisely these costs are what Sosis and Alcorta argue are the price religious people pay for cooperative benefits. This theory builds on costly signalling theory, which has been used to explain various animal behaviours that seem unnecessarily costly, but have the benefit of being reliable signals to other animals. For instance, springboks and gazelles engage in a jumping behaviour which signals their fitness to predators, to avoid being targeted. Sosis and Alcorta note that they are not the only researchers to apply this theory to religion.

Religion tends to come with moral rules, which increase cooperation within the group. However, group members who do not believe in the religion and covertly break the moral rules could get an adaptive advantage to the believers in the group, since these defectors can act selfishly while still enjoying the benefits of the cooperative behaviour from the rest of the group. Sosis and Alcorta argue that rituals have evolved to mitigate this issue. Rituals require participants to engage in risky behaviour or at least sacrifice time and energy. For believers, these sacrifices are seen as a fair price for the benefits that the religion claim will come from engaging in these rituals. Nonbelievers do not believe in the religious benefits and might thus decide to abstain from religious rituals if they are costly enough. Thus, others can identify genuine believers, who are more likely to follow the moral rules, through their participation in rituals.

Sosis and Alcorta mention the spread of Islam in Africa as an example of the benefits of costly religious behaviour. Muslims believed that they would receive supernatural punishment if they broke contracts, which gave them a strong incentive to fulfil their contractual obligations. They also engaged in religious behaviour such as prayer, fasting and
pilgrimage to Mecca. These behaviours signalled genuine belief and increased trust between traders, which led to more efficient trade.

The reason that religious sacrifices are considered sacred is that this belief increases the stability of the ritual or sacrifice. Without sanctity, it becomes apparent that the rules are arbitrary and can be questioned. Religious rituals often induce emotions in genuine believers, which can be observed by others in facial expressions and body language. Such emotional responses are difficult to fake and can thus constitute a signal of true belief. Ritual participation could also signal sexual fidelity. If a religion requires women to be chaste and faithful to their spouse while also requiring participation in rituals, women participating in rituals signal to men that they would be faithful. These women become more attractive to men and can thus choose a more attractive man as their spouse.

Sosis and Alcorta predict that requirement of costly signalling will be more common in communities where people are less genetically related, people have more to gain from collective actions and where people move between groups more frequently (Sosis & Alcorta, 2003).

Wilson (2002) proposes a theory of religion which claims that religiosity evolved genetically as a group-level adaptation. This is a subset of Wilson’s overarching theory of multilevel selection, which differs from the mainstream theory underlying evolutionary psychology that individual behaviour that promotes the genes carried by the individual evolve through natural selection. Multilevel selection theory instead means that selection can happen on different levels, including group levels. Thus, if a group benefits from a behaviour, that behaviour can be selected for even if individuals within the group would outcompete their group members by acting differently.

Wilson argues that other researchers often focus too much on specialised mental modules and ignore learning, development, and culture. Cognitive processes can be adaptive while being open-ended. The immune system is brought up as an example of an open-ended system which includes evolution (of antibodies) within its own structure. Similarly, cultural evolution is a system which allows different actions,
developed through trial and error, depending on the highly variable environment humans are exposed to.

Multilevel selection holds that cultural evolution is an adaptation consisting of several features, such as trial and error, rational thought and imitation. Many mechanisms of cultural evolution are not conscious, meaning that individuals might be unaware of the reasons for culturally evolved behaviours. According to multilevel selection theory, the individual holds no special status and cognition can work on a group level, so that the decisions of several individuals together result in an adaptive outcome. Although multilevel selection theory allows for different levels of selection, cultural evolution mainly takes place on the group level. The benefit of cultural evolution as an adaptation is that ideas spread fast between people, instead of being passed on genetically through reproduction.

Cultural evolution acts on religion, according to Wilson, since religious groups evolve culturally to adapt to their current environments. Religions appeal to people because they promise transformative change and that change does not have to be genetic. The rapid change offered by cultural evolution enables quicker adaptation to changing environments.

One proximate mechanism of religion, according to Wilson, is that group members abandon self-will and work towards the greater good of the group. This gives the religious group an advantage over nonreligious groups. The sole ultimate goal of religion is to create community.

Most modern humans live in environments that differ massively from the environments that our genetic evolution was shaped by. We live in large societies instead of small groups. This, argues Wilson, mean that we need more complex culture to shape our psychology in a way that makes it possible to live in these new environments (Wilson, 2002).
Social, Cognitive, and Evolutionary Psychology Perspectives on Religion

Social psychology is concerned with social influences on humans, interactions between groups (Nielsen et al., 2013) as well as aspects that influence prosocial behaviour (Preston et al., 2013). Cognitive psychology focuses on cognitive mechanisms, structures and processes that underlie emotions, thoughts, beliefs and behaviour (Ozorak, 2005). Since both aspects are relevant for studying religion from a psychological perspective, many studies and theories in psychology of religion have both a social and a cognitive perspective. The social perspective often focuses on how religion fosters ingroup favouritism, outgroup derogation, morality or cooperation. An example of this is Neuberg et al. (2014), who investigated whether religious infusion in society was associated with intergroup conflict. They asked religious experts to rate the degree to which religious rituals, values, narratives, and reasoning were infused in the social and public life of the members of 194 religious groups, as well as how dominant religion is in the everyday lives of members of each group. The experts also answered questions about conflicts between different groups. They concluded that religious groups rated as having high religious infusion were rated as being more prejudiced against and more likely to discriminate against groups with incompatible values.

Social psychological theories have also been applied to religion. For instance, Ysseldyk et al. (2010) applied social identity theory to religion. They argued that religion has a dual function as both a social identity and a belief system that cannot be falsified, which they examine to explain why religion is considered important to many people. They speculated that religious group identity might be especially salient when an individual experiences lack of safety and security, since it can provide a solid ground due to the shared faith in a higher power. The fact that the existence of that higher power cannot be disproven (or proven) means that the faith is not as vulnerable to evidence pointing in another direction. Since this higher power is often considered a moral authority, this also means that moral beliefs can stay stable. This often leads to a belief that
the religion one belongs to is the one correct religion, which might foster an ingroup glorification. This is likely to worsen intergroup relations.

Religion has other unique qualities that might make it more significant as a social group, such as compelling affective experiences. Religious identities come with a system for interpreting life’s experiences in a meaningful way, which political and gender identities might do as well. However, religions also typically include a long history of culture, rites, symbols, and physical spaces that religious group members participate in.

In general, high identification with a social group seems to be associated with better psychological health. Ysseldyk et al. (2010) note that only a few studies have investigated religious identification and psychological health, but those studies suggest that this relationship between high identification and psychological health seems to hold for religious identity as well. Specifically, people who identify higher with their religion had lower depressive symptoms, higher self-esteem and higher subjective well-being. Ysseldyk et al. (2010) speculate that the support from the religious community can fulfil people’s need for belongingness, which can lead to psychological well-being. They concluded that religious faith and religious community seem to interact to increase psychological well-being.

Preston and Ritter (2013) combine a social and cognitive perspective on religion. In three studies, they compared prosocial behaviour toward ingroup and outgroup members when participants were primed with the concept of religious affiliation or the concept of God. They found that participants were more prosocial toward ingroup members when they had been primed with thinking about their religious affiliation, but more prosocial toward outgroup members when primed with thinking of God. They concluded that studies using religious primes to activate religious cognition should consider the meaning of specific primes and be aware that different concepts can evoke different aspects of religious cognition.

A prominent field within psychology of religion is cognitive science of religion (CSR), which many of the evolutionary theories of
Introduction

religion fall under. CSR researchers often come from or are inspired by cognitive sciences, where the idea of innate cognitive biases is common. These researchers use such ideas to offer explanations of religion (White, 2021). Cognitive theories of religion often focus on specific religious phenomena and try to explain the mechanisms behind them from an evolutionary byproduct perspective (Martin, 2009). The studies by Barrett and Nyhof (2001) are an example of this. They investigated recall of counterintuitive concepts that violate expectations of ontological categories, which are believed to have a mnemonic advantage and therefore be prevalent in religious stories (see the section on evolutionary by-product theories above). The studies that primarily have an evolutionary perspective aim to test an evolutionary theory, but often also discuss how the findings can contribute to social or cognitive psychology. A series of studies by Gervais and colleagues (Gervais, 2014; Gervais et al., 2011, 2017; Gervais & Norenzayan, 2012) aimed to test the theory proposed by Atran and Henrich (2010) and further developed by Norenzayan et al. (2016), but also discussed the perceptions of atheists from a social perspective. In conclusion, social, cognitive, and evolutionary perspectives on religion are not only generally compatible, but also frequently employed together in empirical studies and theories.

Prosocial Behaviour and Morality

Even though morality is not a feature of all religions, Christianity, Islam, and many other religions prescribe moral rules or guidelines for their followers (Stark, 2001). As mentioned in the section about evolutionary theories on religion, this has been thought to foster cooperation, since people within a religion aim to follow the same rules. Prosociality is defined here as generosity or cooperation, either to a limited number of people or indiscriminately. However, McKay and Whitehouse (2015) point out that this is a sanitised conception of prosociality. It can also be defined as “furthering the interests of the relevant social group”, in which case helping an outgroup member would not be prosocial behaviour.
They also point out that moral behaviour does not mean being nice. For instance, punishment of rulebreakers is often considered moral, but is not particularly nice. Despite this, most studies on moral behaviour focus on generous or cooperative actions benefitting either ingroup or outgroup members (McKay & Whitehouse, 2015). Regardless of how one chooses to define prosociality, it is helpful to distinguish between behaviour directed toward ingroup and outgroup members. People’s prosocial behaviour has been studied with economic games (Thielmann et al., 2021) and donation studies (e.g. Duclos & Barasch, 2014; Powell et al., 2012). Some common economic games include the Ultimatum Game (measuring trust and generosity), the Dictator Game (measuring generosity), the Trust Game (measuring trust) and the Public Goods Game (measuring cooperation). All of these games include allocation of money between the participant and one other person or several other people. The main benefit of economic games is that they avoid many confounding factors, since no context is usually given – participants make their decisions based on the clearly stated rules of the game (Thielmann et al., 2021). However, they have been criticised for lacking ecological validity (Pisor et al., 2020).

A moral system can be defined as a set of values, practices, institutions, and innate psychological mechanisms that together facilitate social life by limiting people’s selfishness (Haidt, 2008). There is a variety of theories about the mechanisms and evolutionary origins of morality, but one compelling idea is that morality facilitates cooperation between humans. Certain moral ideas that can function as solutions to cooperation problems, such as helping kin, reciprocating, and respecting possessions, seem to be viewed positively in many diverse societies (Curry et al., 2019).

Research on morality has included both beliefs about the moral behaviour of different groups, such as religious people and atheists (e.g., Galen et al., 2011; Gervais et al., 2011), and the actual moral beliefs and behaviour of people in morally relevant contexts (e.g., Arli & Pekerti, 2017; Pasek et al., 2023). However, actual behaviour is not as widely studied, possibly due to the higher costs of conducting such studies.
Introduction

Galen (2012) challenges the belief of general religious prosociality, i.e., that religious people are indiscriminately more prosocial than nonreligious people. I will discuss three of the methodological issues he mentions below. The first issue is that when general religious prosociality is investigated, studies on intended or actual donations to charities often only let participants choose to donate to a charity with religious roots. Thus, when these studies find that religious participants donated more, it might be that the nonreligious participants chose to donate less due to the limited options of recipients.

The second issue concerns studies where raters judge the morality of others. The raters can be people who know the judged person or someone who has just talked to them for a limited time. Often, the religious affiliation of the judged individual is known to the raters. Since people believe religious people to be more moral, ratings of a religious person might be higher just due to the association the raters have between religiosity and morality and not due to actual behaviour.

The third issue that Galen (2012) mentions concerns studies that have investigated real or hypothetical behaviour towards people who either share or don’t share the participant’s religious affiliation. They found that religious people are more generous and cooperative only when the target shares their religious affiliation. In studies where the religious affiliation of targets is not explicitly told to the participants, they might still assume the target’s affiliation. For instance, if a study is conducted in a country, city, or area where most people share a specific religious affiliation, participants are likely to believe that targets by default will have that affiliation. Thus, if religious people tip more in a restaurant than nonreligious people do, as in Grossman and Parrett (2011), the explanation might be that the religious participants assumed the server shared their religious beliefs and the nonreligious participants assumed the server followed the majority religion and was not nonreligious like themselves. This argument shows that even in studies where the targets’ religious affiliation is not told, the level of generosity exhibited by participants might still be influenced by in- and outgroup biases. Galen (2012) also mentioned that although there is no clear evidence that
general religious prosociality exists, priming of religious thoughts have been found to increase prosocial behaviour.

Perceptions and Biases

The word *bias* is commonly used to describe when a target is judged or treated differently depending on their religious affiliation or other group membership (e.g., Hunter, 2001; Scheepers et al., 2006; Sharp et al., 2020). In this thesis, I will use the word *bias* only when a participant has made a clear mistake (as in paper 1) and not when a participant merely treats or judges someone differently based on their religious belief (as in papers 2 and 3). In the latter case, I instead use the more general word *perception*. It is not necessarily a cognitive failing to infer things about a person based on their religious beliefs – and any judgement of the reasonableness of an inference will inevitably be subjective. Thus, I will leave it open to readers to make such judgements.
Aims

The overarching aim of this thesis is to investigate perceptions of and behaviour toward religious groups and atheists in Sweden and the USA, using different experimental paradigms. Several evolutionary theories claim that one function of religiosity or religions is to foster cooperation, even if they differ regarding what mechanisms they claim lead to this increased cooperation. There is also not a consensus on which situations lead religious people to be more generous than nonreligious people. My ambition is that these studies will provide a piece to the puzzle of how religions foster cooperation within the religious group and how religiosity and generosity are linked.

The actions of atheists are also investigated in the studies. Since religiosity has been the norm throughout most of human history, understanding how atheists act toward and perceive other atheists is relevant for understanding how cooperation could transform in societies where more and more people become atheists. The only characteristic necessary for being an atheist is a lack of a belief in gods, but do atheists assume that other atheists share more characteristics, which serve as a foundation for trust and cooperation within this group? Does atheism foster ingroup cooperation in the same way that religions do? The studies in this thesis aim to start answering these questions, by investigating the behaviour and perceptions of atheists.

The following questions are asked in the studies included in the thesis.

1. What are people’s perceptions of the morality of atheists and religious people?
2. How do atheists and religious people perceive each other?
3. Are religious people more generous than atheists and agnostics?
4. To what degree do atheists, Christians, and Muslims extend generosity toward ingroup and outgroup members?
5. Do perceptions of or behaviour toward atheists and religious people differ between countries?
Paper 1
This study asks question (1) by investigating whether immoral behaviour is viewed as more representative of atheists or religious people in Sweden, which would be a type of anti-atheist or anti-religious bias. While the study only includes Swedish participants, the results are compared to results from other countries that a previous study found, thus also asking question (5).

Paper 2
In four studies, this paper asks question (2) and (5) by investigating perceptions of religious and nonreligious groups in Sweden and the USA. Perceived competence and likeability of Christian, Muslim, and atheist job applicants is evaluated by participants separated into Christians, agnostics, and atheists. This allows us to investigate how these groups differ in their perceptions of the three target groups.

Paper 3
The studies in this paper ask questions (3), (4), and (5). Participants who are atheists, agnostics, Christians, or Muslims decide how to allocate money between a Christian, a Muslim, an atheist, and themselves. They also allocate money between other targets unrelated to religious affiliation. This allows us to investigate the generosity of participants with varying levels of religiosity both when they know the religious affiliation of the recipients and when they do not know – in other words, whether religious people are more generous (3) and if such generosity is extended to everyone or just to members of their religious ingroup (4). This is done with participants from Sweden, the USA, Lebanon, and Egypt, which allows us to investigate differences between these countries (5).
Summaries of Studies

Paper 1 Summary

Background and Aim
The study replicated the design of Gervais et al. (2017), who investigated anti-atheist bias using a conjunction fallacy paradigm in 13 countries. The conjunction fallacy test presents participants with a scenario where they must judge whether it is more probable for a target to fit two specific statements together (a conjunction) or just one of these statements alone. Although logically the single statement is more likely, participants often commit a conjunction error, incorrectly judging the combined statements as more probable due to a strong perceived association between the target and the statement in the conjunction. The study in this paper was the first to use this paradigm in a Swedish sample. According to the theory presented in Norenzayan et al. (2016), which was the basis for the studies in Gervais et al. (2017), anti-atheist bias should be weaker in countries with a well-functioning secular rule of law. Sweden is both more secular than most countries and has among the highest ranked rule of law in the world, according to Kaufmann et al (2009). Thus, the aim was to investigate anti-atheist bias, as well as anti-religious bias, in Sweden.

Method
Most participants were recruited on social media, but some were approached in person. All participants completed the study on an online platform. A between-subjects design (target: atheist vs. religious person) was used and 268 participants were included in analyses. Most measures were translated to Swedish from the English version used in Gervais et al. (2017). After giving consent, participants were immediately presented with a description of an unequivocally immoral man and asked if it was more probable that the man was (a) a teacher or (b) a teacher who [is a religious believer/does not believe in any gods]. They then completed an attention check, attitude measures and demographic questions.
Results

Participants who received the atheist target (43.7 %) did not make significantly more conjunction errors than those who received the religious target (39.4 %) $\chi^2 (1) = 0.49, p = .48$. None of the attitude measures differed significantly between those who made a conjunction error and those who answered correctly in either condition. However, compared to the Finnish sample from Gervais et al. (2017), participants in this study made significantly more conjunction errors both when the target was atheist $\chi^2 (1) = 11.55, p = .001$ and when the target was religious $\chi^2 (1) = 9.33, p = .002$. Moreover, compared to the American sample from Gervais et al. (2017), participants made significantly fewer conjunction errors when the target was atheist $\chi^2 (1) = 10.88, p = .001$ and significantly more conjunction errors when the target was religious $\chi^2 (1) = 7.13, p = .008$.

Discussion

The higher proportion of conjunction errors made when the target was an atheist rather than a religious believer seen in previous studies using the conjunction error paradigm was not replicated in this study. This Swedish sample also differed from Finnish and American participants in a previous study – the Swedish participants made more conjunction errors when the target was a religious believer and fewer conjunction errors when the target was an atheist, compared to the sample from the USA. Finnish participants made fewer conjunction errors in both conditions, which might be due to the sample, which consisted mainly of students, while the Swedish sample was from the general population.

These results might indicate that there is less anti-atheist bias in Sweden and also that there is more anti-religious bias in Sweden, compared to the USA. A lower anti-atheist bias is in line with the theory presented in Norenzayan et al. (2016), which predicted that countries with a relatively well-functioning secular rule of law would have lower distrust of atheists.

In conclusion, the study is one of few to experimentally investigate anti-atheist and anti-religious bias in Sweden. Studies in more religious countries have found that atheists are more negatively perceived than religious people. However, studies in highly secular countries are useful to widen our understanding of religious belief.
Paper 2 Summary

**Background and Aim**
Previous research has found that people tend to view ingroup members more positively and prefer to cooperate with them over outgroup members. Studies from the USA and other countries which are more religious than Sweden have investigated religious people’s views of atheists and nonbelievers’ willingness to help a religious person. The four studies presented here investigate how Christians, agnostics, and atheists perceive the competence and likeability of atheists, Christians, and Muslims in a recruitment context. Studies 1 and 3 were conducted in Sweden and studies 2 and 4 in the USA. One study in each country also included fictitious hiring decisions.

**Method**
Participants were recruited from a participant pool (study 1), social media (study 2), or Prolific (studies 2-4). Participants in each study were categorised into Christians, agnostics and atheists/nones for the main analyses. They read a job description followed by fictitious interview notes about an applicant for the job. They then rated the applicant on seven competence and likeability items. This was repeated for four jobs, where the final two were the target case and the control case. The target case included information that the applicant was part of a Christian, Muslim or atheist organisation or discussion group, while the control groups had no mention of religion. In studies 3 and 4, the last two applicants applied for the same job and participants were asked which of them they would have hired for the job. Thus, they made a decision between the target applicant and the control applicant. They then completed an attention check and demographic questions.

**Results**
In studies 2-4, the target applicant (Christian, Muslim or atheist) was rated as less likeable than the control applicant. In studies 2 and 4, with American participants, the target applicant was also rated as less competent than the control applicant. Competence ratings between target groups only differed for Christians in Sweden (study 3), who rated Muslims as significantly less competent than Christians. The only
significant results regarding hiring decisions were that more atheists in study 3 hired the control applicant than the Christian applicant. Most of the significant results were differences in likeability ratings – atheists in studies 3 and 4 as well as Christians in studies 2 and 4 rated ingroup members higher than one or two outgroup members.

**Discussion**

Overall, the results indicate that differences in likeability judgements favouring the religious ingroup do not translate to competence judgements and only seldom to hiring decisions. All differences in perceptions between the groups favoured the religious ingroup over one or both outgroups, which is in line with previous research on ingroup favouritism. However, Christians in Sweden did not rate their religious ingroup higher in likeability than their religious outgroups.

**Paper 3 Summary**

**Background and Aim**

A vast number of studies have investigated whether religious people are more generous than nonreligious people. Many of those studies have been criticised for not controlling for possible confounding factors, such as generosity limited to the ingroup. In three studies, conducted in Sweden, the USA, and Egypt and Lebanon, we investigated Christians’, atheists’, and Muslims’ generosity toward various ingroup and outgroup members, both religious and unrelated to religion, in an adapted Dictator Game. The first aim was to investigate if religious people are more religious and if so, if religious generosity is parochial (limited to the religious ingroup) or general (extended to outgroup members). The second aim was to investigate if Christians, atheists and Muslims are more generous to religious ingroup members than religious outgroup members, and if the level of ingroup generosity differed between the three groups of participants.

**Method**

All three studies had a within-subject, quasiexperimental design and a near identical procedure. Participants played six rounds of an adapted
Dictator Game, where they allocated 100 SEK to themselves and three other fictitious people. In each round, they were told that the potential recipients had answered a question (such as “What is your religious affiliation?) Thus, they had information about the potential recipients, such as their favourite hobby, their ideological beliefs, or their religious affiliation. Participants could not keep the whole sum, but could decide how many of the other people they wanted to allocate money to.

The critical round was the third or sixth round (counterbalanced with the ideology round), where participants were told the potential recipients’ religious affiliation. One was a Christian, one was an atheist, and one was a Muslim.

After completing the Dictator Game, participants indicated which answer was the closest to what they would have given in each of the six rounds (i.e., they indicated their ingroups) before completing various demographic and attitude measures.

Results

The studies conducted in Sweden and the USA found no significant difference in money allocated to recipients between atheists, agnostics and religious participants in the five rounds where religion was not mentioned. However, both of these studies found that religious participants gave more money in the religion round, where they knew the religious affiliation of the potential recipients. Due to a low number of agnostics and atheists in the study in Egypt and Lebanon, these analyses could not be performed with that sample.

All three studies found that participants gave significantly more money to their religious ingroup member than to the religious outgroup member that was given the most money. This was also found when Christian, atheist and Muslim participants were analysed separately. The study conducted in the USA found that Muslims gave a larger sum to their religious ingroup than Christians and atheists gave their ingroups. In studies 1 and 2, the ingroup minus outgroup allocation was overall significantly higher in the religion round than in all other rounds, except for the ideology round. In study 3, the ingroup minus outgroup allocation was higher in the religion round than in any of the other rounds.
Discussion

The results indicate that religious people are more generous, but only when they know the religious affiliations of recipients. They then allocate more money to their religious ingroup. This is in line with parochial generosity, meaning that the generosity is limited to the ingroup. Atheists, despite giving less than religious people in Sweden and the USA, also gave more to their religious ingroup than the religious outgroups. In fact, all religious groups investigated in the three studies gave significantly more money to their religious ingroup member than to religious outgroup members. The gap between ingroup and outgroup allocations, favouring the ingroup, was larger in the religion round than in most other rounds, except for the ideology round in studies 1 and 2. This suggests that religious affiliation evokes a particularly strong ingroup effect.

In the US sample, Muslims were more generous to their religious ingroup than Christians and atheists. In the Swedish sample, with 28 Muslims, there was a similar mean difference between Muslims and the other groups, but since we only had 28 Muslim participants, we lacked the power to detect a possible significant difference. However, there was no difference in amount given to the religious ingroup member between Muslims and Christians in the Egyptian and Lebanese sample, where both groups gave mean amounts similar to what Muslims in Sweden gave to their ingroup. This might be a reflection of successful fostering of ingroup generosity through Islamic norms and rules, which could have affected Christians living in Muslim majority cultures. It might also reflect a cultural acceptance of ingroup generosity unrelated to religion.

Parochial generosity can be viewed as unfair to those that are left outside the ingroup – or as an achievement of an ingroup to create trust and generosity which might otherwise not have existed at all. This paper makes no judgement of whether this generosity should be viewed as desirable or adverse.

In conclusion, this paper investigated religious generosity with a novel design, using an adapted Dictator Game, which allowed us to find (1) that religious people were more generous than atheists only when they were given information about the religious affiliations of the potential recipients, (2) that Christians, Muslims and atheists all gave significantly more money to their religious ingroup members than their religious outgroup members, (3) that the gap between ingroup and outgroup allocations, favouring the ingroup, was larger in the religion round than in most other rounds, and (4) that Muslims tended to give more money to
Summaries of Studies

their ingroup member than atheists and Christians in the USA and possibly in Sweden. Figure 1 displays the most relevant information about each paper.

<table>
<thead>
<tr>
<th>Paper 1</th>
<th>Paper 2</th>
<th>Paper 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aims:</strong></td>
<td>(1), (5)</td>
<td>(2), (5)</td>
</tr>
<tr>
<td>Paradigm:</td>
<td>Conjunction fallacy</td>
<td>Recruitment judgements</td>
</tr>
<tr>
<td>Participants:</td>
<td>Swedish general population</td>
<td>Atheists, agnostics, Christians</td>
</tr>
<tr>
<td>Targets:</td>
<td>Atheist, religious person</td>
<td>Atheists, Christians, Muslims</td>
</tr>
<tr>
<td>Countries:</td>
<td>Sweden</td>
<td>Sweden, USA</td>
</tr>
</tbody>
</table>

**Procedure**

- **Description of an immoral man**
  - Religious target (A) The man is a teacher
  - Religious target (B) The man is a teacher and is a religious believer
  - Atheist target (A) The man is a teacher
  - Atheist target (B) The man is a teacher and does not believe in any gods
- **Practice rounds**
  - Job description and interview notes (target: atheist, Christian, Muslim, OR control)
  - Competence and likeability ratings
  - Job description and interview notes (target: atheist, Christian, Muslim, OR control)
  - Competence and likeability ratings
- **Demographic and attitude measures**

**Practice rounds**

- Allocate money between oneself and 3 others in 6 rounds (one where recipients are a Christian, an atheist, and a Muslim)
- Competence and likeability ratings
- Demographic and attitude measures

**Results**

- **No significant association between condition and conjunction error rate**
- **More conjunction errors compared to Finnish and American sample in the religious target condition**
- **Fewer conjunction errors compared to American sample in the atheist target condition**
- **Target applicant rated less likeable and sometimes less competent than control applicant**
  - Competence ratings did not differ between targets (exception: Christian Swedes rated Muslims as less competent than Christians)
- **Atheists in studies 3 and 4 and Christians in studies 2 and 4 rated ingroup members more likeable than outgroup members**

When religious affiliation of recipients was known, religious participants gave more money than atheists when religious affiliation of recipients was not known, there was no difference between religious people, agnostics, and atheists in amount given. When religious affiliation of recipients was not known, there was no difference between religious people, agnostics, and atheists in amount given. Atheists, Christians, and Muslims all gave significantly more to their religious ingroup member than to religious outgroup members.
Methods

Main Measures

All of the studies in the three papers included measures of religious affiliation and belief in God(s). These are described below.

Religious Affiliation

Participants in each study were divided into groups of religious affiliation based on their answers to this question: “What is your religious affiliation?” or in later studies, “What is your religious affiliation or equivalent?” The options that participants could choose were Christian (in some studies, “Christian (Baptist)”, “Christian (Catholic)” and “Christian (other)”), Muslim, various other religious affiliations (such as “Hindu”, “Buddhist”, and “Jewish”), atheist, agnostic, “have not decided”, “believe in higher powers, but no organised religion” and “other”. The studies in papers 1 and 2 also had the option “none”. Those who selected “other” could write their affiliation in a free-text box. In study 3 of paper 3, participants who selected “Muslim” were then asked to specify their denomination, either “Sunni”, “Shia” or “other”. In all three studies of paper 3, participants also chose which of the options “Christian”, “Muslim” and “atheist” would be closest to their own religious affiliation and those who gave an answer that did not match their answer to the other religious affiliation question were not included in those three groups. Figure 2 is an example of how participants saw this measure in one of the studies.

The reason that the option “none” was removed from the studies in paper 3 was that it is not obvious how the participants who select this option should best be categorised. In study 2, those who selected “none” acted similar to atheists and were thus categorised with them. However, to prevent the ambiguity, we decided to remove the option, while still allowing participants to choose “other” if no other option described their affiliation adequately.
Belief in God(s)

This measure was originally used in studies by Gervais et al. and is intended to measure the level of certainty that a participant has regarding their belief or lack of belief in God or gods. The phrasing of the question was this: “How strongly do you believe in God or gods (from 0-100)? To clarify, if you are certain that God (or gods) does not exist, please choose "0" and if you are certain that God (or gods) does exist, then choose "100."” and below the text was a slider set at 50 as the starting point, that the participant could drag in either direction. Figure 3 shows this measure from the participant’s view.

Figure 1. Example of the religious affiliation item in a study
Methods

Figure 2. Example of the belief in God(s) item in a study

Participants

Some demographic information about participants in each study are shown in Tables 1-8 below.

Table 1
Demographic Data in Paper 1

<table>
<thead>
<tr>
<th></th>
<th>Christian (N=79)</th>
<th>Atheist (N=50)</th>
<th>No religious affiliation (N=88)</th>
<th>All participants (N=268)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Female</td>
<td>77</td>
<td>54</td>
<td>79</td>
<td>69</td>
</tr>
<tr>
<td>% Male</td>
<td>20</td>
<td>46</td>
<td>21</td>
<td>29</td>
</tr>
<tr>
<td>% Other</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td><strong>M (SD)</strong></td>
<td><strong>M (SD)</strong></td>
<td><strong>M (SD)</strong></td>
<td><strong>M (SD)</strong></td>
</tr>
<tr>
<td></td>
<td>40.0 (13.8)</td>
<td>33.5 (13.7)</td>
<td>37.7 (13.8)</td>
<td>35.9 (13.9)</td>
</tr>
<tr>
<td><strong>Faith in God(s)</strong></td>
<td><strong>M (SD)</strong></td>
<td>1.3 (3.8)</td>
<td>12.8 (21.0)</td>
<td>29.1 (36.3)</td>
</tr>
</tbody>
</table>

Note. In this study, answering all questions was not required in order to complete the survey. Participants who failed to answer a question are not included in the table.
Table 2
Demographic Data in Paper 2, Study 1

<table>
<thead>
<tr>
<th></th>
<th>Atheist/None (N = 32)</th>
<th>Agnostic (N = 17)</th>
<th>Christian (N = 10)</th>
<th>All participants (N = 60)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Female</td>
<td>56.3</td>
<td>52.9</td>
<td>70.0</td>
<td>56.7</td>
</tr>
<tr>
<td>% Male</td>
<td>43.8</td>
<td>47.1</td>
<td>30.0</td>
<td>43.3</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>M (SD)</em></td>
<td>27.8 (8.6)</td>
<td>25.6 (6.9)</td>
<td>23.8 (2.7)</td>
<td>26.5 (7.4)</td>
</tr>
<tr>
<td><strong>Faith in God(s)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>M (SD)</em></td>
<td>1.2 (4.5)</td>
<td>22.3 (30.0)</td>
<td>23.5 (30.0)</td>
<td>10.9 (22.6)</td>
</tr>
</tbody>
</table>

*Note.* Gender, age and faith in God(s) of participants identifying as atheist/none, agnostic (agnostic, has not decided, or believe in higher powers but no organized religion) or Christian (all religious participants in this study were Christians).

Table 3
Demographic Data in Paper 1, Study 2

<table>
<thead>
<tr>
<th></th>
<th>Atheist/None (N = 95)</th>
<th>Agnostic (N = 108)</th>
<th>Christian (N = 230)</th>
<th>All participants (N = 456)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Female</td>
<td>43.2</td>
<td>50.0</td>
<td>52.2</td>
<td>49.3</td>
</tr>
<tr>
<td>% Male</td>
<td>55.8</td>
<td>47.2</td>
<td>47.4</td>
<td>49.1</td>
</tr>
<tr>
<td>% Other</td>
<td>1.1</td>
<td>2.8</td>
<td>0.4</td>
<td>1.5</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>M (SD)</em></td>
<td>34.2 (10.6)</td>
<td>35.1 (11.8)</td>
<td>40.0 (12.7)</td>
<td>37.4 (12.2)</td>
</tr>
<tr>
<td><strong>Faith in God(s)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>M (SD)</em></td>
<td>9.5 (23.0)</td>
<td>23.1 (26.0)</td>
<td>84.5 (25.1)</td>
<td>52.9 (42.0)</td>
</tr>
</tbody>
</table>

*Note.* Gender, age and faith in God(s) of participants identifying as atheist/none, agnostic (agnostic, has not decided, or believe in higher powers but no organized religion) or Christian.
Methods

Table 4
Demographic Data in Paper 2, Study 3

<table>
<thead>
<tr>
<th></th>
<th>Atheist/None (N = 197)</th>
<th>Agnostic (N = 112)</th>
<th>Christian (N = 54)</th>
<th>All participants (N = 389)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Female</td>
<td>72.6</td>
<td>66.1</td>
<td>63.0</td>
<td>69.7</td>
</tr>
<tr>
<td>% Male</td>
<td>25.4</td>
<td>33.0</td>
<td>35.2</td>
<td>28.8</td>
</tr>
<tr>
<td>% Other</td>
<td>2.0</td>
<td>0.9</td>
<td>1.9</td>
<td>1.5</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td><em>M (SD)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>29.5 (9.1)</td>
<td>29.5 (9.7)</td>
<td>31.9 (10.3)</td>
<td>29.8 (10.0)</td>
</tr>
<tr>
<td><strong>Faith in God(s)</strong></td>
<td><em>M (SD)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.1 (8.6)</td>
<td>17.8</td>
<td>47.0 (38.2)</td>
<td>17.4 (28.7)</td>
</tr>
</tbody>
</table>

*Note.* Gender, age and faith in God(s) of participants identifying as atheist/none, agnostic (agnostic, has not decided, or believe in higher powers but no organized religion) or Christian.

Table 5
Demographic Data in Paper 2, Study 4

<table>
<thead>
<tr>
<th></th>
<th>Atheist/None (N = 85)</th>
<th>Agnostic (N = 108)</th>
<th>Christian (N = 246)</th>
<th>All participants (N = 470)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Female</td>
<td>55.3</td>
<td>46.3</td>
<td>54.9</td>
<td>52.6</td>
</tr>
<tr>
<td>% Male</td>
<td>41.2</td>
<td>51.9</td>
<td>44.7</td>
<td>46.2</td>
</tr>
<tr>
<td>% Other</td>
<td>3.5</td>
<td>1.9</td>
<td>0.4</td>
<td>1.3</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td><em>M (SD)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>32.71 (11.0)</td>
<td>29.1 (9.6)</td>
<td>30.4 (9.6)</td>
<td>30.7 (10.2)</td>
</tr>
<tr>
<td><strong>Faith in God(s)</strong></td>
<td><em>M (SD)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11.5 (24.5)</td>
<td>31.2 (31.7)</td>
<td>83.3 (24.5)</td>
<td>57.0 (40.3)</td>
</tr>
</tbody>
</table>

*Note.* Gender, age and faith in God(s) of participants identifying as atheist/none, agnostic (agnostic, has not decided, or believe in higher powers but no organized religion) or Christian.
# Table 6
Demographic Data in Paper 3, Study 1

<table>
<thead>
<tr>
<th></th>
<th>Christian (N=90)</th>
<th>Muslim (N=28)</th>
<th>Atheist (N=145)</th>
<th>Agnostic (N=112)</th>
<th>All participants (N=398)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Female</td>
<td>46.7</td>
<td>53.6</td>
<td>32.4</td>
<td>43.8</td>
<td>40.3</td>
</tr>
<tr>
<td>% Male</td>
<td>53.3</td>
<td>46.4</td>
<td>66.2</td>
<td>56.3</td>
<td>98.8</td>
</tr>
<tr>
<td>% Other</td>
<td>0</td>
<td>0</td>
<td>1.4</td>
<td>0</td>
<td>1.2</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>M (SD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>32.6 (9.7)</td>
<td>31.3 (8.8)</td>
<td>29.5 (8.6)</td>
<td>31.6 (11.8)</td>
<td>31.4 (10.3)</td>
</tr>
<tr>
<td><strong>Faith in God(s)</strong></td>
<td>M (SD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>75.06 (31.91)</td>
<td>93.6 (19.1)</td>
<td>3.36 (9.69)</td>
<td>20.7 (25.1)</td>
<td>31.9 (39.4)</td>
</tr>
</tbody>
</table>

*Note.* Gender, age and faith in God(s) of participants identifying as atheist/none, agnostic (agnostic, has not decided, or believe in higher powers but no organized religion) or Christian.

# Table 7
Demographic Data in Paper 3, Study 2

<table>
<thead>
<tr>
<th></th>
<th>Christian (N=169)</th>
<th>Muslim (N=151)</th>
<th>Atheist (N=203)</th>
<th>Agnostic (N=182)</th>
<th>All participants (N=713)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Female</td>
<td>44.4</td>
<td>42.4</td>
<td>48.8</td>
<td>44.0</td>
<td>44.7</td>
</tr>
<tr>
<td>% Male</td>
<td>55.6</td>
<td>57.6</td>
<td>48.3</td>
<td>53.8</td>
<td>54.0</td>
</tr>
<tr>
<td>% Other</td>
<td>0</td>
<td>0</td>
<td>3.0</td>
<td>2.2</td>
<td>1.4</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>M (SD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>33.61 (10.48)</td>
<td>29.01 (10.04)</td>
<td>30.87 (10.25)</td>
<td>29.87 (8.74)</td>
<td>30.9 (10.0)</td>
</tr>
<tr>
<td><strong>Faith in God(s)</strong></td>
<td>M (SD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>86.64 (19.33)</td>
<td>91.61 (15.49)</td>
<td>2.54 (6.95)</td>
<td>23.56 (26.56)</td>
<td>47.3 (42.9)</td>
</tr>
</tbody>
</table>

*Note.* Gender, age and faith in God(s) of participants identifying as atheist, agnostic (agnostic, has not decided, or believe in higher powers
Methods

but no organized religion), Muslim or Christian as well as all participants combined.

Table 8
Demographic Data in Paper 3, Study 3

<table>
<thead>
<tr>
<th></th>
<th>Christian (N=72)</th>
<th>Muslim (N=519)</th>
<th>Atheist (N=5)</th>
<th>Agnostic (N=8)</th>
<th>All participants (N=608)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender % Female</td>
<td>58.3</td>
<td>51.6</td>
<td>80.0</td>
<td>62.5</td>
<td>52.4</td>
</tr>
<tr>
<td>% Male</td>
<td>41.7</td>
<td>48.2</td>
<td>20.0</td>
<td>37.5</td>
<td>47.4</td>
</tr>
<tr>
<td>% Other</td>
<td>0</td>
<td>0.2</td>
<td>0</td>
<td>0</td>
<td>0.2</td>
</tr>
<tr>
<td>Age M (SD)</td>
<td>32.96 (11.36)</td>
<td>31.88 (9.55)</td>
<td>32.40 (11.19)</td>
<td>24.75 (5.97)</td>
<td>31.9 (9.8)</td>
</tr>
<tr>
<td>Country % Egypt</td>
<td>23.6</td>
<td>82.5</td>
<td>60</td>
<td>25</td>
<td>74</td>
</tr>
<tr>
<td>% Lebanon</td>
<td>76.4</td>
<td>17.5</td>
<td>40</td>
<td>75</td>
<td>26</td>
</tr>
<tr>
<td>Faith in God(s) M (SD)</td>
<td>91.67 (19.30)</td>
<td>97.72 (8.64)</td>
<td>3.00 (4.47)</td>
<td>53.63 (50.48)</td>
<td>95.5 (15.5)</td>
</tr>
</tbody>
</table>

Note. Gender, age, country, and faith in God(s) of participants identifying as atheist, agnostic (agnostic, has not decided, or believe in higher powers but no organized religion) Muslim or Christian as well as all participants combined.

Methodological Paradigms

Each paper consisted of studies using a different methodological paradigm. All studies investigated perceptions of or behaviour toward religious people and atheists in different ways. The different paradigms allowed me to investigate the aims of the thesis in different situations. Below, I explain the paradigms and present previous research that have used these paradigms.
**Paper 1: Conjunction Fallacy Test**

In this paradigm, researchers aim to identify if participants associate a trait (e.g., being immoral) with a type of person (e.g., an atheist) to the degree that they make a logical mistake. In the original study using this paradigm (Tversky & Kahneman, 1983), a woman named Linda was described as a young, single woman who was concerned with discrimination issues and social justice when she was a student. After reading the description, participants were asked if it was more probable that Linda was (a) a bank teller or (b) a bank teller and active in the feminist movement. Earlier variants of the Linda problem asked participants to rank the probability of several statements about Linda. Even though the conjunction in option (b) means that it is necessarily less probable than the more open option (a) – feminist bank tellers are a subset of bank tellers – people often chose option (b). Tversky and Kahneman (1983) interpreted this conjunction error as an association between the description of Linda and the chosen option. Participants did not make conjunction errors when the options were not associated with the description.

Gervais (e.g., Gervais, 2014; Gervais et al., 2017; Gervais & Norenzayan, 2012) adapted the conjunction fallacy test to study people’s association between immorality and atheism. In these studies, a man was described as unequivocally immoral and participants were then asked which option was more probable: (a) the man is a teacher or (b) the man is a teacher and does not believe in any gods. In the control condition, option (b) was instead the man is a teacher and a religious believer.

The study in paper 1 used the procedure from Gervais et al. (2017), which used this paradigm to study views of atheists in 13 countries.

**Paper 2: Ratings in a Recruitment Context**

This paradigm was adapted from a previous study by Moss-Racusin et al. (2012), which is one of many studies that have examined attitudes toward or beliefs about targets in a recruitment context. Some of those studies have found that participants view or treat targets differently. The included targets have varied from different hairstyles (Koval & Rosette, 2021),
Methods

ethnicity (Agerström & Rooth, 2009) and gender (Fisher et al., 2022; Moss-Racusin et al., 2012).

Participants in all four studies included in paper 2 were presented with information about four job applicants followed by questions about the likeability and competence of the targets. Participants were told about the religious affiliation of one of the applicants, which varied between participants. Thus, the only difference between conditions was one word - ”Christian”, ”Muslim”, or ”atheist”. This type of experimental manipulation, where only a word or a sentence differ between conditions, is widely used in experimental studies and serves to minimise confounding factors (Aguinis & Bradley, 2014).

Paper 3: Dictator Game

Dictator Game is a widely used economic game where participants divide a sum of money between themselves and another person. While other economic games usually involve all players making decisions, this game only requires the ”dictator” to act. Dictator Games have been used to study different facets of generosity to an unknown recipient as well as difference in generosity to various targets (List, 2007). Hypothetical decisions have also been found to predict real decisions well (Ben-Ner et al., 2008).

In the three studies included in paper 3, we modified the Dictator Game so that participants divided a sum of money between themselves and three potential recipients. They did this over multiple rounds before the target round where the potential recipients were an atheist, a Christian and a Muslim.
General Discussion

In this thesis, eight studies are included, which used three methodological paradigms to investigate perceptions of and behaviour toward religious people and atheists. They contribute to the discussion about how religion and religious affiliation affect people’s behaviour and ultimately, what function(s) religiosity might have.

The first aim was to examine people’s perceptions of the morality of atheists and religious people, which we did in Paper 1. We found no difference between the atheist target and the religious target in the Swedish sample, indicating that Swedes do not associate atheism with immorality more than they associate being religious with immorality. It is possible that both targets are associated with immorality for different reasons – or by different people.

The second aim was to examine how atheists and religious people perceive each other. The studies in Paper 2 found that when participants knew a job applicant’s religious affiliation, they rated them as both less likeable and sometimes less competent. However, competence ratings did not differ between atheist, Muslim, and Christian targets, with the exception of Muslim targets in Study 3, who were rated lower than Christian targets by Christian Swedes. Atheists in Sweden and the USA and Christians in the USA generally found targets who belonged to their religious ingroup to be more likeable.

The third aim was to investigate whether religious people are more generous than atheists and agnostics. This was done in Paper 3, where we found that Swedish and American religious people were more generous than atheists (Study 1 and 2) and agnostics (Study 2) when they knew the religious affiliation of recipients. However, there was no significant difference in generosity between the groups when participants were not told the religious affiliation of recipients.

The fourth aim was to study to what degree atheists, Christians, and Muslims extend generosity toward ingroup and outgroup members. All three groups gave more money to their religious ingroup member than they gave to outgroup member in Paper 3. This was found in all three studies, but only for Christians and Muslims in Study 3, as there were too few atheist participants to analyse. This ingroup favouritism was particularly strong in the religion round, since the gap between ingroup and outgroup allocation, favouring the ingroup, was larger in the religion
round than in all other rounds, except for the ideology round in study 1 and 2, which did not differ significantly from the religion round. Thus, religious affiliation seems to be a kind of group that is particularly important for generosity.

The fifth aim was to investigate differences in perceptions and behaviours toward religious people and atheists in different cultural contexts. In Paper 1, the result differed from previous studies conducted in other countries, where atheists were more often associated with immorality. In the sample from the USA in Gervais et al. (2017), the atheist target was more often associated with immorality and the religious target was less often associated with immorality, compared to the Swedish sample in Paper 1. The results of the studies in Paper 2 were similar in both Sweden and the USA. However, the Swedish Christian participants’ lower competence ratings of Muslim targets compared to Christian targets was not seen in the two American studies. Moreover, Christians in Sweden did not rate atheists or Muslims as less likeable than Christian targets. This indicates that Swedish Christians lack the negative perception of atheists that American Christians display, at least in regard to likeability. In Paper 3, the same patterns were seen in all studies, but Muslims were more generous to their religious ingroup than Christians and atheists in the USA. It is possible that this was the case in Sweden as well, but we had too few Muslim participants to detect a possible significant difference in generosity. However, in Egypt and Lebanon Muslims and Christians gave similar amounts to their religious ingroups. The mean sum was similar to that allocated by Muslims in Sweden and the USA.

Methodological Discussion

Online Studies

All studies were conducted online. This kind of data collection enabled recruitment of a larger number of participants than would have been possible with laboratory studies. However, online studies have some limitations. We had no control of the environment around the participants while the survey is being filled in. They were anonymous to us, but they could show their answers to other people and that might affect their responses. To mitigate this, most of the studies started with an instruction
General Discussion

to fill in the survey in a way that did not allow anyone else to see their answers. Another issue is that some participants might have been distracted by their environment while completing the survey, which might have caused them to misinterpret instructions or response options. As long as such misinterpretations were not systematic or differed between conditions, which we have no reason to suspect, the larger sample sizes could compensate for that limitation.

Recruitment of participants was also largely done online, either through social media or Prolific. Participants on Prolific had signed up for invitations to participate in studies and had the option to answer any number of prescreening questions that they chose. In exchange, they receive money for each study they participate in. Participants can write to the researchers through the platform, to ask questions or report any mistakes in their answers. They use an ID number and are thus anonymous to the researchers. To prevent the same individuals from participating in studies that built on each other, I excluded previous participants from each study that was presented within the same paper. Prescreened questions were also used in the recruitment of some studies, to get a more representative sample, to select participant from a specific country, or to ensure equal numbers of participants in each group of religious affiliations.

The social media sites used to recruit participants were Facebook and Reddit. Since we had no way of paying these participants in a way that preserved their anonymity, they were not compensated in any way. However, in some cases, they were given the option to request a summary of the results once we had analysed the data. These participants might have differed in relevant ways from the paid participants on Prolific.

When analysing differences in demographic variables between participants recruited from social media and participants recruited from Prolific in study 3 of paper 2 using an independent samples t-test, I found that age ($p = .028$), trust in people in general ($p < .001$) and subjective socio-economic status ($p < .001$) differed significantly. Participants recruited on social media were on average 2.47 years older than those recruited on Prolific. Their trust in people in general was 0.73 higher on
a 10-point scale than participants recruited from Prolific. Participants recruited from social media rated themselves as having 0.81 higher socio-economic status on a 10-point scale than those recruited from Prolific. A Mann-Whitney U test for education showed that participants from social media had a higher mean rank than those recruited on Prolific. T-tests for religiosity measures found that those recruited on social media had a lower belief in God(s) (14.9 lower on a 0-100 scale) and role of religion (0.7 on a 1-7 scale, both \( p < .001 \)). Chi-square tests for national background (\( p < .001 \)) and gender (\( p = .034 \)) showed that these variables differed significantly between recruitment methods. Of participants recruited via social media, 76.4% were born in Sweden to Swedish parents, compared to 58.1% of those recruited on Prolific and 77.3% were women, compared to 66.7% of those recruited on Prolific. Ideology did not differ significantly between the two groups.

The reason that I chose to recruit participants from social media and Prolific was that I wanted to avoid using student samples. University students differ from the general population in important ways that are likely to affect their answers in my studies. First, most students are young, which means that they are more likely to be socially liberal and lack experiences which older people might use to, for instance, judge the competence and likeability of job applicants in paper 2. Second, typically, students in Sweden get a small grant and a slightly higher loan which should cover their living expenses and course literature. Most students do not have an income that allows them to not think about their spending and for some, even a small amount of money could make a difference. Thus, if they are asked to allocate money between themselves and others, such as in paper 3, the sum of money to be divided might be more valuable to them than to people in general. Thus, students might differ in their allocations. Third, people who decided to pursue higher education might differ in their skills, interests and other ways from people who did not. Fourth, in the only student sample included in my studies, the pilot study in paper 2, very few were Christians and none were Muslims. If this is representative of student samples, using them would have made it difficult to analyse differences between Christians, Muslims, and atheists.
General Discussion

The online recruited samples in my studies are not without issues – such samples tend to be left-leaning and more educated than the general population – but online recruitment is a cost-effective way to collect large samples that have fewer issues than student samples.

Preregistrations

All but the first of my studies were preregistered. Preregistration is a way to document the aims, hypotheses, recruitment intentions, and planned analyses before data collection. This forces the researcher to clearly state these intentions and can prevent ad hoc constructions of hypotheses that only became relevant after results were seen. It is also a way to guarantee to the reader of an article that planned analyses actually were planned before data collection and that the researchers have not engaged in p-hacking. However, the plans might change along the way and my preregistrations were not intended to impose limitations on my options for analyses, but rather to make the process transparent to readers.

Ethical Considerations

Transparency prevents misunderstandings regarding how a study was conducted and how it can be interpreted. Preregistrations is one tool to promote transparency. Another tool is supplementary files or appendices including instructions and items that participants were shown. I have included such files in papers 2 and 3. In paper 1, the items were included in the main manuscript.

In order to prevent participants from being primed with thoughts about religion, it was necessary to withhold information about the aims of the studies from participants until they had completed the tasks. Participants consented to participate after reading a short description of the study, without any mentions of religion. At the end of the studies, an explanation about the aim and how their data would be used were included. Contact information was always included in the studies, so that participants could ask questions.
No identifiable information was collected from participants in any of the studies. The participants were always anonymous to the researchers. This meant that sensitive questions about political opinions and religious beliefs could be asked without requirement of an ethics approval. An ethics application was nevertheless sent and the Swedish Ethical Review Authority decided that the studies did not require ethics approval (registration number: 2019-02282).

Prolific-recruited participants were compensated with money, while no other participants were given any compensation. The money that some participants received varied between 1.00 GBP and 1.50 GBP, which we deemed small enough to not make unwilling individuals feel pressured to participate. Those recruited through social media saw a post inviting them to participate and stating the estimated duration of the survey. Thus, there were no negative repercussions to those who decided to not participate.

Theoretical Discussion

This section addresses the theoretical implications of the papers’ findings. Norenzayan et al. (2016) predicted that a well-functioning secular rule of law could take over the role that belief in a moralising god has in deterring people from breaking rules. Thus, people in such societies would not believe that atheists have less reason to act morally. However, Gervais et al. (2017), who tested the theory, predicted that people would associate atheism with immorality even in Finland. Thus, it is not clear how well-functioning the secular rule of law would have to be before atheism would no longer be associated with immorality and I can therefore not say whether Paper 1 is consistent with their theory or not. A more specific test of the atheist-distrust prediction could include a measure of trust in secular rule of law – either on a society-wide level or for each participant. We made an attempt to include such a measure, but found no interaction with making a conjunction error in the atheist target condition. The issue might be the choice of measure, but the theory is not specific enough to make it clear what an appropriate measure could be.

Several evolutionary theories of religion claim that the main function of religion is that it facilitates trust or cooperation within the religious ingroup. While it is not explicitly stated by the theorists, I expect
that they would predict that religious people would extend a higher level of generosity to members of their religion. This is consistent with the results of Paper 3, where religious people – especially Muslims – gave more money to others overall and more to their religious ingroup members. In fact, unlike most groups in the other rounds, all three groups in the religion round gave significantly more money to their single ingroup than to the two outgroup members combined. Even though atheists are not part of a religious institution or subscribe to a set of moral rules, they were more generous to fellow atheists than to the other two potential recipients combined. On a question asking participants to rate how much they expect that a member of their religious ingroup would agree on what is morally right and wrong, Christians, Muslims, and atheists gave strikingly similar ratings in each study. This suggests that atheists, just like Christians and Muslims, perceive those who share their (lack of) religious beliefs to also share their moral opinions. This might facilitate trust and cooperation between atheists, even in the absence of a belief in a morally concerned punishing god, costly signals of belief or an evolved belief system that fosters ingroup community.

If perceived moral agreement or some other aspect of religious ingroups that atheists also share creates a similar level of generosity without the aspects of religiosity that theories predict will create trust and cooperation, what does that mean for these theories? In absolute numbers, atheists did give slightly less than both Christians and Muslims in Study 1 and 2 of Paper 3, even though the only significant difference was that Muslims gave more in Study 2. Thus, larger samples might have been able to detect a small difference. It might be that religion still has advantages that atheism lacks in other contexts than the one we studied. It is also possible that Muslims in Studies 1-3 and Christians in Study 3 were more religious in relevant ways than Christians in Studies 1 and 2. The low number of Muslims in study 1 precludes us from confirming whether Muslims are more parochially generous than Christians in Sweden, but in absolute numbers, Muslims gave similar amounts of money to their religious ingroup members in all studies in Paper 3. Muslims scored significantly higher on some of the religiosity measures in all studies, including belief in God(s), which is in line with this interpretation. In highly secular societies, religious people might have become less religious and lose some of the advantage that religion might have provided through a shorter (cultural evolution) or longer (biological evolution) part of our history. Since most Muslims in Sweden and the
USA have an immigrant background from more religious societies, they might retain advantages of a stronger religiosity that benefits the ingroup at least in the form of generosity.

Together, the studies included in this thesis contribute to the theoretical discussion of religiosity by specifying some of the contexts in which religiosity affect perceptions and behaviour in specific ways. In Sweden and the USA, religious ingroup members are often perceived as more likeable by Christians (USA) and atheists (both countries), but seldom as more competent, than outgroup members in a recruitment context. Compared to an applicant with unknown religious affiliation, neither atheists nor Christians seem to perceive their religious ingroup member as more likeable. In a context where people can be generous to both ingroup and outgroup members with the same sum of money, Christians, Muslims, and atheists all display parochial generosity to the degree that a single ingroup member receives more than two outgroup members. This was seen in Muslim-majority countries where religion is more central to everyday life (Egypt and Lebanon, for Christians and Muslims), in a secular country where Christianity has some influence in society (USA) as well as in a highly secular country (Sweden). This degree of generosity was not seen for other groups, with a few exceptions of ideological groups. Overall, religious people were also more generous than atheists in the USA and in Sweden, when they knew the religious affiliation of recipients. Thus, religious affiliation remains a particularly powerful ingroup even in societies where religion plays a smaller role.

Conclusion

Swedes do not seem to associate atheism with immorality any more than they associate being religious with immorality. They generally do not view Christians, Muslims, or atheists as less competent, regardless of their own religious affiliation. However, atheists do find members of their religious ingroups more likeable than outgroups, while Christians rate ingroup and outgroup members similarly in terms of likeability. Atheists, Christians, and Muslims all also extend more generosity to their religious ingroup members than to two outgroup members combined, when there is a limited sum of money to be distributed. The studies included in this thesis reveal that religious affiliation influences Swedes’ perceptions of likeability and their willingness to be generous. This does not seem to stem from a view of the other group as immoral or less competent.
General Discussion

Our three studies with participants from the USA are generally in line with the previous research done in the country. Both Christians and atheists in the USA found ingroup members more likeable than outgroup members. Christians, Muslims, and atheists are all more generous toward their respective ingroups than to outgroups. This difference does not seem to depend on a view of the other group as less competent, but as earlier studies have shown, Christians’ dislike of atheists might at least in part be due to a high distrust of people who lack a belief in God (Gervais et al., 2011).

In all studied contexts, religious affiliation affected perceptions of likeability and how people distributed their generosity to those who shared their religious beliefs and those who did not. Thus, (non)religious affiliation is an important group identity not only for religious people in religious societies, but also for atheists in highly secular societies.
References

https://doi.org/10.1108/01437720910948384


https://doi.org/10.1017/S0140525X02000092


https://doi.org/10.1093/acprof:oso/9780195178036.001.0001
References


Ben-Ner, A., Kramer, A., & Levy, O. (2008). Economic and hypothetical dictator game experiments: Incentive effects at the individual
Nathalie Hallin


https://doi.org/10.1016/j.socec.2007.11.004


https://doi.org/10.1086/701478


https://doi.org/10.1146/annurev.psych.54.101601.145024
References


Nathalie Hallin

*of Personality and Social Psychology, 101*(6), 1189–1206.

https://doi.org/10.1037/a0025882


https://doi.org/10.1098/rspb.1979.0086


https://doi.org/10.1080/13504851003761798


References


Nathalie Hallin


https://doi.org/10.1037/a0040409


https://doi.org/10.1086/519249


https://doi.org/10.1037/a0038455


https://doi.org/10.1073/pnas.1211286109

References


Nathalie Hallin

https://doi.org/10.1177/09567976231158576


https://doi.org/10.1111/eth.12011

https://doi.org/10.1177/0146167213499937


References

Papers

The papers associated with this thesis have been removed for copyright reasons. For more details about these see:

https://doi.org/10.3384/9789180756846


244. Ej utgiven


251. LIDMAN, LINDA. Employee-driven innovation in the public sector. At the intersection of innovation support and workplace conditions. 2023. ISBN: 978-978-8075-095-0


256. JANSSON, TOBIAS. Varierade bedömningspraktiker i samhällskunskap Validitet och agens i lärares beslut om bedömningars syften, innehåll och metoder. 2024. ISBN: 978-978-8075-446-0


At the Faculty of Arts and Sciences at Linköping University, research and doctoral studies are carried out within interdisciplinary research environments, often addressing broad problem areas. Linköping Studies in Arts and Sciences is the Faculty’s own series for publishing research. This thesis comes from the Division of Psychology at the Department of Behavioural Sciences and Learning.