VARIETIES OF SUPERNATURAL EXPERIENCE
THE CASE OF HIGH-FUNCTIONING AUTISM

INGELA VISURI

SÖDERTÖRN DOCTORAL DISSERTATIONS
Varieties of Supernatural Experience
The Case of High-Functioning Autism

Ingela Visuri
Abstract
It is argued in the cognitive science of religion (CSR) that the empathic ability to ‘mindread’ others underpins the experience of supernatural communication with gods, ghosts, and spirits. As autism is characterized by mentalizing difficulties, CSR scholars have expected autistic individuals would find supernatural agency incomprehensible. This thesis however turns the question around: why do autistic individuals engage intimately in supernatural relations, despite the social difficulties they face in everyday life?

The thesis aims to provide new insights on autistic and religious cognition through examination of supernatural descriptions provided by 17 young, high-functioning autistic adults (16–21 years of age) who label themselves as ‘religious’ or ‘spiritual’. The research questions explore: (1) cognitive aspects of experienced interaction with invisible agents, compared with human interaction, (2) the prevalence of unusual embodied experiences (e.g. feeling touch and seeing visions without external input) and its role in attributions of supernatural agency, and (3) the psychological function of parasocial (fiction-based) interaction in imaginary realms.

This interdisciplinary project draws on work undertaken in the cognitive science of religion, cognitive and critical autism research, and psychological anthropology. Mixed qualitative and quantitative methods are employed to enable a kaleidoscopic outlook on the topics explored, and to promote a dialogue between idiographically and nomothetically oriented scholars. The study provides first-person perspectives on religious and autistic cognition, which is understood as dynamic interaction between embrained, embodied, encultured and situated input.

It is argued in Publication I that ‘bodiless’ interaction facilitates mentalizing, also in relation to invisible agents, as no cross-modal synchronization of mimicry, body language and intonation is required. Publication II examines the prevalence of unusual, embodied experiences in autism, and it is proposed that supernatural attributions offer enchantment and sense-making of potentially frightening experiences. Results from Publication III suggest that imaginary worlds and parasocial relations function as ‘simulators’ that autistic individuals use to rehearse social interaction. Publication IV offers a theoretical and methodological discussion regarding the study of atypical cognition. Importantly, this thesis illustrates that these imaginative autistic participants are not drawn to supernatural frameworks in spite of, but because of the supernatural and parasocial characters these provide.

Keywords: autism, religious cognition, supernatural experience, invisible agency, parasocial relations, embodiment, bracketed ethnography, participatory autism research, atypical cognition.
To my mother Kaisu, from whom I have learnt that quirkiness is simply a variant of being human, and who thereby taught me not to fear those who are different from myself.
Acknowledgements

Writing this thesis was my dream. As all other tales, this story involves a beginning and an end, and the in-between is filled with the people who helped to make it come true. None of the descriptions below are exaggerated. I have truly been privileged by having great people by my side throughout this journey.

In the beginning, there was my mother Kaisu. Odd, quirky, and filled with love to the brim. She also passed on her love of literature and reading to me, which led me onto this path of reading, writing and deep thinking. When I eventually ended up at Uppsala University, my encouraging teacher and tutor Petra Junus commented that I had ‘a special nose for theories’, and thereby sowed the first seed to thinking that academic writing might actually might be something for me. Petra was also the first female researcher to gain a PhD in the psychology of religion in Sweden and I am proud to be treading the path that she has set out for the rest of us.

Another fortunate occurrence was how I came to knock on the door of Jenny Berglund. She took me firmly by the hand, led me into academia and taught me to put the pedal to the metal and deal with things as they happen: “Just do it, it’s easy!”. I could not have wished for a better or more helpful role model. Thanks Jenny for always being there for me!

Jenny also invited me to join the religious studies group at Södertörn University, which has been a wonderful place to learn, laugh and grow. Simon Sorgenfrei encouraged me to write the master thesis that preceded this PhD thesis, and decisively proclaimed that Göran Ståhle should be my supervisor. Göran was in turn the one who pointed me towards the cognitive science of religion, for which I am forever grateful. Ann af Burén has been an abundant source of wisdom, support and wild dancing, and Maria Lindqvist has not only helped me with proof reading, but has also made this journey so much fun! Thanks also to the very thoughtful Gunilla Gunner who is always there to provide support and kind words, and to Kateryna Zorya for being my guide in the world of online gaming and for geeky discussions that have provided me with new insights.

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Another serendipity was crossing roads with Armin Geertz during a conference in Budapest, where I presented the results of my master thesis. He generously invited me to the Religion, Cognition and Culture-group at Aarhus University, and believed in me and my project from start. Armin has been there all the way from guiding me while I wrote my research application, through his reading of my final draft. I cannot adequately express how valuable and strengthening his support has been to me. Armin, your curiosity and never-ending endeavour to move onwards is such an inspiration, and you are precisely the kind of scholar I want to become.

I am also deeply grateful for being entrusted with the PhD position at the University of Gävle that enabled me to pursue this project. Special thanks to David Carlsson for friendship, prosecco and great advice, and to Jaana Kurvinen and Peder Thalén for trusting in me and funding my many travels. Thanks also to my friends and colleagues Mimmi Eriksson, Per-Erik Söderberg, Sandra Lantz, Birgit Lindgren Ödén, Åke Tilander, Sara Duppils, Jari Ristiniemi, Febe Orest and Olov Dahlin for our many joint discussions and contemplations. I am moreover indebted to librarians Malin Almqvist Jansson, who assisted me with referencing, and Anna Prymka for always helping out with a smile when it has been needed.

Along the way, I have been guided by fantastic supervisors; pushing me forward gently but decisively, confiding in me but also redirecting me when it has been needed. Pehr Granqvist has kindly and patiently directed me through the world of psychological measurements, terms and ideas. His help has made my ‘hack’ of the nomothetic system possible, and consequently researchers in such fields have come to acknowledge my research. It has also been a reassurance to know that Pehr would never let a mediocre text slip through, and his high expectations on scientific quality have ignited my fighting spirit, pushing me constantly forwards and upwards.

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My many discussions (and late nights at bars) with superstars Uffe Schjødt and Marc Andersen are also at the core of this project – both my thesis and my PhD journey would have been so much duller without you! Thanks for continuously providing me with assistance and great input. I am moreover indebted to Anders Klostergaard Petersen for friendship, endless encouragement, and for arranging a scholarship for me at Aarhus University in 2018. Anders always makes me smile and the many dinners at his and Ellen’s home have filled me with energy, joy and new insights.
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Another act of kindness and generosity was provided by Sandra Praun and Oscar Guermouche who have designed the book cover for this thesis. The image is built from the circles and triangles that reoccur throughout religious and occult symbolism. Besides giving an impression of the various layers of experience described by the participants, it also signifies my understanding that – in contrast to common depictions – both autism and religiosity are dynamic phenomena that are in con-
stant interaction with inner, as well as surrounding input. Millions of thanks to you, Sandra and Oscar, for taking time to genuinely consider my work. The cover ties in beautifully with the narratives described in this thesis.

Magnus, I cannot express in words how happy I am that we found each other along the way. You have been my cheerleader during this final period, and it is truly a bliss to have a partner who considers each achievement to be a mutual joy. With you, I feel like everything is possible. Mio and Mattis, you keep me grounded and remind me what is really important in the world. Thanks for hugs, affection and laughter on tired days, I love you endlessly and I am so lucky that the two of you came into the world to be my children. I am also indebted to Håkan & Vero for support during busy periods when I have needed to reschedule kid-days. Thanks, Håkan also for backing me up when I decided to pursue this dream.

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And this is where the story ends, I’ve crossed the finishing line. I now look forward to new stories to tell – come what may!
List of Publications

This doctoral thesis is based on the following four papers, all of which are referred to in the text by their Roman numerals.¹


¹ The papers are reproduced with the permission of the publishers.
**Abbreviations**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
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<tbody>
<tr>
<td>ADD</td>
<td>Attention deficit disorder</td>
</tr>
<tr>
<td>ADHD</td>
<td>Attention deficit hyperactivity disorder</td>
</tr>
<tr>
<td>APA</td>
<td>American Psychological Association</td>
</tr>
<tr>
<td>AQ</td>
<td>Autism quotient test</td>
</tr>
<tr>
<td>CAS</td>
<td>Critical autism studies</td>
</tr>
<tr>
<td>CREDs</td>
<td>Credibility enhancing displays</td>
</tr>
<tr>
<td>CSR</td>
<td>Cognitive science of religion</td>
</tr>
<tr>
<td>DSM</td>
<td>Diagnostic and Statistical Manual of Mental Disorders</td>
</tr>
<tr>
<td>EF</td>
<td>Executive functioning</td>
</tr>
<tr>
<td>fMRI</td>
<td>Functional magnetic resonance imaging</td>
</tr>
<tr>
<td>HFA</td>
<td>High functioning autism spectrum condition</td>
</tr>
<tr>
<td>OCD</td>
<td>Obsessive, compulsive disorder</td>
</tr>
<tr>
<td>IPA</td>
<td>Interpretative phenomenological analysis</td>
</tr>
<tr>
<td>IRI</td>
<td>Interpersonal reactivity index</td>
</tr>
<tr>
<td>R-COPE</td>
<td>Brief religious coping questionnaire</td>
</tr>
<tr>
<td>SQ</td>
<td>Sensory quadrants</td>
</tr>
<tr>
<td>STEM</td>
<td>Science, technology, engineering and mathematics</td>
</tr>
<tr>
<td>ToM</td>
<td>Theory of mind</td>
</tr>
<tr>
<td>ToMM</td>
<td>Theory of mind model</td>
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<tr>
<td>WCC</td>
<td>Weak central coherence</td>
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Prologue

My interest in exploring the interaction between religious and autistic cognition began ten years ago in a shared teacher’s room. My colleague, the psychology teacher at the special-educational unit at which I worked, leaned over and told me in a low voice that one of our pupils had asked whether God actually speaks to people or not. Peers in his Christian, Pentecostal congregation claimed that God was talking to them and, as he also saw them speaking in tongues, it was his understanding that the Holy Spirit was present amongst them. But as he had never experienced such divine communication himself, he had begun to think that perhaps God spoke to everybody else but him.

Psychologists of religion have long argued that the experience of supernatural communication is based on empathy, understood as the ability to imagine how another person might react and respond to a certain situation. Hjalmar Sundén (1959) called this ‘role-taking’ and argued that people learn about the minds of religious characters from social and cultural sources, such as sacred texts and fellow practitioners, and eventually come to intimately relate to these invisible minds. The experience of supernatural agency thus occurs in an interactional framework.

What struck me during the conversation with my colleague was the fact that this pupil was diagnosed with Asperger’s syndrome (i.e. high functioning autism) and one of the main criteria for such a diagnosis is difficulties in ‘mindreading’ what others are thinking and intending. This causes complications in social interaction, which for instance means that individuals on the autism spectrum find it difficult to determine what others are thinking or intending, which in turn causes insecurity in peer relations. Was this mindreading difficulty the reason why he could not imagine God speaking back to him? I did however not question the religiosity of autistic individuals as I knew that many of the pupils held firm beliefs in God, ghosts and other supernatural phenomena, but wondered whether their experience of invisible agency might differ from non-autistic individuals.

While this query of religious role-taking in autism was formed into a master thesis (Visuri, 2012; 2013), researchers in the cognitive science of religion (CSR) introduced the hypothesis that the mindreading difficulties of autistic individuals might make them more likely to become atheists or non-believers (Banerjee & Bloom, 2014; Coleman, 2016; Gervais, 2013; Lindeman & Lipsanen, 2016; Maij et al., 2017; Norenzayan, Gervais, & Trzesniewski, 2012; Reddish, Tok, & Kundt, 2016; Schaap-Jonker, Sizoo, Van Schothorst-Van Roekel & Corveleyn, 2013). This hypothesis was framed out of the naturalness hypothesis of religion, which suggests that our evolutionarily derived tendency to search for intentions in the world also
forms the basis for supernatural beliefs (see section 2.2). These scholars now hoped that the mindreading difficulties of autistic individuals would shed light upon the relation between empathy (often termed theory of mind/ToM) and religiosity.

Looking more closely into some of the earliest studies, I was troubled by the lack of separation between the various aspects of mindreading, such as affective and cognitive components of empathy. In my view, autistic competencies also came through as static and homogenous, especially as I had learned from my many years amongst autistic pupils how very different these individuals could be and how difficulties with intuitive processing could be partially compensated for by intellectual strategies. I had also come to understand that my own experience of things differed at times from that of an autistic person. These reflections were gradually formed into the PhD project presented here. My work thus strives to capture autistic experiences and break down complex cognitive phenomena into smaller units, in order to understand how religious cognition is formed in autistic individuals.

Before introducing the project, I would like to comment on the dimensions of religious cognition dealt with in this thesis. It is in no way an attempt to capture the full array of religiosity and supernatural experience in autism, but is rather a glimpse caught through a ‘keyhole’. By this, I mean that the reasoning of the 17 individuals presented here provides an opportunity to capture and analyse personal narratives on supernatural ideas and experiences made from an autistic – and Swedish – point of view, which may or may not be recognized by other people on the autism spectrum.

The focus is directed more or less exclusively towards the role of mentalizing and embodied experiences, and how these are related to cultural frameworks. Although the results are based on multiple case studies, the ambition is to contribute with empirical, theoretical and methodological insights to the cognitive science of religion (CSR). The close collaboration with autistic individuals has been especially rewarding and my hope is that this thesis will inspire other scholars to engage in such collaborative endeavours.
1. Introduction

This thesis explores the relation between autistic cognition and the formation of supernatural beliefs. My choice of topic is built from an emergent debate in which cognitive researchers have argued that these two are incompatible: why would autistic individuals engage in gods, spirits and ghosts when so many of them find human minds to be perplexing? As we shall see, the autistic participants in this study yet report that such beliefs are central to their world views. If human minds are so complicated to ‘mindread’, how do autistic individuals then interpret the superhuman minds that they understand to be present? What are their motives for embracing supernatural ideas, especially when growing up in a secularized country like Sweden where God rarely is mentioned? These questions formed the starting point for my work.

It is my conviction that cognitive processing is dynamic and formed out of multiple aspects of human life. I will therefore argue throughout the thesis that it is not possible to fully disentangle pure ‘autistic’, ‘religious’, or ‘cultural’ aspects of cognition, as these are tightly interwoven and in constant interaction. However, I have taken on the task of isolating and specifying how the interaction among certain aspects of cognition is moulded into supernatural beliefs and experiences.

Whilst writing this introductory chapter, the genuinely interdisciplinary character of my work has become apparent. The left side of Figure 1 illustrates how the thesis is positioned between the cognitive- and humanities-oriented study of religion. The right side illustrates how it also draws on cognitive autism research, as well humanities-oriented critical autism studies (CAS) and psychological anthropology. The result, as I see it, is a novel space in which complex concepts like ‘religion’, ‘cognition’ and ‘autism’ are broken down into sub-elements (see Asprem, 2016; Sørensen, 2005) and discussed from a non-objectifying point of view with the aid of autistic voices.
Briefly summarized, the thesis moves between cognitive and humanities-oriented fields of research and draws on mixed qualitative and quantitative methods. To guide the reader in this somewhat winding path of choices, I have dedicated the first half of the introductory chapter to outlining my stance as a doctoral student of religious studies who is also studying autistic cognition. In these sections, I begin by introducing the historical trajectories and theoretical standpoints in the study of religions and CSR that are relevant to this thesis. Next, I present the fields in autism research that I draw upon. Besides clarifying my scientific choices and positioning, these descriptions also serve the purpose of introducing the reader to previous research related to my work.

In the latter half of this introductory chapter, I provide a description of my aims and research questions, as well as the mixed methodology that I have developed in response to them. In the final sections, I describe and discuss the results from the empirical articles and the anthology chapter included in the thesis. These are appended in full to this comprehensive summary.

1.1 Some terminological notes

The participants studied in this thesis are diagnosed with autism. As this label is associated with some rather heavy baggage, I will begin by specifying how I understand the term. While the experience of being autistic varies between individuals, the view in this thesis is that there are shared autistic experiences that differ from experiences of individuals who are non-autistic. In the current diagnostic manual DSM 5 (APA, 2013), autism is characterized by difficulties in social interaction, repetitive behaviour and atypical sensory processing. While some autistic individuals find it difficult to navigate socially due to prosopagnosia (face blindness), others may be able to read facial expressions rather well but are instead bothered by
sensory issues that complicate social interactions, such as sounds of voices merging together, or visual input fading in and out (see section 3.2.1). In other words, the cognitive specifics of autistic individuals may differ, but still result in social difficulties. The DSM thus reflects a cluster of symptoms that we refer to as ‘autism’, but not their origins or causes.

Most of the participants studied in this thesis were assessed according to the previous DSM IV (APA, 1994). Therefore, they are diagnosed with Asperger’s syndrome, which indicates that their intelligence and verbal competencies are average or above. In the DSM 5, high functioning autism is now described as level 1, meaning that support is required in certain domains of social interaction, communication, switching of activities and organization/planning. There are also autistic individuals who do not require any diagnosis as they function well in most areas of life. The results in this thesis thus relate to autistic individuals who are capable in many areas of life, but yet require support to manage everyday life.

The terminology related to ‘religion’ is at least equally complex and difficult to pin down. In this thesis, I will not be using religion in general as an analytical category since it is a broad term that, in addition to its experiential dimensions, also brings institutional aspects to mind. I am primarily interested in phenomena that relate to psychological experiences and individual views of life that encompass aspects which are found both inside and outside what is traditionally recognized as religion. Therefore, I have chosen to use the term supernatural as a pragmatic umbrella term that covers the experiences that the participants in their personal descriptions label ‘religious’, ‘spiritual’, ‘magic’, or ‘paranormal’. This choice also reflects my understanding that the boundaries between such constructs, similar to other human abstractions, are fuzzy and virtually impossible to pin down (see Gruneau Brulin & Granqvist, 2018). Focus is directed towards personal narratives that concern mentalizing, embodiment and cultural expressions, which are consequently developed into an analysis of religious and autistic cognition. In the absence of a noun that is derived from supernatural (i.e. ‘supernaturality’), I will in the following use the term religiosity to signify my general topic of interest (e.g. ‘the study of religiosity’; see Taves, 2009).

Lastly, cognition is here understood as mental processing that involves embrained, embodied, encultured and situated input. The mutual, psychological foundation that humans share is in other words dynamic and shaped by our surrounding environment. For clarity, embodiment is understood in enactive terms,

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1 The three levels of severity in the DSM 5 are (1) requiring support, (2) requiring substantial support, and (3) requiring very substantial support.
2 ‘Religiosity’ here also embraces non-organized expressions which some scholars would call ‘spirituality’ (see Taves, 2013). Several of the participants however involve in supernatural agents in both organized and non-organized forms, and to avoid terminological confusion both of these are included under this pragmatic umbrella term.
3 Although I share Geertz’ (2010) understanding of cognition as embrained, embodied, encultured, situated and extended, only the first four aspects are thoroughly explored in this thesis.
which means that there is an interaction between individuals and their environment (see De Jaegher, 2013). The thesis therefore pays attention to inner, embodied experiences, as well as bodily interaction between people. In summary, the study first zooms in on specific (e.g. autistic) traits, and then zooms out to regard general (e.g. cultural) patterns that are related to internal and external input.

1.2 Situating the participants: autistic, Swedish and millennial

The experience and outcome of being autistic – and religious – is moulded in relation to contextual factors. In this section I describe why it is necessary to consider the impact of cultural and generational specifics when studying autism, cognition and religion.

Carruthers and colleagues (2018) note how typical autistic traits are regarded differently between cultures: while a quiet and withdrawn child is interpreted as courteous in Japan and India, parents in the United Kingdom instead regard it as a lack of spontaneity. Roy Richard Grinker (2007) correspondingly describes how autism is understood in terms of sacred specialness in one culture, and in terms of medical pathology in another. Such socio-cultural norms affect the outcome of being autistic, and the kind of support that autistic individuals receive (Bernier, Mao and Yen, 2010).

Cultural norms similarly affect the understanding and experience of religiosity: while supernatural ideas are regarded as ‘natural’ and taken for granted in one community, these may require of practitioners in another context to stand up for and defend their beliefs. However, Luhrmann (2018) argues that regardless of context, supernatural ideas require constant maintenance (e.g. through rituals; see section 2.2.2), as these will always be mixed with scepticism.

Since the individuals studied here are Swedish, their convictions and assumptions need to be adjusted to notions about the supernatural in Sweden. In an overview of such attitudes, David Thurfjell (2015) describes three movements that have been particularly formative: Christianity, secular criticism of religion and esotericism. While the latter two have increased in importance in recent decades, the former has clearly faded in importance. Thurfjell moreover notes that attitudes towards religion in the Swedish majority culture are set apart from other cultures in (1) a rejecting attitude towards religions, (2) cultural features that are clearly marked by the Lutheran state church and (3) remarkably high levels of self-reported individualism. Individuals identifying with other religious traditions may be equally influenced by these attitudes, since ideas that are widespread in the majority culture also have an impact on minority groups. The themes described by Thurfjell indeed come through as central in the reasoning of the participants in this thesis, which nicely illustrates the impact of cultures on religious cognition.

So far, few cross-cultural comparisons of religiosity have been made between autistic individuals growing up in differing cultural contexts. However, the autistic
American participants described by Dubin and Graetz (2006) report that they attend religious services regularly, while the autistic Swedish participants I have studied (Visuri, 2012; 2018a) are by and large disinterested in congregational activities. Erika Willander (2019) similarly found in an extensive study that Swedish individuals in younger generations are less likely to be involved in organized religiosity. This illustrates the fact that religious attitudes and behavior cannot be generalized to the entire autistic population, but contextual input needs to be taken into account.

Sweden is often regarded as being one of the most secularized countries in the world and, accordingly, one recurrent theme in the study concerns the challenge of embracing supernatural ideas and experiences in a society in which people often dismiss supernatural notions as irrational. For instance, the participants describe how negative reactions from peers and family members make them wary of talking openly about their views of life. One of them importantly comments that if you are already labelled as autistic, you do not want people to find out that you are also religious, because then people may think that you really are crazy.

So, what motivates young Swedes to hold on to such contested convictions, especially in a sample where few have grown up in families that share their views of life? One answer is found in popular culture, which today is saturated with themes relating to magic (Partridge, 2004, 2005). The participants in this study were born after 1982 and thus belong to generation Y, or the millennials; an age group that Diana Oblinger (2003) characterizes as oriented towards new technology, experiential activities and collaborative styles of learning. The participants for instance describe how interaction online is relevant to them. Some of these descriptions pertain to the Christian tradition, such as theological discussions on internet forums, or streaming religious sermons held in the family’s country of origin.

However, the majority of narratives contain magical content that relates to contemporary popular culture, such as descriptions of inner dialogues with characters from computer games and fantasy literature, visions of little girls in one’s home and ghostly women dressed in white – much like depictions in ghost stories and scary movies (see Publication II). Partridge terms this enlacement between magic and occult ideas in popular media occulture and argues that such ideas – which were previously appropriated for a cultural elite – have become public and ordinary. Supernatural popular culture appears to be especially attractive to young people. Lynn Schofield Clark (2003) argues that “teens are immersed in a culture that extends beyond traditional religion in its fascination with the realm beyond” (2003, 4) and notes that the interest in extra-terrestrial life, witchcraft, angels and ghosts has been on the rise during several decades – despite decreasing numbers of congregational activity. This was confirmed in two Swedish studies (Dahlin, 2015; Sjödin, 2005) in which the teenagers embraced various supernatural beliefs, but generally rejected institutionalized religion. In the words of Diana Eck (1999), supernatural beliefs may thus not be declining, but changing.
Sidestepping the conceptual discussion regarding borderlines of ‘real’ religion, Douglas Cowan (2019) centres his study of occult themes in popular culture around William James’ (1902) characterization of the unseen world and order of things. Cowan maintains that the same stories need to be told over and over again, because younger generations do not accept traditional descriptions of how invisible forces play out in the world. Schofield Clark adds that the facing of fears is central in rites of passage (see Van Gennep, 1960; Turner, 1969) and suggests that these may now be fulfilled through thrilling narratives in which teenagers encounter powers beyond their control:

As teens ride the tension between fear and faith that characterizes the question of whether something unearthly might happen in their presence, they can heighten the emotional intensity, and hence the possible intimacy, among group members. (7)

Vivian Asiamos (2019) moreover highlights how video games and ‘creepy pastas’ (i.e. ghost stories and urban legends) online literally change the way in which people live their lives; comparable to the interrelation between story and agency that Marcus Altena Davidsen (2016, 2018) terms religious affordance. Put differently, fantastic narratives and imaginary worlds provide new answers to old questions. The monopoly of religious traditions appears to be broken and the views of life of many millennials – such as the participants in this study – are shaped by new forms of media.

In conclusion, the main characters in this thesis are not only autistic, but also Swedish and millennial. Does this mean, then, that the results only relate to a somewhat narrow case of autistic individuals? I argue that while the results to be presented are specific to the sample studied, they also reflect more general processes underlying religious cognition. Specifically, the results in Publication I illustrate how religious experiences primarily seem to be formed from reflected rather than intuitive beliefs, Publication II provides a discussion about the role of embodied supernatural experiences that are interpreted in the light of the cultural frameworks at hand, while Publication III presents the view that parasocial (fiction-based) relations are comparable to relations with gods, angels, spirits and other invisible agents. Throughout the thesis, I maintain that our cognitive properties should be understood as being enmeshed with socio-cultural aspects of human life.
2. Studying religiosity

2.1 The scholarly study of religious experience

A thesis that explores autistic cognition might, at first sight, seem to be at the fringe of the study of religions. In actual fact, the religious experiences and relations studied here have for long been in focus in a wide range of disciplines in the scientific study of religions. This section provides a brief outline of the various trajectories that are relevant for contextualizing the study of supernatural experiences in this thesis.

The academic study of religious experience was introduced during the 19th century. The systematic comparison of various religious traditions worldwide was pioneered by Max Müller (1856) and this stance was initially marked out as independent from theology and philosophy of religion by the term ‘science of religion’ (religionswissenschaft). This marked out that religions and religiosity were studied from non-confessional perspectives, such as historical, sociological and psychological points of view (Hasan, 2010; Wach, 1958).

As the early Christocentric outlook on other traditions became heavily criticized, Christianity (i.e. the Protestant, Evangelical-Lutheran bend) was eventually treated as one of many religions, rather than the religion (Gross, 2000). The study of religions was moreover supplemented by disciplines such as history-, anthropology-, sociology- and psychology of religion, which in turn have developed their own sub-disciplines. These are all principally defined by a non-confessional approach and demands for scientific rigour:

Not knowing how the universe really is organized – not knowing if it is organized at all – the scholar of religion seeks not to establish a position in response to this question but to describe, analyse, and compare the positions taken by others. (McCutcheon, 1999, 216–217)

The history preceding the rise of these academic disciplines is complex, and I therefore limit the description to the study of experiential and psychological dimensions that are relevant to this thesis.

This trajectory originates in a redirection of attention from outer expressions towards inner religious experiences, feelings and intuitions, which was sparked by theologians Friedrich Schleiermacher (1799) and Rudolf Otto (1958) as a response to enlightenment critique of religious dogma. An illustrative example is the emphasis on the psychological role and function of religious experience that was funda-
mental in the work of psychologist William James (1902/1985), who understood such experiences in terms of intuitions entering consciousness. James used ‘religious experience’ as an umbrella term that encompassed various religious traditions, and defined ‘religion’ as “the feelings, acts, and experiences of individual men in their solitude, so far as they apprehend themselves to stand in relation to whatever they may consider divine” (James, 1901, 55). James also connected such experiences to a sense of presence and reality beyond ordinary feelings, and took an interest in extreme expressions such as trances, voices and visions (Taves, 2004); expressions that are still studied the psychology of religions (e.g. Hood, 2013).

Along the way, social psychology also came to influence the study of religiosity. Hjalmar Sundén’s (1959) role-theory is an example of work undertaken in the psychology of religion that examines cultural influence on perceptions. Sundén argued that people learn to identify with various characters (‘roles’) from the sacred and mythological texts that are relevant to them, and gradually come to identify various experiences as ‘religious’. Sundén also expanded the discussion about deep psychological (‘numinous’) structures by applying sociological theories from symbolic interactionism. In other words, the role of social learning and language was considered to be central to the individual development of models for religiosity (Holm, 1995). Interestingly, Sundén’s discussion about perceptual psychology and the role of mentalizing is very much in line with the later ideas in the CSR (see section 2.2) that are central to this thesis. For instance, he argued that people learn to relate to invisible minds through the same mentalizing mechanisms that are used to understand ‘real’ individuals.

The study of mystical experience was gradually divided as the early essentialist understanding, represented by Walter Stace (1961; see also Eliade, 1957; Hood, 1975; Otto, 1923/1958; van der Leeuw, 1938/2014) was challenged by the structuralist approach promoted by Steven Katz (1978). The latter claims that mystical experiences occur within linguistic and cultural boundaries. This stance is shared in this thesis. Another turn was provided by Alister Hardy (1966), who advocated use of methods from social anthropology and empirical psychology in the exploration of experiences of a greater ‘something’. Hardy (e.g. 1979) also attended to visions and sensory experiences that individuals understood in religious terms, and his evolutionary approach can be described as an early predecessor to the CSR.

While previously being overlooked in the CSR, attention to mystical and religious experience has recently been instigated by scholars in the Religion, Cognition and Culture-research unit in Aarhus (Anderson, Schjødt, Nielbo, Sørensen 2014, Schjoedt 2009), as well as CSR-scholars in Amsterdam (van Leeuven and van Elk 2017; Maij & van Elk, 2018) and the US (McNamara, 2009; Luhrmann, 2012; Taves, 2009).

The scholarly study of religions has moreover been characterized by interaction with neighbouring disciplines and societal changes. In fact, it shares at least for the first 75 years its history of scholarship with anthropology. The close collaboration
with neighbouring fields continues to be a hallmark of the discipline, as illustrated in the study of contemporary popular culture in which religious studies scholars have been spurred by work in film studies (Axelsson, 2014), narrative semiotics (Davidsen, 2016) and consumer capitalism (Cusack, 2010), to mention a few. Such novel lines of inquiry are also central to this thesis (see Publications II and III).

In conclusion, the focus on the inner lives, feelings and experiences of the autistic participants, as well as the interdisciplinary approach to neighbouring fields seen in this thesis, is firmly located in the scholarly study of religiosity.

2.1.1 Methodological agnosticism

In a nutshell the problem is whether, and to what extent, someone can study, understand, or explain the beliefs, words, or actions of another. In other words, to what degree, if any, are the motives and meanings of human behaviors and beliefs accessible to the researcher who may not share these beliefs and who does not necessarily participate in these practices? (Russell McCutcheon, 1999, 2)

Scholars in the study of religions are guided by the scientific approach known as methodological agnosticism (Cox, 2003; Porpora, 2006), which means that researchers should strive to suspend their personal biases and judgements. This idea dates back to German phenomenologist Edmund Husserl’s (1931) popularization of the concept of epoché (‘holding back’ in Greek), and is built from the argument that we need to bracket our own assumptions in order to gain knowledge of how phenomena are experienced by others, as a method for better understanding such structures.

Self-reflection on behalf of the scholar is central in this process, and Cox argues that “academic neutrality on religious matters is based on the flawed premise that the scholar of religion can or should exclude personal judgements from academic discourse” (4). Put differently, all research is coloured by the respective outlook of each researcher. Jeppe Sinding Jensen (2011) problematizes the idea that scholars would gain increased knowledge by sharing similar experiences as those studied: “When does the empathist know that she is “empathic enough”? And, just to complicate the issue, how empathic are insiders among themselves?” (34).

Despite such complications, I have been guided by an agnostic striving to accept the life stories of each participant without questioning them. I am fully aware that my own position influences my understanding and interpretation of the participants’ narratives, but have nevertheless made a genuine effort to understand how they experience things. I also acknowledge the fact that the experiences described in the material are personal and differ between the participants, but yet attempt to find themes throughout the material that appear to reflect general patterns of information processing.
2.2 The cognitive science of religion

While scholars in the study of religions generally study expressions of religions and religiosity over time, space and place (Taves, 2009), the cognitive science of religion (CSR) is concerned with the underlying structures of such beliefs and behaviour. Justin Barrett (2013) presents CSR as an area of study in the psychology of religion and compares it with the basement of a grand structure that is not visible until we are made aware of its presence and importance. A central starting point is the question of why various phenomena persist through different periods and places, as exemplified by Jesper Sørensen (2005):

> Whether we are going back in history by means of textual and archaeological evidence or roaming the farthest regions of the globe we find religions and equivalent ideas and practices keep appearing: the existence of superhuman agents (e.g. gods, spirits or ancestors with knowledge about and power over human affairs); narratives of how the world was created by these superhuman agents; evil spirits or witches seeking to harm people by disease or misfortune; the power of religious specialists to deal with both benevolent and malevolent superhuman agents; specific types of actions, such as sacrifice or spirit-possession, involving superhuman agents; ideas that a part of a person lives on after the body is dead. (467)

The explanation proposed in the CSR is that while specific phenomena may be local, humans share a universal and autonomous cognitive system that is independent of cultural context. This approach to studying religions and religiosity “can offer a theoretical framework for analyzing and comparing material from different times and places, but it can also make more exotic religious acts and thoughts appear more comprehensible” (Geertz, 2008, 90). Whereas psychologists of religion mainly study the role and function of religious beliefs and behaviour, cognitive scientists thus delve deeper into underlying and causal mechanisms, which are understood as universal and (largely) independent of cultural context.

Thomas Lawson and Robert McCauley (1990) are considered to the founding fathers of the CSR, and the term science (which was remodeled from the study of religions) marks out the orientation towards fields in the natural sciences (e.g. evolutionary theories, psychology and neuroscience). An early contribution was, for instance, Stewart Guthrie’s (1980; 1993) pioneering account of the universal tendency to anthropomorphize the environment (e.g. seeing faces in the clouds and attributing agency to objects). Harvey Whitehouse (1995) added mnemonic dimensions to Lawson and McCauley’s (1990) cognitive theories on ritual action, and Pascal Boyer (1994, 2001), who similarly attended to the role of memory, proposed that minimally counterintuitive concepts (e.g. a talking tree or an invisible person) are specifically memorable and easily transmitted. Another significant contribution was provided by Justin Barrett (2004) who developed Guthrie’s early work on invisi-
ble agency by the much-influential model of the *hypersensitive agency detection device* (HADD), which centers the role of ToM.

Today, the CSR has grown into a well-established and interdisciplinary field engaging evolutionary biologists, neuroscientists and psychologists, as well as scholars from the study of religion and anthropology who take an interest in exploring how cognitive information-processing is relevant in explaining phenomena that could be characterized as ‘religious’ or ‘spiritual’. The evolutionary perspective is central in this striving to elucidate why human psychology functions in a specific way, and in explaining panhuman beliefs and behaviour.

The *naturalness hypothesis of religion* (see Publication I) is an illustrative example. This hypothesis suggests that the detection of invisible beings is underpinned by people’s tendencies to automatically and intuitively search for agency and intentionality in their surroundings; a behaviour that may have supported survival, reproduction and group living throughout history. This intuitive tendency to detect agency is used to explain the fact that people in all cultures hold beliefs of invisible and intentional beings, such as gods, spirits, djinn and ancestors (Boyer, 1994) and explains our tendency to think about inanimate objects (e.g. printers or cars; see Svensson, 2016) as having a will of their own (Guthrie, 1993; described further in section 2.2.2).

What, then, is my own unique contribution to the CSR? Geertz (2008b) notes that the CSR is dominated by scholars from research fields in which ‘religion’ might not be the center of attention, which means that they may lack in-depth knowledge about the subject. As researchers trained in the study of religions use other tools to compare and critically examine phenomena related to religion and religiosity, they may add important insights to the work conducted by science-oriented CSR-scholars. The study of autistic cognition in the CSR is similarly restrained when researchers are not fully informed about the various perspectives discussed amongst autism researchers.

In other words, my contribution consists of a humanities toolbox with qualitative methods (that are combined with quantitative data, see section 6.4) and an encultured outlook on religiosity, as well as a broad knowledge of both cognitive and critical perspectives on autism. The case of autism is of particular interest to the CSR because it has potential to illuminate aspects of cognition at play in the formation of religiosity, such as mindreading capacities, atypical embodiment and fantasy proneness, all of which are discussed in this thesis. As yet, few CSR studies are conducted in comparatively secularized contexts, such as Sweden, and studies of young people’s views of life are similarly lacking. The case highlighted here provides such new outlooks on religious cognition.
2.2.1 The embodied and encultured mind

My auntie’s Rottweiler dog died a couple of years ago. […] It has happened a few times that I’ve felt his fur against my hand, even when I’m wearing thick gloves, so I know that he’s somewhere around me. Not all the time, but it’s mostly when I’m feeling insecure or scared or something. (Catzy)

Over the past 20 years, scholarly work has gradually come to challenge the Cartesian separation of body and mind that for long has guided cognitive research. Early work in the CSR (described above) was for instance directed towards the processing of mental information and mnemonic perspectives on ritualization and invisible agency. However, Uffe Schjødt (2007) notes that a growing body of “findings from neurobiological and perceptual studies support the assumption that cognitive processes solely rely on modal activities – even the most complex ones” (314). This thesis embraces the holistic understanding that our sensory modalities (e.g. visual, auditory and olfactory senses) are central to human cognition, and proceeds from the stance that our minds are closely intertwined with all aspects – cultural, embodied and material – of being human:

The brain, body, and mind are often erroneously thought to be more or less independent organs. They are, however, enmeshed not only internally but also externally in a vast network of other brains, bodies and minds stretching across the planet and back to the beginnings of time. (Kundtová Klocová and Geertz, 2019)

Judith Kovach (2002) similarly emphasizes that embodiment is central to religious practices, such as healing trance dances, sacred artefacts and ritualized diets: “Nowhere is the experiential significance of the body more apparent or better documented than in religious behavior, with its ritualized bodily actions and its predominance of sensory, rather than conceptual, stimuli” (942; see also Bell, 2006).

Lakoff (1987) and Johnson (1987) argue that embodied ‘image schemas’ (i.e. patterns and repetitions) contribute to making sense of an otherwise chaotic and incomprehensible existence. This argument is echoed in Schjødt’s (2007) illustration of how “knocking on wood” (i.e. knocking on/under a table in order to ‘jinx’ against invisible forces that may prevent success) is a habituated and low-cost alternative strategy for coping with distress. Such behaviour, Schjødt argues, is intimately tied to cultural traditions: “The economical principle of the individual’s resource mobilization make cultural ideas very ‘cheap’ and cost-efficient coping strategies solving resource-demanding challenges with few cognitive resources invested by the individual itself” (335).

Kundtová Klocová and Geertz (2019) expand the idea of how embodied ritualization is connected to mental processing. For instance, they argue that local instructions of correct religious practice (e.g. kneeling or bending down) may increase the formal power of religious leaders, while body chemistry released through painful
rituals such as flogging or skin piercing promote psychological relief and group cohesion (see Xylagatas, Mitkidis and Fischer, 2013). Hanne De Jaegher (2013) importantly adds that an embodied and enacted approach brings clarity to behaviour that may seem odd to an outsider. De Jaegher therefore encourages researchers to ask why people do what they do and what this in turn reveals of how they engage with the understanding of themselves and others.

The role of embodiment is central to this thesis. First, bodily cues play a central role in the mindreading process – which plays out differently in autistic individuals – and invisible agents are disembodied in the sense of not being empirically present in terms of smells or vocal intonation. Such ‘disembodiment’ is explored in Publication I. Second, the material provides vivid descriptions of sensory experiences that occur without input of external stimuli, such as touch and visions when no physical bodies are present. Publication II thus analyses autistic processing of embodied information. Third, I provide a discussion on how atypical embodiment challenges experimental and psychological measurements of cognition (e.g. eye tracking) in Publication IV. These considerations of the bodily dimension contribute new perspectives on embodiment that have previously been overlooked in the study of religious cognition in autism.

2.2.2 Why experience matters

I woke up very early, it was summer so the sun was rising like 3 am so I woke up and got out of bed because I couldn’t get back to sleep. We were in our summer house and there is a forest that I walked into and strolled around. And it was really weird because I walked there and there was nobody, no one else was around, but it really felt the same way as if I would walk through a crowd. It felt as if there were, like people, or not people but live things around me. And it was kind of nice because there was no one there but it really wasn’t empty of life, even though you couldn’t see anything it felt as if… it must have been something about the forest being alive.

(Frank)

The process of examining how individuals arrive at representations of supernatural agency was a natural starting point in this thesis, especially as mental representations were central in the previous research that I sought to complement. This choice of focus was also a way of avoiding a pre-defined, overarching (and often elusive) definition of ‘religion’, whilst at the same time exploring a topic of central interest in the study of religions.

However, when talking to the participants about their supernatural beliefs, they appeared to be somewhat disengaged when asked about ontological views of what is ‘real’ or not, but were keen to describe how feelings and odd occurrences had guided their inferences. This led me to reconsider the process of how beliefs are constructed. Below, I discuss why paying attention to experiences may be a more fruitful way of studying religiosity from a cognitive and psychological point of view.
than to the often-discussed topic of beliefs. This conviction is also echoed in the title of the dissertation, which is inspired by the psychologist William James’s ground-breaking work *The Varieties of Religious Experience* (1902). James similarly held that experiences were central for understanding the psychology of religion and drew on personal narratives in his exploration of such manifestations. James also argued that religious and mystical experiences were guided by emotions rather than logic, which is a conclusion resonating with my own conclusions from the study to be presented.

As discussed in the following section, previous research on religious cognition in autism takes its point of departure in the *naturalness hypothesis of religion* (e.g. Boyer, 1994). This concept is based on a separation between fast/intuitive processing of input (e.g. hearing a bang in one’s house and thinking someone is there) and slow/reflective processing (rethinking that the door is locked and it is more likely that an object has fallen to the ground; see Guthrie, 1993). This intuitive tendency to search for intentional agents – that might potentially do us harm – is the ‘natural’ aspect of the hypothesis: evolution has made us inclined to pay attention to both visible and invisible agency in the world. These intuitions may either form into articulated beliefs in gods or spirits, or remain unconscious, such as in the case of ‘knocking on wood’ or making wishes when blowing out candles on a birthday cake (see Publication IV). Scholars have assumed that such agency detection is inhibited in autistic individuals (Barrett, 2012; Bering, 2002b; Boyd, 2008; McCauley, 2011; Tremlin, 2006).

However, Luhrmann (2018) argues that such beliefs are difficult to sustain. The most interesting psychological question, she argues, is therefore not *what* or *if* people believe, but *how* these beliefs are upheld and *why*: “Faith is about holding certain commitments front and center in one’s understanding of reality even when the empirical facts seem to contradict them. That is why faith takes work and why faith changes the faithful” (303). This is illustrated by the discrepancy between people’s statements and their behaviour: if beliefs were certain and taken for granted, why would people spend so much time reading scriptures, performing complicated rituals, and carefully practising how to recognize that supernatural agents are present? Why lock the door or study intensely for an exam if you are certain that God is always there to help you? In other words, people seem to be switch between alternative modes of reality and competing intuitions. Luhrmann refers to these as ‘faith frames’.

The separation between *everyday religion*, which focuses on what people do and how they live their lives, and *prescribed* religion, which emphasizes rites and dogmas, is also useful. Thomas Tweed (2015) argues that research on everyday religion has “provided a much-needed corrective” (362) and an increased understanding of what is at play in the lives of ordinary people. As we shall see, some of the most interesting accounts in this thesis are indeed enmeshed in the everyday lives of the participants, who describe their experiences as closely entwined with emotions such as grief, comfort, fear and well-being. Luhrmann (2018) likewise exemplifies how
2. STUDYING RELIGIOSITY

goose bumps may reinforce the notion that magic is real. Such experiences, I argue, is a persuasive form of knowledge. Pascal Boyer (1997) similarly maintains that experience, rather than ontology, underpins conceptions of reality.

Notwithstanding, it is common for cognitive psychologists to base entire studies on scales measuring ontological beliefs, such as the coping measure R-COPE (Pargament, Koenig, & Perez, 2000) and the Intrinsic/extrinsic religious orientation scale (Gorsuch & McPherson, 1989). I argue these explore prescribed religion, rather than psychological and cognitive mechanisms that underpin supernatural notions. Such measurements moreover bring about the bias known as social desirability: how do we know whether the reports are evidence of genuine convictions, or simply reflect the desire of adapting to prevailing norms (see Barret, 1999; Frith, 1991)?

For instance, in Publication IV, I argue that (non-autistic) American individuals will be more likely to respond positively to survey items about believing in God or not, whereas Swedes are more likely to respond negatively. They simply respond in the manner that is prescribed by their context. While personal stances are of course relative depending on the immediate local context, larger and randomized studies still reflect socio-cultural norms. Ann af Burén (2015) illustrates how the ambiguity between personal ideas and cultural norms also comes through in interviews, where the participants appear to be unaware of sliding between opposing stances: someone may first declare that they do not believe in life after death, and then shortly after describe how they speak to dead relatives experienced as being present.

The study of religiosity requires that we take time to dig into such ambiguities, rather than taking people’s statements at face value. The emotional – and perhaps also sensory – experience of a deceased relative’s presence may not be coherent with the ontological statement of not believing that dead people move forward to a new dimension. This is why we also need to acknowledge personal experiences when studying religiosity.

2.3 Previous research on religious cognition in autism

[H]e is with us in the room, that’s actually what I think, that he’s sitting next to me now listening to what I’m saying, so he is with us Jesus in the room. And … he’s listening to what I’m saying, and he may think whatever he wants, I mean he can give me different signs, if I’m saying anything wrong, then I feel that no this is wrong, I have to tell it in another way. Then he’s telling me, but it doesn’t show. (Mina)

Autism is indeed an interesting case that actualizes the question of why people come to hold the notion that there are invisible powers in the world. The CSR-field which

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1 As autistic subjects are less inclined to give socially desirable answers (Dziobek et al. 2008; Izuma et al. 2011; Visuri 2012, 2018b), I argue that studies comparing the beliefs between samples of autistic and non-autistic individuals are asymmetrical, or a so-called comparison between ’apples and oranges’ (see Publication IV).
explores religious cognition in autism was introduced as an evaluation of the naturalness hypothesis: to what extent does the human ability to relate to other people predict our tendency to form mental representations of supernatural agents?

The early publications were of theoretical character. Jesse Bering (2002b), who appears to be the first scholar to connect mentalizing difficulties in autism to attributions of invisible agency, argued that “The unfortunate impoverishments in just this area of reasoning render people with autism greatly impaired in their communicative interactions with others” (5). Bering therefore concluded that autistic individuals likely are unable to perceive nondescript agency and teleological meaning behind events.

Todd Tremlin (2006) similarly focused the assumed inability to perceive other minds. He described autistic individuals in general as “detached from others” (85) and maintained that they perceive humans as if they were objects:

Perhaps the most catastrophic of all is the autistic’s impaired ability to grasp the ontological distinction between mental and physical entities. This suggests that autistics do not share the mentalistic perception that is a hallmark of human thought. (85)

Tremlin thereby concluded that they are unable to mentally represent invisible and superhuman agents.

Jeffrey Boyd (2008) developed this idea by suggesting that mentalizing difficulties in autism, which make even high functioning individuals “appearing aloof, condescending, and contemptuous” (371), are related to mirror neuron deficits (see ‘broken mirror hypothesis’ in section 3.2.1). He suggested in line with Bering (2002b) that while autistic individuals are unlikely to believe in personal deities, some of them may be attracted by to spiritual, impersonal concepts that do not require mentalizing on behalf of the believer, such as the Chinese qi (energy flow), spiritual therapies like acupuncture or Reiki healing, or Buddhist descriptions of Nirvana.

Robert McCauley (2011) embraced Baron-Cohen’s (2009) idea of the ‘male’ tendency to interest in systems, rather than minds (see section 3.2.2.), as central to understanding why “autistic children treat people no differently from the way they treat objects.” (254) He therefore concluded that “Though people with autistic spectrum disorders may have religion thrust upon them, they will be no clearer about its import and no more creative with its peculiarly religious contents than what they can commit to memory”. This reasoning was echoed by Justin Barrett (2012), who argued that theistic beliefs cannot be embraced by ‘male-brained’ autistic individuals (which he compared to the atheistically oriented scientist Richard Dawkins) since they “may not have these [mentalizing] abilities readily by their beck and call.” (84).

It should also be mentioned that there is an early article in which psychologist Stephen Flusberg and autism researcher Helen Tager-Flusberg (2006) comment on Bering’s (2002) hypothesis on the folk psychology of souls. They hypothesized that
“a person with autism may acquire the belief in an afterlife via language, in the same way as they can learn to pass false belief tasks” (473). Contrary to previous scholars, they argued that individuals on the autism spectrum actually may solve ToM tasks, but do so by engaging in other neurocognitive processes. From this dynamic view, the authors suggested that “the prevalence of these beliefs likely indicates a complex and dynamic process consisting of multiple interdependent cognitive, affective, linguistic, and cultural components” (473).

Gradually, empirical studies emerged to test the hypothesis that mentalizing deficits limit the ability to perceive supernatural agency. Assessing beliefs in God and fate (i.e. teleological reasoning), Banerjee and Bloom (2004) measured autistic traits through an abridged version of the Autism Spectrum-test (AQ) and results suggested a subtle difference in the inclination to represent fate in terms of agency. The authors therefore hypothesized that autistic individuals are more inclined to think about invisible forces in non-agentic terms (i.e. laws of nature). However, they also noted that “Contrary to our expectations, participants’ AQ-Shortscores did not predict whether or not they believed in fate, nor did they predict their tendency to imbue fate with fairness, kindness, and instructiveness” (286). Banerjee and Bloom yet concluded that autistic individuals should be less likely to endorse beliefs in God and fate due to mentalizing difficulties that ‘block’ such intuitions.

Bethany Heywood (2010) similarly looked into the connection between religious beliefs, teleological reasoning and autistic traits as defined in the AQ-scale. Heywood noted that 15% of the participants that were coded as autistic had difficulties understanding the questions and that responses were more varied in this sample. Many responses were also ambiguous. Those coded as neurotypicals however gave more teleological responses.

Caldwell-Harris, Fox Murphy and Velazquez (2011) analyzed discussions on the online discussion forum wrongplanet.net. They found that autistic participants “were much more likely than those in our neurotypical [non-autistic] group to identify as atheist or agnostic, and, if religious, were more likely to construct their own religious belief system” (1). Baron-Cohen’s systematizing scale (SQ) was also used and results indicated a correlation to non-belief. Norenzayan, Gervais and Trzesniewski (2012) also found some correlation between autism and non-belief, whereby they concluded that autism predicted higher levels of unbelief, which appeared to be mediated by mentalizing.

Later studies provided a more fine-grained discussion on mentalizing and a broader variety of measurements. Tommy Coleman (2016), for instance, noted that individual differences in ToM ability among autistic individuals means that many of them are able to pass false-belief tests. Coleman importantly also comments on the fact that the AQ-test consists of five subscales (attention to detail, attention switching, communication, imagination and social aspects), but that previous studies only reported the overall results; despite the fact that several subscales do not connect to social cognition. Instead, Coleman utilized the subscale ‘aloof personality’ in the
Broader Autism Phenotype Questionnaire (BAP), the Reading the Mind in the Eyes (RMET) and Rosset’s intentionality task. He found no significant mentalizing differences (in terms of results from RMET and BAP) between atheists and theists, but atheists identified as autistic scored lower on mentalizing than atheists deemed to be non-autistic.

Jack, Friedman, Boyatzis and Taylor (2016) included measurements of moral concern, as well as various measurements of mentalizing. While the former was found to be robustly related to religiosity, there was no evidence of connections to mentalizing or autistic traits. Linderman and Lipsanen (2016) similarly established a positive relationship between moral concern and belief in God, while the impact of mentalizing – which they also measured through performance based measures – was considerably weaker. The authors concluded that “The present findings put religious and spiritual beliefs in a new light by suggesting that they are not so much linked to the perception of agency as they are broadly to moral concern, and in particular empathic concern.”

Reddish, Tok and Kundt (2016) also used performance based measurements and found no significant mentalizing differences between their autistic and non-autistic samples, or evidence of differences in religious beliefs, prayers, attendance at religious services, anthropomorphism and felt closeness to God. Discussing these results, they concluded:

...when scholars in the cognitive science of religion argue that mentalizing is a key component of religion, they are not claiming that the ability to detect sarcasm or white lies is essential to religion. They appear to be referring to mentalizing at a more fundamental level: the knowledge that mental states exist and the tendency to project these on to perceived agents (Tremlin, 2006). As we argue earlier here, HFA do have this ability (108).

Maij and colleagues (2017) attempted to replicate the results found in Norenzayan et al. (2012) through an extensive and cross-cultural study. Neither the Empathy Quotient-test (EQ) nor the AQ-test predicted belief in supernatural agents. The study however added measurements of credibility enhancing displays (CREDs; see Henrich, 2009; Lanman, 2012) which are based on a model of cultural learning, and the authors concluded that “It is obvious that how your parents raised you is a strong determinant of one’s personal worldview and religious beliefs”. Ekblad and Oviedo (2017) moreover included items relating to beliefs in ghosts and paranormal experience to their study, and found that these were “significantly more prominent among NDs [neurodiverse] than NTs [neurotypicals]” (291).

In summary, empirical research that included more fine-grained definitions of mentalizing and a broader array of measurements did not confirm the hypothesis that supernatural beliefs would be limited in autistic samples. It seems however as if the early discussions on autistic mindblindness and atheism have become a popularized
meme’ in academia, and the early studies are widely cited. In line with Sørensen (2005), I argue that the attempt to find ‘a magic bullet’ (i.e. one theory that explains a complex case) is problematic. In order to advance the understanding of religiosity in autism, the thesis seeks to complement previous research in several ways.

1. First, it provides an analysis of how various aspects of mentalizing are at play autism, in line with the argument that the constituent parts of complex phenomena need to be identified (e.g. Asprem, 2016; Brezis, 2012; Sørensen, 2005).

2. Focus is also redirected from beliefs towards experiences. To exemplify, Guthrie’s (1993) famous description of how a sudden sound results in an intuitive notion of someone being present is understood to illustrates how sensory experience precede a search for (invisible) agency.

3. The role of cultural reinforcement is moreover central to this thesis, which shares Luhrmann’s (2018) stance that supernatural ideas are shaped from surrounding notions and require constant sustenance.

4. Another shift concerns definitions. While previous studies explore invisible relations that are also held as ontologically real, this thesis also includes imaginary interactions that take place in daydreaming and narrative worlds. Such ‘parasocial’ relations similarly involve mentalizing abilities (Oatley, 2016). Despite the fact that such realms are not generally understood to exist outside one’s imagination, they may yet be experienced as realistic. A comparison between parasocial and supernatural agents is provided in Publication III.

5. My data is moreover based on qualitative interviews, which are complemented by statistical reports. Proceeding from personal descriptions means that we build categories bottom-up from the material, which may highlight unexpected processes at play. This pragmatic approach enables identification of aspects that may otherwise be overlooked (Taves, 2009; Tweed, 2015) and may also help researchers make sense of ideas and behaviour when regarded from an autistic perspective (De Jaegher, 2013).

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2 The article by Norenzayan, Gervais and Trzeniewski (2012) has currently more than 200 citations, and the article by Caldwell-Harris and colleagues (2011) has at least 38 citations (as it first circulated unpublished). These studies are also widely cited in popular science media.
3. What is autism?

I was thinking about what to say to this dude, it’s his birthday this weekend. Should I congratulate him before or after that? It’s stuff like that, I mean it’s of no greater personal value for me but at the same time it’s this thing I feel, that I’m not social. You’re supposed to be socially representative, and you don’t want to make any social mistakes, but I don’t have any system telling me what’s right or wrong. (Simon)

The heading for this section reflects a commonly discussed enigma: what is autism, really? Some people wonder whether autism exists at all. In order to provide an overview of how I understand ‘autism’, this section introduces the scholarly approaches that are relevant to this thesis.

The most frequently used definition is found in the current diagnostic manual DSM 5 (APA, 2013), according to which an individual must meet the following criteria to receive an autism diagnosis:

A. Difficulties in social reciprocity and communication that affects relations with other people.
B. Restricted and repetitive behaviour, insistence on sameness, and unusual reactions to sensory input.
C. These symptoms have been present throughout their lives.
D. These symptoms cause difficulties in various areas of life.
E. These symptoms are not better explained by intellectual disability.

As exclaimed in media headlines, estimates of prevalence have been steadily increasing over the past 40 years. In 1985, Baron-Cohen, Leslie and Frith remarked that childhood autism “is a rare condition, affecting about 4 in every 10,000 children” (37; see Lotter, 1966). In 2002, the numbers were adjusted to 1 in 150, increasing to 1 in 80 in 2008 (CDC, 2019). Currently, it is expected that as many as 1 in 40 individuals are autistic (US samples; Kogan et al., 2018; Xu et al., 2019). Due to high heritability, there are often several autistic individuals in the same family.¹

Despite the accelerated rates, there is a consensus against the idea of an ‘autism epidemic’. Eric Fombonne (2018), for instance, highlights that the impact of

¹ In cases outside inherited genetics, autism has for instance been linked to genetic mutations (Sebat et al., 2007), immune dysfunction (Gupta, Aggarwal, Rashanravan & Lee, 1998) and prenatal factors (e.g. maternal medication; see Gardener, Spiegelman & Buka, 2009). However, there is consensus that vaccines against measles, mumps and rubella do not cause autism (Parker, Schwartz, Todd & Pickering, 2004; Maisonneuve & Floret, 2012).
methods for measuring prevalence (e.g. the number and selection of respondents), if a study targets a random sample or has other criteria for inclusion, or whether individuals with PDD-NOS\(^2\) are included or not. King and Bearman (2009) moreover note that changes in diagnostic practices affect the outcome; a previous diagnosis of ‘mental retardation’ may now be labelled as ‘severe’ autism, which significantly increases rates. Other accumulative factors are increased awareness (Willingham, 2014), adults being retrospectively diagnosed (Geurts & Jansen, 2011) and increased societal demands for social skills in the labour market (Deming, 2017) that many autistic individuals cannot meet.

As there are currently no biomarkers or biological tests for diagnosing autism (King & Bearman, 2009), psychiatrists need to assess behavioural symptoms. The section below outlines how these symptoms have been defined differently over time, which reflects the complicated (and somewhat arbitrary) issue of defining what autism really is, and how such definitions are intimately tied to scientific and societal changes. As we shall see, there are several – and sometimes conflicting – ideas about how to characterize autism.

### 3.1 The historical conceptualization of autism

> Given that it is now understood to be a neurologically based condition, we know that autism has always been part of human diversity, and its current status should be seen in light of centuries when it belonged to the general categories of ‘idiocy’ or ‘retardation’. So, as a subject matter, autism is both timeless and totally contemporary. It is part of human life, as it always has been. (Murray, 2009, 11)

The historical conceptualization of autism serves as an important backdrop to this thesis. While tracing the various changes in how autism has been defined over time, I have come to understand how difficult this condition is to pin down. For instance, shifts of focus in Western psychiatry and politics “have profoundly affected how we view autism and its boundaries, the range of ability levels of people now included as within the autistic spectrum, and the range of interventions offered” (Wolff, 2004, 206). This also illustrates how scholars are bound to contemporary views of health and illness.

The term *autism* was first used in 1911 by Swiss psychiatrist Eugen Bleuler. In line with other early psychologists, psychiatrists and psychoanalysts, Bleuler regarded autism in terms of psychosis and hence categorized it as one of four types of schizophrenia (Wolff, 2004). As these early descriptions coincided with the rise of psychoanalysis, the imaginary mode of introversion was given much attention. Bleuler concluded that frequent daydreaming was normally present in autistic

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\(^2\) PDD-NOS is short for *Pervasive Developmental Disorder Not Otherwise Specified*, which indicates that all criteria for an autism diagnosis are not fully met.
children and adults, and considered this a substitution for a distressing reality (Evans, 2013). However, his portrayals also involved externally visible traits such as social ‘aloofness’ and repetitive behaviour, which still prevail in the characterization of autism.

Grunya Efimovna Sukhareva’s (1926/1996) case study of six boys with schizoid personality disorder of childhood is considered to be the first, proper attempt at classifying autism. Although rarely acknowledged in historical accounts, her classification is fully compatible with the current understanding of high functioning autism and included, for instance, the sensory atypicalities that are now reinstated in the DSM 5 (Posar and Visconti, 2017). Sukhareva’s work also precedes the famous accounts of American Leo Kanner (1943) and Austrian Hans Asperger (1944) by almost two decades. Seemingly unaware of each other, these two psychologists concurrently provided case studies of gifted but socially isolated children with repetitive behaviour and highly specialized interests. While Kanner adopted Bleuler’s term early infantile autism, Asperger used the term autistic psychopathology. However, both differentiated their cases from infantile and juvenile schizophrenia (at that time called ‘De Sancti’s dementia praecocissima’), due to different onsets and trajectories (Barahona-Corrêa & Filipe, 2016).

Novel methodological approaches led to a reconceptualization and shift of focus from individual cases and inner lives of autistic individuals towards observable and measurable traits. The first epidemiological study was provided by Victor Lotter (1966), followed by Michael Rutter’s (1972) first genetic study of autism. This shift also provided a way of abandoning psychoanalysis, in which childhood disorders were thought to stem from poor parenting: “It was widely thought that ‘maternal deprivation’ could help to explain why some children developed pathological thinking patterns while others did not.” (Evans, 2013, 8). By that time, autism had also come to include children with brain damage and learning disabilities.

The diagnostic criteria were consequently changed. Evans (2013) describes how Kolvin’s (1971) formal separation of early childhood autism and schizophrenia for instance led to a reformulation of excessive fantasizing was changed into lack of imagination and “an absence of delusions, hallucinations, loosening of associations, and incoherence as in schizophrenia” (DSM III, APA, 1980). Autism was now also understood as a developmental condition, rather than a mental illness (Wolff, 2004). The systematization of Kanner’s and Asperger’s findings made by Lorna Wing and Judith Gould (1979) in their Camberwell study also had substantial impact on diagnostic work. They termed the cluster of three strands of difficulties the triad of impairments: social interaction (e.g. forming relations with peers, social withdrawal), social communication (e.g. literal understanding of language, atypical body language), and social imagination (e.g. perspective taking, play skills). Wing and Gould also related these traits to restricted and repetitive interests (e.g. preferring routines, special interests) and untypical responses to sensory stimuli.
Wing (1981) moreover coined the term *Asperger's syndrome* to denote high functioning autistic individuals and contributed to the current understanding of autism as occurring on a *spectrum* (Wing, 1975; see Wolff, 2004). In Wing's understanding, a spectrum indicates a dimensional view of how different combinations and degrees of features are found both between individuals, and in the same individual depending on the environment: “You look at all the different dimensions of social skills, motor skill comprehension and use of language, etc., and describe where they are on each. That gives you a meaningful profile in terms of helping that child” (Wing interviewed in Feinstein, 2010). This approach is clearly accentuated in the updated DSM 5 (2013), which sub-folds previously distinct diagnoses into one umbrella diagnosis of autism spectrum disorder (ASD):

> New in DSM-5 is the explicit recognition of the “spectrum” nature of autism, subsuming and replacing the DSM-IV Pervasive Developmental Disorder (PDD) categorical subgroups of “autistic disorder,” “Asperger’s disorder,” “pervasive developmental disorder not otherwise specified,” and “childhood disintegrative disorder” into a single umbrella term “Autism Spectrum Disorder” (ASD). (Lai, Lombardo, Chakrabarti & Baron-Cohen, 2013, 1)

Previously diagnosed individuals – such as most of the participants in this study – are not affected by this change (unless re-diagnosed). However, Lai and colleagues note that whilst being primarily directed towards clinical work, the DSM also guides the definition of autism in medical and psychological research. This situation is criticized by Eric London (2014), who argues that scholars may overlook additional features that are not acknowledged in the diagnostic manual.3

Finally, the impact of parental engagement deserves a mention. Evans (2013) describes how the inclusion of ‘retardation’ contributed to an increased number of diagnosed individuals in the 1970s, and when institutions for these children also were closed down, parents began campaigning for increased awareness of needs and proper diagnoses. Parental organizations and autistic individuals have ever since come to influence and destigmatize the contemporary discussion about autism. For instance, several of the most influential organizations today (e.g. Autism speaks [US], Autism Society [UK] and the MIND Institute at the University of California) are founded, financed and run by parents and grandparents of autistic children.

Wolff (2004) adds that next to innovations and progress in educational and medical interventions, parental involvement has also led to the dissemination of non-scientific ideas, such as fear of vaccines and ineffective dietary proposals.

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3 Although the American DSM is the most commonly used, some clinical psychiatrists also use the diagnostic guidelines in the International Classification of Diseases and Related Health Problems (ICD), which is published by the World Health Organization (WHO). The most recent version is the ICD11 (WHO, 2018), which will not come into force until 2022. While ICD 11 mirrors the DSM 5 in many ways, such as including sensory problems and merging several previous diagnoses under one umbrella term, it also differs in certain ways, for instance by separating autism with and without intellectual disability into separate categories.
3. WHAT IS AUTISM?

Murray (2009) argues that such ‘activism’ is caused by frustration at the failure to locate the origin and essence of autism. The stories that these movements promote can be understood as an attempt to make autism intelligible: what Mitchell and Snyder (2000) call a narrative device. Like the previous approaches presented above, this (oversimplified) view of autism participates in the societal ‘multilogue’ of how illness and health are to be understood.

3.1.1 Towards a heterogeneous and dimensional view of autism

As we shall see, there is a current turn amongst autism scholars that embraces an integrative and diversified view of autism. Pellicano, Dinsmore and Charman (2013), for instance, note that no unifying biological or genetic cause for autism has been identified and point towards the significant variation between individuals. Hens and Van Goidsenhoven (2017) add that biologists and philosophers of biology have long discredited the idea of genetic determinism, and argue that autism should instead be understood in heterogeneous terms:

…testimonies of autistic people are suggesting that we don’t need one single explanation for autism and that it should be characterised as a condition of ‘the idiosyncratic brain’. This, of course, ties in with the debate of autistic heterogeneity. No one thing unites all individuals with autism and there may be no one thing that explains all symptoms.

Many influential scholars have therefore embraced autism “as a complex and heterogeneous set of related developmental disorders in which no single cognitive mechanism or cause can account for the variety of symptoms and range in their expression” (Tager-Flusberg 2007, p. 311). Hence, plural terminology such as ‘autisms’ (Boucher, 2011) and ‘autism spectrum conditions’ (Baron-Cohen, Golan, & Ashwin, 2009; Lai et al., 2013; Wallace, 2012) is sometimes used. Based on the argument that diagnostic labels and symptoms are fuzzy and “literally intertwined with one another and cannot be neatly separated” (97), Denny Borsboom and Angélique Cramer (2013) suggest that the search for essential characteristics is replaced by a network approach. This view conceptualizes clinical diagnoses, such as autism, as systems of connected symptoms. This would, for instance, explain why individuals outside the autism spectrum may share comparable traits. Along similar lines, Murray (2009) adds that the DSM is problematic in its attempt to pin down a precise definition of what autism is and suggests that “Autism could be a set of coordinates, rather than a case of X marking the spot.”

Importantly, the dimensional approach provides a middle ground between essentialist notions and the idea that diagnostic labels are simply a social construct. It also provides an explanation for the common covariation among various diagnoses. In line with the heterogeneous turn, this thesis embraces a non-reductionist view of the various expressions and experiences seen in autistic individuals. Autism
therefore serves as an overarching term that covers the various individuals who are joined through social difficulties, repetitive behaviour and atypical sensory experiences.

3.2 Associated fields of autism research

As described previously, this thesis is pursued between various academic fields. In order to situate my own study of autism more precisely, I here present four different areas of research that in various ways connect to my thesis: cognitive autism research, critical autism studies, psychological anthropology, and the scholarly field focusing autistic embodiment.

3.2.1 Cognitive autism research

The cognitive study of autism involves scholars of psychology, cognitive science and neuroscience, and represents the largest area of autism research in relation to both funding and publications in the UK and the US (Pellicano, Dinsmore & Carman, 2013). Work in this field draws on epidemiological methods that aim to generalize traits and behaviour towards the larger autistic population and has contributed significantly to the understanding of general traits, difficulties and strengths.

Much attention has been directed towards social cognition and communicative abilities, as these are central to autism. Three older accounts have been especially influential among cognitive researchers. The first of these is the theory of mind-model (ToMM) that was introduced by Baron-Cohen, Leslie and Frith (1985), which is defined as the ability to attribute mental states to oneself and to others:

This model specifies a mechanism which underlies a crucial aspect of social skills, namely being able to conceive of mental states: that is, knowing that other people know, want, feel, or believe things; in short, having what Premack and Woodruff (1978) termed a ‘theory of mind’. (38)

The ToMM suggests that autistic children lack such abilities and therefore fail to attribute beliefs and predict the behaviour of others. To test this hypothesis, the authors utilized the false-belief Sally-Anne test (Wimmer and Perner, 1983) in which Ann moves a marble from Sally’s basket to her own box while Sally is out of the room. The autistic children in this experiment predicted that Sally would look for the marble in Ann’s box despite not seeing that the marble was relocated; thereby failing to understand that Anne’s knowledge and perspective differed from their own. The comparison group consisting of children with Down’s syndrome performed better on this task.

The development of the broken mirror hypothesis provided an extension of the ToMM. Giacomo Rizzolatti and colleagues (1996) discovered so-called mirror neurons (a type of brain cells) that fire when one is passively watching what others...
are doing (in their case, a macaque monkey that observed a researcher eating a banana). In an fMRI study on autistic teenagers, Iacoboni and Dapretto (2006) found that brain activity was not reduced according to typical patterns when processing socially relevant information, and concluded that autistic individuals might not simulate or recognize the actions of others in relation to themselves. This led to the idea that the social ‘mirrors’ were damaged in autistic individuals.

However, Gallagher and colleagues (2000) found in another fMRI study that autistic individuals were able to solve ToM tasks by using different brain circuits than the expected ones. Sue Gerrard (2006) also notes that the concept of ToM has been interpreted differently by autism researchers (see also discussion in Publication 1) which complicates comparisons of results. Importantly, Frith and Frith (2003) specified that while intuitive mentalizing difficulties are challenged in autism, these may be compensated for by reflective processing. Helen Tager-Flusberg (2007) consequently argued that ToMM may account for some, but not all, autistic traits.

A few years later, Uta Frith (1989) launched a novel theory on weak central coherence (WCC) in autism. This suggests that attention to details is central to autistic cognition, which causes difficulties in integrating contextual and general information. This would explain the demand for structure and predictability, as well as the remarkable skills of detecting patterns seen in some autistic individuals (see De Jaegher, 2013).

A third account was provided by James Russell (1997) who focused the role of executive functioning (EF).4 This cognitive function supports the coordination and structuring of activities (therefore popularly termed ‘the secretary in the brain’) and helps us manoeuvre in a constantly changing environment. Since autistic individuals prefer repetition and sameness, and struggle with impulse control and shifting attention (which cannot be explained by ToMM), Russell suggested that EF deficits underlies such difficulties.

Beyond these three predominant theories, later work contributed further nuances to the picture of autistic cognition. For instance, Geoffrey Bird and Richard Cook’s (2013; see also Dziobek et al., 2008) studies on alexithymia (‘emotional blindness’) provided an analytical separation between cognitive and affective mentalizing skills. They argued that while alexithymia sometimes concurs with autism (just as it also appears in individuals with eating disorder, schizophrenia and Parkinson’s disease), it is not central to autism. Difficulties in emotion processing in autistic individuals can thus be explained by this overlapping diagnosis (see Publication I). Smith (2009; see also Taylor, 2017) suggested that some autistic individuals may even have heightened emotional empathy, and argued that difficulties in cognitive empathy combined with robust affective empathy cause many

4 While Russel (1997) often is credited with the EF model of autism, his work was preceded by Damasio and Maurer (1978) and Rumsey (1985).
autistic individuals to withdraw from social interaction as this become confusing. Such nuancing challenges both the notion of autism as an empathy disorder (e.g. Baron-Cohen et al, 2004) and the broken mirror hypothesis.

Another significant area of research concerns the role of sensory processing. Despite the early findings on unusual responses to sensory stimuli (e.g. Kanner, 1943; Ornitz, 1973; Sukhareva, 1926), this was not included as a core feature until the introduction of the DSM 5 (2013). Tomchek and Dunn (2007) suggested that as many as 95% of autistic individuals have unusual responses to sensory stimuli, which is displayed in areas such as hypo-/hypersensitivity towards textures, difficulties filtering out irrelevant sounds in the environment, humming or putting fingers in their ears, unusual interest in shiny objects or visual patterns, limited responses to pain and sensory fluctuation (extended list found in Dodd, 2005, 44). Other studies also suggest that unusual perceptual experiences that occur without any input of sensory stimuli are common in autism (Horder et al., 2014; Tomchek & Dunn, 2007).

Neuroscientific work also suggests that multimodal processing is of importance. Wallace (2012) explains that in order to gain a holistic experience of simultaneous information from several senses (e.g. the sound and image of someone talking), the brain needs to bridge the temporal gaps between input arriving at different pace. Light, for instance, travels faster than sound, but in typical individuals these signals become integrated through the temporal binding window. In autism, however, this binding window however appears to be prolonged, which means that multiple stimuli come through as fragmented and incoherent (Brock, Brown, Boucher, & Rippon, 2002; Foss-Feig et al., 2010; Wallace, 2012). Stevenson et al. (2014) emphasize the importance of these findings and add that “although temporal cues are one powerful factor in multisensory integration and binding, other stimulus-related factors also play an integral role in the construction of an integrated perceptual gestalt” (396).

Much of the cognitive work presented here is significant for this project. Publication I, for example, discusses – and to some extent challenges – the ToMM by involving findings on alexithymia and emotional empathy. A detailed discussion about the role of sensory processing in religious cognition is found in Publications I and II. Cognitive studies of imagination in autism are also of relevance, but to limit the scope I have not included these here. Instead, I direct the reader towards Publications I and III, in which I reconsider previous claims that imaginative and creative abilities generally are constrained in autistic individuals.

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5 Sensory impairment was listed as an associate feature of autism, and not a core symptom, in the DSM IV (1994).
3. WHAT IS AUTISM?

3.2.2 Critical autism studies

The research field critical autism studies (CAS) has developed from critique of medical and psychological stereotyping and involves autistic activist academics and non-autistic scholars using semantic analysis to challenge previous notions. Davidson and Orsini (2013), who once coined the term CAS, describes that the field (a) explores power relations, (b) involves narratives that challenge the negative medical discourse, and (c) creates an emancipatory methodological and theoretical approach that values autistic individuality and enculturation.

In contrast to aim of generalizing traits to the whole autistic population in the medical sciences, CAS highlights the great variation among autistic individuals and subgroups. Although these scholars indeed describe autism in terms of a ‘spectrum’ that involves diversity, autism is nevertheless often portrayed in linear terms: “Autism is a spectrum, not a scale. I’m no more or less or autistic than any other autistic person, it’s just that I don’t fit people’s assumptions about it” (Ryan, 2018). This thesis embraces the CAS argument that medical generalizations need to be complemented by contextualized knowledge from within the autism spectrum:

It is clear that people with autism do not speak with one voice. Anything less would be fundamentally insulting and harmful to people with autism themselves, and the myriad knowledge and experience they mobilise in the field of autism. (O’Dell, Rosqvist, Ortega, Brownlow & Orsini, 2016, 168)

From such a starting point, many critical voices have been raised in response to Simon Baron-Cohen’s (2009) much cited Extreme male brain hypothesis. This hypothesis promotes a separation between competencies in empathizing and systemizing and extends into a discussion about a STEM (science, technology, engineering, mathematics) personality type. Baron-Cohen and colleagues argue that autism is characterized by a ‘male’ type of cognition that involves talents of systematizing – and difficulties of empathizing – which they suggest explain why so many autistic individuals seem to take an interest in STEM subjects. This idea has been highly influential among psychological and cognitive scholars, as illustrated by the vast number of publications examining such traits.

However, Lesley Brierley (2018) describes it as a cliché that excludes the vast majority of autistic individuals who are unable to engage in higher education or employment, as well as autistic females. James McGrath (2017) moreover notes that an eye for systematizing is useful in many other, and often unexpected, areas beyond the STEM sciences:

… poetry is a system of tradition and experience: two qualities it shares with science. But poetry is also more intimately conducive and gratifying to autistic senses and sensibilities than tends to be recognized. Reading, speaking and writing it can create a

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6 According to Google Scholar, the article was cited in 694 publications in January 2019.
kind of verbal stimming – a sort of dance between word and mouth. Not unlike autism itself, poetry can flourish outside of the norms of linguistic expression. (59)

Malcolm Matthews’ (2017) adds that the STEM coding of autism forms a normative representation of masculinity. He illustrates how popular depictions of fictional characters (e.g. Raymond ‘Rainman’ Babitt, Sheldon Cooper and Christopher Boone7), real autistic people (e.g. Daniel Tammet and Temple Grandin8) and historical figures that have been identified with autistic traits (e.g. Alan Turing and Andy Warhol) reinforce the idea of a connection between masculinity and digital technology: “Such characters illustrate in visual rhetorical terms how certain traits of autism are being romanticized in a digital era to equate ethnic whiteness with intellect and with a re-branded form of techno-masculinity” (4). Matthews concludes that the autistic noble savant forms a romanticized image of the digitalized Other; much in line with Sonya Loftis Freeman’s claim that the “autistic mind is commonly compared to a machine or computer, metaphors that again suggest a less-than-human quality to those with cognitive difference” (2016, 17; cf. Barrett, 2012 on a CSR discussion about the ‘male’ brain).

David Hartley (2018) moreover casts light upon how autism often is represented in terms of deficits and abnormality in popular media, such as movies and literature and that often concur with the STEM stereotype, as also noted by McGrath: “You’ve encountered one fictional character with autism. It’s most likely a white male with savant-like ability in mathematics or science” (2017, 2). This focus on negative traits contributes to defining autistic individuals in terms of medicalized incapacities and contributes to the conventional idea that all autistic individuals are alike (Murray, 2009).

However, social media and personal blogs have become important tools for disseminating alternative and subjective perspectives on autism. The blogger Max Sparrow, for instance, argues that medical representations are internalized by autistic individuals and promotes the use of linguistics as a means of resistance, in line with Fairclough’s (2003) argument that language can be used to negotiate social relations. In response to commentators who argue that disabilities are simply one part of a person’s identity, Sparrow remarks that, for him, the term ‘autistic’ represents full personhood, similar to other adjectives:

If I called someone a “woman” or a “Muslim” or “Black,” would you feel that it was important for them to use person-first language because someone might mistakenly forget that they are a whole person? Instead, perhaps, I should call them a “person

7 The film Rainman (1988) is based on the story of autistic savant Kim Peek; the fictional character and theoretical physicist Sheldon Cooper is found in the TV-series Big Bang Theory (2007-) that has also inspired the spin-off series Young Sheldon; while autistic mathematician Christopher Boone is the main character of the fictive novel The Curious Incident of the Dog in the Night-Time (2003).

8 Autistic savant Daniel Tammet is famous for his mnemonic and mathematical talents, while Temple Grandin is a professor of animal science and a well-known autistic spokesperson.
with femaleness” or “a person who follows Islam” [...] That’s so important, I want to say it again in its own paragraph: people get so insistent about using person-first language to “remind” the world that Autistic people are whole people because they don’t fully believe it themselves. (Sparrow, 2019)

In summary, CAS scholars attend to complexities, lived experiences and representations of autistic individuals. Their arguments can be considered in light of non-speaking autistic poets (e.g. Tito Mukhopadhuay and DJ Savarese) who nevertheless display with impressive language competencies, the many individuals with severe motoric and vestibular difficulties who may walk clumsily or be unable to hold a pen, and are equally autistic as those who become professional athletes (e.g. snowboarder David Campion and Olympic swimmer Jessica-Jane Applegate) or extraordinary artists (e.g. Stephen Wiltshire and Nadia Chomyn). While being highly capable in certain areas of life, they struggle in other areas. There is thus great variety both within and between individuals.

The significance of naming things has been taken seriously during the writing of this thesis. This appears to be an increasing trend amongst cognitive scholars, many of whom now use term autism spectrum condition, rather than disorder. I have also made an effort to include autistic voices as far as possible, for instance involving the participants as active collaborators and later evaluating the outcome with the help of autistic colleagues and friends. This interactive approach allows for “the myriad knowledge and experience they mobilise in the field of autism” (O’Dell, Rosqvist, Ortega, Brownlow & Orsini, 2016, 168) and supports non-autistic researchers in widening and deepening their conceptions of autism.

3.2.3 Medical autism anthropology

Are weak arms a disability? Of course not, right? I mean it’s a trait – an impairment, maybe – but it’s definitely not a disability. Well no, not here and now. But say in an imaginary world where everyone’s a blacksmith, for example, so yeah, absolutely, people with weak arms would be quite severely disabled. (Ben Belek, 2013)

The approach presented in this thesis is in many ways similar to anthropological work on neurodiversity that operates in the intersection between psychology, cognitive science and cultural studies. Olga Solomon (2010) notes how the view of autism has been divided between biomedical and cultural sciences, and argues that ethnographically-based anthropology positions itself in relation to both. While borrowing medical and cognitive terminology, these researchers also “include terms and concepts that closely describe the everyday experiences of individuals, families, and communities” (243). From such a “multilogue of theories and voices”, Solomon and Bagatell (2010, 2) reframe the biomedical idea of autism as a culture-free phenomenon, which they argue has negative consequences for autistic individuals and limits the possibility of designing successful interventions.
Put differently, the anthropological view of autism is ‘kaleidoscopic’ and embraces complexity (Lawlor, 2010). Rachel Brezis (2012) extends this to also involve neurology:

By observing the interaction between mental architecture of the autistic way of thought and the Jewish environment in which it is immersed, the current research sets the stage for the expansion of psychological anthropology into neuroanthropology; from an exploration of personhood across cultures (Hallowell, 1955; Shweder & LeVine 1984), to an exploration of acculturation across different neurological capacities” (308).

A similar argument is provided by Ochs and Solomon (2010), who challenge the conceptualization of autism as a non-social phenomenon: “Autistic sociality is not an oxymoron but, rather, a systematically observable and widespread phenomenon in everyday life.” (69) Their view is rather that social coordination is shaped by the socio-cultural settings and linguistic conditions in which it occurs. Ochs and Solomon therefore split ToM/mentalizing into sociocultural and interpersonal perspective taking and illustrate how autistic children display a heightened awareness of locally circumscribed interactions with family members and peers, while struggling with communication outside this social world:

The language games, as Wittgenstein calls them, becomes more difficult to play as the game entails acts of relevance based on interpersonal attunement, contextual implicatures, and nested topics related to an overarching theme across an extended stretch of discourse. High functioning children with autism or Asperger’s syndrome use their intelligence to play these language games and they often get by with fully or proximally relevant contributions. (79)

Importantly, the conceptualization of intersubjectivity in anthropologically informed work is practice-based and subject-oriented. Put differently, anthropologists base their work on interactions with autistic individuals, acknowledging the fact that their lived experiences may not match those of the researcher. Here, the imperative of ‘bracketing’ oneself (see section 2.1.1) is essential. As described by Ben Belek (2013): “So no, I don’t ‘study’ autistic people. A better way to put it, perhaps, would be to say that I learn from autistic people.” Writer Steve Silberman (2016) compares the oddity of not involving autistic individuals in autism research with someone writing about women and only talking to men. He further comments that heart-warming narratives that attempt to correct the stigma of neurodiversity actually are a patronizing intensification of otherness. Descriptions therefore need to be balanced and fair to those that are described.

In line with the anthropologically informed work outlined here, my aspiration has been to create new knowledge by talking to – rather than talking about – the participants in this study, and to never do so in condescending terms. Autism is
3. WHAT IS AUTISM?

neither understood as a disorder, nor as a blessing, but a way of being in the world (Lawlor, 2010). This approach signals an ethical stance that embraces otherness as equally human as any other way of being (Sewell, 2005). I also carry with me the self-reflective insight that my account of autism and the participants studied is coloured by my own cultural and experiential outlook (see Grinker, 2015).

3.2.4 Autism beyond the brain: embodied perspectives

My senses always fall in love: they spin, swoon; they lose themselves in one another’s arms. Your senses live alone like bachelors, like bitter, slanted rhymes whose marriage is a sham. (autistic poet Deej Savarese, 2017)

While socio-cultural impact is central to anthropology, other researchers have accentuated the role of socio-perceptual embodiment. As discussed above (see section 3.2.1), autism is characterized by atypical reactions to sensory stimuli, which have often been described in autobiographical accounts of autistic individuals:

Our autobiographers insist that certain sensations cause huge distress to the author. They give examples to demonstrate they are sensitive to the point of anguish by too bright a light, too loud a sound, too scratchy a surface or other touch; when sensations become overwhelming, this leads to virtual collapse, screams, etc. The too much is ‘painful’. These accounts are strikingly consistent and backed by parental observation. (Hacking, 2009, 1472)

Currently, the awareness of such sensorial and embodied aspects amongst autism researchers seems to be increasing. Hanne De Jaegher (2013) notes that none of the three overarching theories of autism (ToM, WCC and EF) can be used independently – or even together – to explain the social and communicative difficulties observed in autistic individuals. The reason, she argues, is that they all fail to include bodily aspects and interpersonal coordination between people, and their role the sense-making processes and behaviour of autistic individuals:

Sense-making plays out and happens through the embodiment and situatedness of the cognitive agent: her ways of moving and perceiving, her affect and emotions, and the context in which she finds herself, all determine the significance she gives to the world, and this significance in turn influences how she moves, perceives, emotes, and is situated. (De Jaegher, 2013, 1)

De Jaegher illustrates the impact of autistic movements and perceptions through the seemingly simple act of grabbing a glass of water, which is uncomplicated for a non-autistic person who is able to filter out irrelevant details. However, as autistic individuals generally perceive things in detail, a basic task such as selecting which glass to drink from becomes challenging. This act may moreover be performed at
the cost of socially relevant behaviour (e.g. grabbing someone else’s glass and drinking from it).

Importantly, the enactive approach also involves those interacting with autistic individuals. In their study of ‘severely’ autistic children, Ochs and Solomon (2019) note how the alignment of face-to-face bodily interaction, which is common in educational and clinical settings, causes sensory overload in children with autism. While such social coordination impedes the performance of the child, they argue that “Non-face-to-face alignments offer a different social playing field that is more congruent with the autistic child’s social potentialities” (81).

The authors further illustrate how the use of baby-talk, which involves heightened emotions, slower speech and widened eyes, conflicts with autistic sensory processing. Restraint communicative approaches (e.g. non-exaggerated pitch and prompt questioning and responses) are, conversely, more successful. Put differently, non-diminishing communication and interaction performed side-by-side boosts the outcome of interventions; as echoed by autistic writer Madeleine Ryan (2018):

I didn’t feel safe with [the psychiatrist] or her methodology, so I asked to receive the report via email. The mere idea of more face-to-face time was too overwhelming. The clinic where she worked was built with the smell of hand sanitizer. There were low ceilings, fluorescent lights, stained carpets, sticky leather couches, heavy mahogany desks, a packed waiting room, and her intent gaze over a notepad. […] When I first encountered autism with Kristina [an autistic carer], I felt happy and held. She smelled like rose geranium because she always does. The environment was serene, the couch was soft, and I was not disabled. I was home.

A reduction of embodied cues (facial expressions, body language and intonation), such as understanding communication over the internet, also appears to promote autistic mentalizing (Davidson & Orsini, 2013; Hacking, 2010; Loeppky, 2006; Sinclair, 2010). Whereas spoken language is fleeting and vanishes as soon as it is articulated, online chatting and gaming provides visual/textual assistance. Embodied and emotional coherence thus supports predictability in social interactions. This may also explain why autistic individuals are attracted to animals (Fields-Meyer, 2007; Grandin & Johnson, 2005; Smith, 2009; Solomon, 2010b) that – in contrast to humans – do not fake their emotions to become socially desirable (see Publication I). Predictability, transparency and temporal adjustments thus appear to be keys to autistic communication.

Importantly, this thesis builds on the idea that autism is not either a social or a sensory phenomenon, but rather that various mechanisms are at play and vary between individuals. However, embodied aspects have been so far been overlooked in relation to religious cognition in autism (see section 2.3) and, as we shall see, new pictures emerge when these are added to the discussion.
4. The epistemological challenge of interdisciplinary research

The French philosopher Bruno Latour (2014) has argued that different aspects of life require different languages, or *templates*. Just as legal vernacular is insufficient when declaring your love to your partner (“I can provide evidence that I really love you!”), a scientific template will not suffice when discussing religiosity with a religious person (“You cannot prove that God exists!”). Latour calls these *category mistakes* and argues that “interrogating a mode of existence by using another mode” (5) is an unsuccessful way of creating a meaningful dialogue. Rather, we need to switch between different linguistic modes, depending on the area of life discussed.

I have similarly come to understand the divide between nomothetically- and idiographically-oriented scholars as (partly) related to a category mistake. Humanities scholars may find it odd to operationalize and measure complex phenomena such as ‘religion’ or ‘autism’, whereas many scientists regard qualitative methods and linguistic arguments as vague and obscure (see Heyink & Tymstra, 1993). My endeavour to grasp the differences and similarities of these often-conflicting epistemologies has led me to appreciate the strength of using *various* methods and approaches. In line with the multilevel, interdisciplinary approach (see Paloutzian & Park, 2005) I now understand various categories and epistemologies in terms of a *scientific kaleidoscope*, in which different images and perspectives appear depending on how it is turned (see Berglund, 2018, Denzin, 1978; Lawlor, 2010).

Writing from the position of someone who is trained in the humanities, my work yet aims at entering into dialogue with a nomothetically oriented audience (e.g. CSR scholars, cognitive psychologists and cognitive autism researchers). I have for instance made an effort to translate my work into terms that are recognized in the cognitive sciences, and have striven towards clarifying the hermeneutical process to make it comprehensible to an audience that is mainly familiar with quantifiable methods.

Another dividing line concerns the difference between *generating* and *testing* hypotheses. In line with Sven Bölte (2014), I hold that the qualitative generation of hypotheses is a constructive step *before* quantitative testing takes place:

> Qualitative research helps to ask the right questions, derive hypotheses, and can enable a deeper understanding of certain processes in humans. Quantitative research should test hypotheses, and enable the generalizability of findings to larger populations. For both, standards must be high for reliability and validity. (Bölte, 2014, 67)

In my building of such hypotheses, interviews are complemented quantitative material from carefully matched groups, in line with the norms agreed upon by the psychological sciences (although rarely used in idiographic studies). This design
both provides an opportunity to highlight contrasts between groups and to detect specific qualities in the studied groups (see Kline, 2009). The results have been published in journals primarily targeting a nomothetically oriented audience, even though the subject is also approached from a humanities point of view.

During this process, I have gradually learned how to translate my work into a new language, while simultaneously providing perspectives on autistic and religious cognition that are tinted by my humanities ‘glasses’. In the end, some researchers may fail to see what kind of contributions such an interdisciplinary approach may bring about. However, my experience from this project is that the combination of various methods, theories and outlooks has given me a deeper and broader outlook on the topics studied, and I like to think of this thesis as a window through which diverse types of knowledge can be viewed simultaneously. Independent of fields, scholars strive towards valid results and conclusions. Cross-fertilizing our research with valuable insights from different – and differing – perspectives, thus means a possibility to improve our work.
5. Aims

The primary aim of this thesis was to explore cognitive aspects of religion and spirituality in a sample of high functioning individuals on the autism spectrum. More specifically, my work aimed to: (a) formulate hypotheses about religious cognition that connect to social and embodied aspects of autism, (b) complement previous quantitative generalizations through first-person narratives from within the autism spectrum, (c) provide a critical and constructive discussion about theoretical and methodological approaches within the CSR and cognitive autism research, and (d) develop an interdisciplinary and multilevel research process by using insights from idiographic and nomothetic fields of research. These overarching aims were specified in each publication, as defined below.

The aims of Publication I were to: (1) distinguish how the participants form relationships with supernatural agents, and (2) compare these to social relations with peers to shed light on cognitive specifics regarding the social difficulties that autistic individuals experience.

The aims of Publication II were to: (1) examine how the participants had come to understand unusual somatosensory experiences, such as sensing invisible presence, seeing visions, or hearing voices in supernatural terms, and (2) to investigate whether autistic individuals differ from the matched, non-autistic participants in the prevalence of such experiences.

The aims of Publication III were to: (1) advance the understanding of autistic imagination from a cognitive point of view, and (2) explore the psychological function of parasocial relations and cognitive characteristics of intrasubjective worlds.

The aims of Publication IV were to: (1) promote a critical discussion about how methodological and terminological approaches impact results when studying populations with atypical, cognitive processing, and (2) provide suggestions of how research designs can be adapted to achieve valid results.
6. Method

6.1 Introducing the protagonists

To give the reader a more specific idea of the 17 young adults who are the main characters in this thesis, I here provide an overview of how they describe their various views of life. However, this depiction is limited by the ethical requirement of anonymity, and it should be mentioned that I am the only one who knows what people are included in the final sample.1 These participants have chosen their own code names, which are used throughout the thesis.

The autism group consists of 12 males and 5 females; a composition that approximates the estimated male-to-female ratio of 3-to-1 (Loomes, Hull & Mandy, 2017). I also included a number of participants from families with immigrant backgrounds, as Sweden paradoxically comes across as both one of the most secular and the most multi-religious countries in the world (Sorgenfrei, 2019). However, quite few pupils from immigrant backgrounds were enrolled in the special educational schools I visited, which of course reflects the fact that they are a national minority population. It may, however, also be an indication that fewer immigrated families enrol their children in such schools. Being unable to find any studies confirming this observation, this remains an anecdotal report.

Table 1 presents the participants’ chosen code names, their personal labelling of views of life, and examples of supernatural and parasocial others that they describe as significant. My intention here is not to reduce ‘religion’ to only mean such relations, but to reflect significant aspects of the material that connect to the research questions.

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1 Before arriving at the decision to only include material from participants describing themselves as ‘religious’ or ‘spiritual (see section 6.2.1), I had several meetings with 26 autistic individuals in three different schools.
TABLE 1: Overview of autistic participants

<table>
<thead>
<tr>
<th>Code name</th>
<th>Orientation</th>
<th>Invisible/supernatural relations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mina</td>
<td>Christian</td>
<td>God, Jesus, Christian saints</td>
</tr>
<tr>
<td>Annie</td>
<td>Phil. orientation, agnostic</td>
<td>Jesus (in childhood), fantasy characters</td>
</tr>
<tr>
<td>Boyan</td>
<td>Muslim</td>
<td>Allah, ghosts, deceased kindreds, spirits</td>
</tr>
<tr>
<td>Bilal</td>
<td>Muslim</td>
<td>Allah</td>
</tr>
<tr>
<td>John</td>
<td>Spiritual Christian</td>
<td>God</td>
</tr>
<tr>
<td>Simon</td>
<td>Christian</td>
<td>God</td>
</tr>
<tr>
<td>Adilz</td>
<td>Philosophical orientation</td>
<td>Fantasy characters</td>
</tr>
<tr>
<td>Erik</td>
<td>Christian</td>
<td>God</td>
</tr>
<tr>
<td>Frank</td>
<td>Spiritual</td>
<td>Invisible presences, fantasy characters</td>
</tr>
<tr>
<td>David</td>
<td>Christian, spiritual</td>
<td>God, spirits, Pallas Athena.</td>
</tr>
<tr>
<td>Andrew</td>
<td>Christian</td>
<td>God, literary characters</td>
</tr>
<tr>
<td>Catzzy</td>
<td>Spiritual</td>
<td>Deceased kindreds, animated characters</td>
</tr>
<tr>
<td>Anastazia</td>
<td>Christian, spiritual</td>
<td>God, deceased kindreds, spirits</td>
</tr>
<tr>
<td>Leonardo</td>
<td>Philosophical orientation</td>
<td>Fantasy characters</td>
</tr>
<tr>
<td>Elise</td>
<td>Satanist</td>
<td>Satan, demons</td>
</tr>
<tr>
<td>Edgar</td>
<td>Christian</td>
<td>God, ghosts/spirits</td>
</tr>
<tr>
<td>Gustav</td>
<td>Spiritual, Buddhist</td>
<td>God, Buddha, spirits, demons</td>
</tr>
</tbody>
</table>

Five of the participants grew up in families that actively embraced religious practice and two participants had officially converted to Islam and Christianity on their own initiative. The majority of the participants were raised in secularized families and many described that their views of life involved ideas from various traditions (e.g. embracing Buddhist or Christian ideas while also stating that there are spirits or demons in the world). Half of the sample described supernatural notions that their family members do not share, sometimes secretly to avoid disapproval. There were also those who recognized their own beliefs or ‘abilities’ (a frequently used term to denote sensitivity for supernatural agency) in a parent or grandparent, even though their families had no formal undertakings relating to these.

When asked if they had ever sought out groups of like-minded people, most of them responded that it was unlikely that any community would accept their eclectic views of life, or that they were afraid of being forced into accepting doctrines and ideas that they did not want to embrace. This can be understood both in terms of the Swedish ‘smorgasbord principle’ of highly individualistic world views, combined with the common autistic nonconformity to standards created by others. Similar to Rachel Brezis’ (2012) findings from a case study on autistic, Israeli youths, Dubin and Graetz (2006) also note that their autistic, American participants tend to pick and choose between idiosyncratic supernatural ideas and practises. Only two people...
in the sample presented here were actively involved in congregational activities. The majority were thus disinterested in positioning themselves in clear categories and three of them fit what David Carlsson (2015) terms hybrid-believers: describing themselves as agnostic, while simultaneously acknowledging supernatural concepts such as ghosts, spirits or angels (see also Day, 2013; Burén, 2015). Such interest in religious, spiritual and existential ideas is here labelled ‘philosophical orientation’.

The composition seen in this sample seems to be consistent with previous research on Swedish teenagers. Olov Dahlin (2015) found for instance found in an interview study that many of his participants expressed beliefs in spirits and ghosts and that these seemed to be influenced by popular culture. Also, Ulf Sjödin (2002) found in a quantitative study on young Swedes that supernatural beliefs rarely related to traditional religiosity:

The results of our survey show a low interest in institutionalised religion among Swedes, but they still continue to uphold essentially religious values, like belief in an afterlife and belief in a supernatural power, but these beliefs are not considered to be associated with inherited religious dogmas and they are combined with a belief in the paranormal. (84)

Terhi Utriainen (2016) similarly found in a Finland study (which is comparable to the Swedish setting) that females used Goddess religion to re-enchant and complement Lutheran Christianity, which they thought was too secularized: “Thus, in subtle yet intriguing ways they re-enchant both the “secular” and to some degree also the “religious.” (141) Although Utriainen’s participants are somewhat older, the same pattern is found throughout the material that this thesis is based on.

In conclusion, the sample studied comes through as representative of attitudes found among young Swedes: few are traditionally religious, while the majority can be described as ‘post-secular’ in rejecting Lutheran Christianity while simultaneously embracing other supernatural concepts (Thurfjell, 2015).

6.1.1 The comparison group

The composition of the comparison group is of importance for the validity of the quantitative results. I visited classes of non-autistic pupils at the same three schools from which the autistic participants had been recruited to present my project and objectives. Amongst those who agreed to complete the Views of life-questionnaire and the Brief RCOPE scale, I recruited a sample of 17 persons that as far as possible matched the autism group (see 6.4.1). The results from the AQ-scale were moreover used to assess that none of them had a typical autistic profile.

The comparison group consists of 11 males and 6 females aged between 16–21 years of age. In both groups, one male participant is insecure about his actual gender identity. As in the autism group, their real identities have been protected by code names.
During the process of matching the groups, organized religiosity such as Islam and Christianity was collapsed into one category. Five participants labelled themselves as Christian and six as Muslim (out of which one previously considered herself a Christian). There were thus some more Muslims in this group, which indicates that they may have grown up in immigrated families, given that Islam is a minority religion in Sweden. One participant used the rather unusual label ‘Aesir believer’ and was matched to the autistic participant labelling herself as ‘Satanist’. Four of them reported being ‘seekers’ or ‘spiritual’, which I interpreted as beliefs and experiences that fall outside non-organized religiosity. I also included two people to match the autistic participants whose views of life are of philosophical character.

As these participants did not take part in the interviews, I have no detailed information about what kind of invisible relations they engaged in (beyond labels such as Christian that indicate that God and Jesus are relevant), or to what extent. Therefore, the third column in Table 1 is removed from Table 2. I neither have any knowledge about any current religious activity in their families. However, the matching was made as detailed as possible according to age, gender and views of life as reported in the questionnaires.
6.2 Bracketed ethnography

Russell McCutcheon (1999) poses the critical question of how we, as scholars of religion, can access and capture the experiences of others. The challenge, he argues, “is to develop tools that will allow researchers to enter into the experience and meanings of others, to access private moments of human perception, thereby enabling one to bridge the gulf between subject and object.” (3) One such tool that proved to be valuable during this project is the act of bracketing (see section 2.1.1). Here, I describe the rather time-consuming, but worthwhile, ‘bracketed’ ethnographic approach that I used to recruit autistic participants, gain their trust and set my own values aside in order to access their personal perspectives.

Initially, I set out to find a strategic sample of autistic participants who described themselves as either religious or spiritual and who wanted to share their narratives with me. As I had many years of teaching experience teaching from a special educational department, I knew that I had to find a setting in which the participants would both feel safe and which did not require of them to travel between places and thereby causing them stress – which would both be unethical and increase the risk of losing participants along the way. I therefore decided to recruit participants from special-educational schools attended by autistic individuals, as these provide routines, rooms for meetings and professional staff (e.g. nurses and counsellors with requirements for professional secrecy) available in case sensitive or distressing topics would arise. In hindsight, no such incidents occurred.

At the three schools identified as suitable, I soon felt comfortable around the pupils and I was often treated as a colleague by the teachers (who learnt that I too was a teacher). They also helped by inviting me to present the project in their classrooms, suggested pupils who might be interested, gave me access to spare rooms, and allowed me to come and go as I wished.

In order to make the research procedure as non-invasive as possible, I aimed to ‘bracket’ myself as far as possible and pursue the project on the terms of the people I was studying. Being aware that it may take time to acquire the confidence of autistic individuals, both as a result of their mindreading difficulties, and because far too many of them have experienced being harassed and misunderstood by peers and teachers alike, I began by visiting the schools on a regular basis during four months to allow for the pupils to gradually get to know me better and find out more about the project.

During this period, I also visited lessons in order to describe my project and tell the pupils that I was looking for participants. After each presentation, I sat close to the teacher to allow for the pupils to study me and thereby become acquainted with my presence. It is common for autistic individuals to have prosopagnosia (‘face blindness’), meaning that they have to memorize faces analytically, feature-by-feature (Van Belle et al., 2010), which takes both time and effort. Autistic individuals also often use their peripheral vision (Williams, 1999; Wintour, 2014),
rather than looking straight at people, and I noticed how many pupils glanced at me from the side. Initially I was careful not to be obtrusive and make anyone feel pressured to participate, but gradually realized that I needed to approach the pupils directly since autistic individuals may be hesitant about taking such an initiative themselves. Eventually, 17 participants volunteered to take part in the study.

The coding of names turned out to be a transformative act. The reason for doing this was solely ethical, but I was surprised to see how enthusiastic the participants were when asked to choose a new and secret nickname. When they signed the form of consent, I emphasized my obligation to never disclose their participation in the project. As it turned out, the secret name, the promise of a safe space and their assigned role as autistic experts appears to have created a trustful alliance and rapport. We also met three times before the interviews to fill in questionnaires, and gradually the participants opened up to share their life stories.

It is not uncommon for anthropological and ethnographic researchers to become involved with the people they spend a lot of time with. The expression ‘going native’ describes researchers who lose their objectivity and take sides with the group they study. However, I think that when learning about people’s lives, you have to be willing and dare to come close and allow yourself to be moved. McCutcheon similarly argues that empathy is an essential tool to gain a “deep understanding of the actors’ intentions and meanings – literally sharing their feelings and emotions” (1999, 3). There have been moments of both laughter and tears along the way. However, once back at my desk I have tried to take a step back and switch on my professional self in order to do the narratives justice both theoretically and analytically. The research process thus balances between closeness and distance, and moves between understanding and explanation.

6.2.1 The process of arranging meetings and gathering data
Gathering data from autistic individuals over a longer period of time (2014-2017) requires much planning. Travelling to three different schools, presenting myself to pupils in classrooms and spending casual time with them at breaks and over lunch added significant time to the process. Therefore, my initial plan that involved four meetings each with 80 participants (20 autistic/religious, 20 autistic/non-religious, 20 non-autistic/religious and 20 non-autistic/non-religious) from three different schools had to be adjusted. Eventually, I retained quantitative data from 17 autistic and 17 non-autistic participants who all defined themselves as religious and/or spiritual, and limited the interviews to include only the autism group.
TABLE 3: Number of meetings and type of data gathered

<table>
<thead>
<tr>
<th>Meeting 1</th>
<th>Views of life-questionnaire, Brief RCOPE (religious coping scale), State-trait anxiety inventory (STAI-T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meeting 2</td>
<td>Sensory quadrants, Interpersonal reactivity index (IRI), Autism quotient test (AQ)</td>
</tr>
<tr>
<td>Meeting 3</td>
<td>Raven matrices, Verbal test, Ice cream-van false belief test</td>
</tr>
<tr>
<td>Meeting 4</td>
<td>Photographic life story interview (only autistic participants)</td>
</tr>
</tbody>
</table>

Attempting to make the process less exhausting and allow for the autistic participants to focus on the task of responding to the items, I supported most of them with either writing or reading. I also received help from a group of students of the study of religions at Södertörn University to collect some of the data from the comparison group. They were carefully instructed in the process to make sure that the gathering of data was performed similarly by everyone.

Many autistic individuals struggle with their awareness of time, and I therefore sent out reminders of our scheduled meetings one day ahead, and then again one hour before the meeting. Despite this, some participants forgot that I was coming and left school before I arrived, which meant that we had to reschedule the meeting. The autistic participants also required more time to complete the scales than the non-autistic participants, primarily because they were careful about arriving at correct responses and therefore wanted to discuss items that they found to be ambiguous.

At the beginning of a term, many of the participants were fully occupied in adapting to their new schedules and routines and by the end of the term some were too tired for extracurricular activities. I therefore arranged for most of the appointments to take place between these stressful periods. There were also periods when some participants suffered from stress, ill health, sleeping problems, or grief after losing a beloved pet. We then halted their participation until they felt able to resume. This naturally delayed the gathering of material, but it was still crucial not to push forward too soon for ethical reasons. One early participant asked to terminate his participation due to time constraints, and another was forbidden by her family to participate because they did not understand why I was seeking information about their religion. In all cases, I adapted to the special needs of each
individual, rather than expecting them to adjust to me, which I believe contributed to the fact that the remaining participants stayed throughout the study.²

A rather surprising discovery was how eager many participants were to schedule the next meeting, and I was asked if I ran more studies in which they could participate. Some participants also prolonged the meetings by discussing existential issues and personal matters and I was happy to extend the time to return their generosity and gain further insights into their lives. After the final meeting, many expressed that participation had been interesting and a rare opportunity to process their views of life. One way of understanding this commitment is that their roles as narrating subjects transformed the common medicalized objectification of autistic individuals.

Looking back, these hundreds of hours have been of immense value. Gaining the trust and rapport of the participants made them open up, especially when they understood that I was genuinely interested and did not judge their views of life. I also gained valuable insights from casual conversations with other autistic pupils who engaged in discussions with me. After arriving at the hypotheses described in the attached publications, I also took the opportunity to check whether these seemed plausible from their autistic point of view. Such verifications have strengthened my confidence that the conclusions in this dissertation are of substance.

6.3 A visual life-story interview

When gathering data for my master thesis (Visuri, 2012), I was concerned that my participants might feel objectified. I therefore set out to find a non-invasive way to conduct interviews, which was how I came to design a so-called visual life story interview. Despite being commonly used in anthropology and sociology (Pink, 2007), visual methods are rarely used in the study of religions (Uehlinger, 2015). However, Sarah Dunlop (2012) argues that such methods are well suited for studying religious concepts as they encourage participants to provide their own personal meaning and interpretation of events that otherwise may be difficult to express in words.

I also saw an opportunity to reverse the traditional roles of the interviewer/subject and the interviewee/object, especially as I am non-autistic. Therefore, I instructed my participants to prepare their own interviews:

In short, you will take part in an interview about your religiosity. Before the interview, you need to make some preparations. You will be given a disposable camera and a notebook. Keep these close, for instance in your bag, so you have the camera at

² Elise is the only one in the autistic sample who did not fulfil her participation due to personal reasons. However, she took part in a one hour long first meeting and provided rich narratives of her view of life and extraordinary experiences that she had in her daily life, which were interpreted in supernatural terms. I therefore kept her as part of the sample, despite the fact that she was not interviewed.
hand if a suitable situation arises. You are going to take photos that illustrate religion in your life, defined broadly. (Extract from written instruction)

I clarified that about 15 photographs would suffice and that the term ‘religion’ meant their view of life as discussed during our initial meetings. The participants also got a list of possible themes (alphabetically ordered in Swedish; here translated as they were listed in the table) to illustrate how many various aspects could be of significance.

TABLE 3: List of possible themes for guidance in the preparation of interviews

<table>
<thead>
<tr>
<th>Supernatural experiences</th>
<th>Sounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Images</td>
<td>Foods</td>
</tr>
<tr>
<td>Ethics</td>
<td>Music</td>
</tr>
<tr>
<td>Existential questions</td>
<td>People</td>
</tr>
<tr>
<td>Colours</td>
<td>Places &amp; buildings</td>
</tr>
<tr>
<td>Objects</td>
<td>Rituals</td>
</tr>
<tr>
<td>Community</td>
<td>Jewellery</td>
</tr>
<tr>
<td>Festivities</td>
<td>Traditions</td>
</tr>
<tr>
<td>Clothes</td>
<td>Faith</td>
</tr>
</tbody>
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The idea of handing out notebooks was provided by Mats Holmberg, an experienced photographer who is also diagnosed on the autism spectrum. He suggested that brief notes could serve as mnemonic support, such as describing why the photograph was taken and how they felt at the moment; a recommendation that also turned out to be valuable if a photo was too dark or was difficult to discern.

A few of the participants worried that they would bring the ‘wrong’ kind of photos, but I reassured them that there was no right or wrong result in this task and that each participant was an expert in that the interviews concerned their own views of life. This was sufficient for them to continue with their preparations. A few participants also decided to skip the camera and only took notes, while some used their own smartphones or laptops to illustrate relevant topics.

When a participant had completed the task, we settled on a date for the interview. I developed the photos from the disposable cameras, and in other cases the participants would bring their own preparatory material. When the participant arrived, s/he was instructed to arrange the photos/notes/images on the table. When indicating to be ready, I started the recording device and initiated the interview by asking what topic or photo the participant wanted to describe first. The participant was thereafter in charge of the interview structure.
6.3.1 Why visual material is useful in autism research

In line with my own experience, Kim Rasmussen (2011) notes that visual, ethnographic methods can be used to transform the hierarchy between the interviewee – who now becomes the expert setting the agenda – and the researcher – who is listening and learning. I argue that such an inversion is especially significant when studying a population that rarely is heard in research, of both ethical and professional reasons: when studying atypical cognition, non-autistic scholars need to acknowledge the fact that atypical views and reactions may differ from our own, which in turn affects the validity of our results (see discussion in Publication IV).

There are also methodological advantages specifically related to autistic individuals, who are commonly distressed by difficulties predicting what will occur in a specific situation. In typical research settings, they may therefore become uncertain about whether they are behaving and performing appropriately or not. However, being put in charge of the interview procedure makes the process more predictable and ensures that it is structured according to their own preferences.

Visual ethnographer Sarah Pink (2011) also argues that images invite the researcher to participate in the events being described and adds that pictures ‘extend’ time and space. This indeed made the participants’ narratives more vivid to me, and at times I felt as though if I was present in the situations they described. Pink argues that such an experience strengthens the researcher’s understanding of what the participants describe: “It is the difference between mapping from above and being in and moving through the world.” (437–438).

Jon Prosser (2007) similarly points to the benefit of slowing things down and creating an opportunity to reflect on things that are otherwise invisible and taken for granted. In Collier and Collier’s (1986) words, photos can also be described as “communicative bridges”. This is illustrated in Rasmussen’s (2011) description of project in which children and adults with developmental disabilities became more communicative when their own photos were used (Rasmussen & Foss, 1998). Visual imagery thus supports the verbal ability of participants with special needs and helps them express what is relevant in their lives.

Christoph Uehlinger (2015) adds argues that visual methods are useful for grasping intrinsic meaning of material, religious objects. The visual material indeed reflected both material and sensory aspects of religiosity. The photos in Figure 2 are illustrative: in the contact sheet with miniature photos, there are clash cymbals, religious images, a book of hymns, a cloth that is assumed to have an imprint of Jesus’ face, a photo of a cuddly lion cub and a pot for burning incense. The other picture illustrates stones that one participant got during a religious festivity and which are used to relieve stress when caressed against the cheek. While material religion is not discussed in detail in this thesis, such sensorial aspects are yet interesting when considering autistic processing of stimuli (see section 3.2.1).
It is also widely acknowledged that many autistic individuals are ‘visual thinkers’. Judy Endow (2016), for instance, describes how linguistic cues trigger her to search for mental images:

I think in colors. My thinking colors have sound and movement. When I hear spoken words my neurology automatically goes for the match – a match for the words I hear to a familiar concrete picture of something in the world outside my skin or to an internal picture I have stored in my memory.

Temple Grandin similarly illustrates how images are central to her thinking: “My mind is similar to an Internet search engine that searches for photographs. I use language to narrate the photo-realistic pictures that pop up in my imagination” (2009, 1437). In other words, imagery-based and participatory research methods appear to be especially suitable for qualitative autism research.

6.3.2 Interpretative phenomenological analysis

Interpretative phenomenological analysis is a formalized method for thematising qualitative interviews step-by-step, in order to make the process more comprehensible to an audience trained in quantitative methodology. Jonathan Smith (2004) describes it as an idiographic, inductive and interrogative method that aims at capturing rich and thick descriptions of lived experiences. The ‘phenomenological’ approach involves the researcher’s attempt to make sense of such experiences; termed double hermeneutics: “The participant is trying to make sense of their personal and social world; the researcher is trying to make sense of the participant trying to make sense of their personal and social world.” (40). Pietkiewicz and Smith (2012) moreover argues that IPA is well suited for qualitative study of cognitive, mental processes by accessing and analyzing subjective experience:
IPA researchers attempt to understand what it is like to stand in the shoes of the participant (although recognising this is never completely possible) and through interpretative activity make meaning comprehensible by translating it (362).

The first step involved transcription of recorded interviews verbatim (i.e. literally). All names of persons and places are feigned and de-identified to prevent recognition of the participants and the people they describe. In the publications of thesis, vernacular language, odd grammar, humming and stuttering was edited to enhance readability, but was retained in the original transcription of the interviews. Pauses in the speech were illustrated by three dots (...) and full stops and commas were inserted to illustrate clauses and subclauses. Movements and sounds that are central to understand the tone of the oral narrative were written within square brackets (i.e. [laughing]).

This was followed by a close reading of the transcribed material, in which emerging themes and subthemes were identified and arranged into a preliminary table (e.g. religious relations, prayers and communication, dealing with fear, life after death). Some of these were collapsed into new themes (e.g. visualization + somatosensory experience + mystical events were joint under the new headline agency detection; see Publication II). Other themes were split up under new headlines (the theme spirits was for instance sorted under both agency detection + invisible communication). Eventually, a final master table with saturated themes that re-occurred throughout the material was completed. Many, but not all, of these themes were used in the publications in this thesis.

IPA is moreover a dialectic process in which the researcher moves between an abductive search for relevant topics and inductive attention to unexpected themes that surface from the interviews. The process thus moves from detailed accounts towards a conceptual level, similar to a grounded theory approach (see Bryant and Charmaz, 2007, 15). In contrast to hypothesis testing, in which hypotheses are formulated beforehand, a qualitative researcher may need to be renegotiate focus along the way; such as if participants appear disinterested in discussing issues that the researcher expected to be relevant. While IPA is formalized to give an overview of how qualitative coding is performed, most researchers collecting qualitative material through interviews likely recognize it as an ordinary research procedure for analyzing data.

6.4 Quantitative measures

There were two reasons for including quantitative measures in this study. First, I wanted to find suitable participants for the study. Second, as scales enable comparisons between groups, they would allow me to draw conclusions on possible differences between the autistic and non-autistic participants. It should to be re-emphasized that this project aims to developing hypotheses from the material, which
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is a different process to that of researchers testing pre-defined hypotheses in order to generalize the results to a whole population.

6.4.1 Tools for selecting and comparing participants

The recruitment process was designed to identify individuals with a formal autism diagnosis (Asperger’s syndrome/HFA) who also described themselves religious and/or spiritual. In order to facilitate conclusions about how religious cognition is formed in autism, I had to find an equivalent number of matched individuals without autism, to allow for comparisons between the groups (see section 6.1.1).

In the initial formation of the autistic sample, about 25 individuals filled in two questionnaires to validate whether they actively displayed beliefs or behaviour that are clearly related to supernatural agency (e.g. prayers, visits to sacred places, use of magical objects, experiences that were deemed as supernatural). I refer to the first of these as Views of life. It is modelled upon a larger sociological study ('Enköpings-studien'; Ahlstrand and Gunner, 2008), which in turn is a Swedish replication of the British 'Kendall project' (Heelas & Woodhead, 2004). The items are thus well validated, also in a Swedish context. To limit the workload of the participants, only the most relevant sub-scales were included: (1) how to live a good life, (2) theistic beliefs, (3) what happens after death, (4) teleological meaning-making, (5) religious/supernatural experience; (6) religious identity, (7) religious practice; (8) congregational membership, and (9) religious rites of passage. The questionnaire has a dimensional approach and makes use of both graded scales and binary either/or questions.

The Brief RCOPE measure of religious coping (Pargament, Feuille & Burdzy, 2011) provided further information about the role of religion/spirituality in the participants’ lives. This scale consists of 14 items designed to assess emotional and behavioral aspects of how one deals with crisis, such as seeking God’s love, trying to solve the problem with the help of God, or feeling abandoned or punished. These two self-reports set the preliminary frame for whom to include in the study. While the participants were filling in these scales, I seized the opportunity to discuss their responses to identify the extent to which supernatural frameworks were present in their everyday lives. The sampling procedure was in other words qualitative, rather than quantitative.

In the following phase, non-autistic participants were recruited from typically composed classes in the same schools. These participants were also asked to complete the Views of life-questionnaire and the Brief RCOPE-scale. To ensure that none of these had clear autistic traits, all participants filled out the AQ-test. The scale consists of 50 statements in forced choice format ("definitely agree", "slightly agree", "slightly disagree" or "definitely disagree") and is designed to measure autistic traits in adults (i.e. sociability, repetitive behaviour, attention to detail and imagination). While some scholars have cautioned against use of this scale for characterizing autistic samples (e.g. McGrath, 2017; Ruzich et al, 2015), it was here used to
assess autistic traits in the non-autistic sample to validate that the groups were dissimilar. One of these participants scored rather high on the AQ-test and was therefore removed. The remaining individuals were matched according to age, gender and religious orientation, and 17 of them fulfilled their participation.

All participants also took part in two intelligence tests that were included to confirm that the autistic participants were on the high functioning end of the autism spectrum, and that the comparisons had equal cognitive capacities. The first was a simple yet standard verbal comprehension task to confirm that participants had adequate verbal ability. The participants were given one minute to name as many words beginning with a specific letter as possible, and results indicated no significant differences between the groups.

To measure general intelligence, a reduced scale of nine items3 (Bilker et al., 2012) from the Raven Advanced Progressive Matrices (Raven, 1981) was used. This test is designed to measure so-called fluid intelligence, which reflects a person’s abstract, non-verbal problem-solving skills. The Raven Matrix is recommended in research involving autistic participants, because it does not involve linguistic cues that need to be interpreted (Soulières, Dawson, Gernsbacher & Mottron, 2011). The reduced scale was used in order not to exhaust the participants. The results from the Raven test ($M=5.6$ in the autism group, $M=5.0$ in comparison group) and the verbal test ($M=39.7$ in autism group, $M=39.8$ in the comparison group) are equivalent between the groups.

As this study is explorative, rather than hypothesis-driven, a broad variety of measurements were used to capture possible differences between the two groups. Four of the subscales yielded results that contributed to answering the research questions.4 The first of these is the subscale on religious experiences from the Views on life-questionnaire. The results are discussed in Publication II.

Two subscales from the Interpersonal Reactivity Index (IRI) (Davis, 1983) were also put to use. The IRI is a multidimensional empathy designed to measure perspective taking, fantasy, empathic concern and personal distress, and the results were used in the discussion about the role of affective empathy and fantasy/absorption (see Publication I). This commonly used scale consists of 28 items

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3 The items included from the original 60-item Raven matrices are 11, 24, 28, 36, 43, 48, 49, 53 and 55. Bilker et al (2012) note that the psychometric properties of the reduced scales are comparable with the full-length test and perform well in correlation with the full test.

4 The results of a number of measurements have not been utilized in the publications, either because they did not contribute useful data for answering the research questions, or because the results were difficult to interpret. These are: (1) the State-Trait Anxiety Inventory (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983), which is commonly used to measure current symptoms of distress and anxiety, (2) The Sensory quadrants (Dunn, 2001), which is a well validated test used to measure behaviour related to sensory perception and behaviour (sensation sensitivity, sensation avoiding, low registration, sensation seeking) and (3) the false-belief story, The Ice-cream van (Wimmer & Perner, 1985), which measures the ability for 1st and 2nd order theory of mind. Notably, none of the autistic participants failed on the 1st order question, while two in the comparison group provided faulty responses. They also performed better on the 2nd order question, in which only three autistic participants failed, as compared to six of the non-autistic participants.
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arranged on a Likert scale and has good reliability and validity. The subscale on empathic concern was used in the discussion about affective empathy in Publication I, and the subscale on fantasy/absorption was used to highlight similarities between the groups in Publication III. This publication also utilizes the imagination subscale from the AQ-test.

6.4.2 Triangulation of data

Triangulation means that various methods are put in dialogue. There are two types of triangulation: triangulation of data means that various material is used to highlight various aspects of the study, and triangulation of methods which means that different methods are used to point to a similar result. Mertens and Hesse-Biber (2012) argue that the latter may lead to problems in validity conversion, because it draws on differing epistemological starting points. However, this thesis draws on triangulation of data and thus sidesteps such problems.

In a pragmatic sense, this means that the data from interviews, questionnaires and psychometric tests were used to highlight different aspects of cognition and religiosity in the autism group. In Publication I, the results from the empathic concern subscale in the IRI were used to compare the groups. In Publication II, the results from the supernatural experiences subscale in the Views of life-questionnaire were used to highlight the frequency of such experiences. In Publication III, the results from the subscales on imagination and fantasy from the IRI and AQ-test were used in the discussion about imaginary competencies.

6.5 Ethical considerations

A research project that explores religiosity in young adults in a diagnostic community requires special ethical consideration. The study was formally approved by the Swedish Ethical Review Board and followed the central guidelines for good research practice (The Swedish Research Council, 2011) that aim at protecting the individuals involved in research.

The first requirement is that participants must provide written consent to participating in the study, and the individuals in this study were qualified to provide their own approval as they were above 16 years of age. However, this requires that they are fully informed about the aims and procedures involved. Since some autistic individuals struggle to digest long pieces of text, the full project description (background, information about the researcher, meetings, presentation of results and data privacy) was complemented by a brief summary with images illustrating the research process (translated to English in Figure 3). When filling in the consent form, each participant also chose a personal code name and were told that their real names would not be revealed, and that they were free to terminate their participation at any time without giving reasons.
Step 1: All participants fill in a number of questionnaires in school. Time required: approx. 2 hours.

Step 2: A number of participants will also be interviewed. The interview is conducted in school or any other place which one prefers. Time required: approx. 1.5 hours + 2 hours of preparations.

Step 3: After analysing the material, the results will be presented in four articles that are published in scientific journals.

FIGURE 3: The brief hand-out summary of the research process

A second criterion concerns the potential of the study to contribute new and valuable knowledge. This thesis complements previous research on religious cognition in autism by involving the participants as collaborators, and the empirical material adds new perspectives that challenge previous assumptions on the inability to form invisible relations (see Publications I and II). Another contribution concerns the discussion about imagination, which challenges previous assumptions that such abilities generally are inhibited in autistic individuals (see Publication III). The study thus fulfils this criterion by adding new findings, and by highlighting individuals in an underrepresented group as active subjects. A complementary ethical consideration concerns the research design, which was adapted to autistic prerequisites to make the research experience as positive as possible and to avoid any negative effect on the participants’ school attendance (e.g. becoming exhausted; see section 6.2).

A final ethical requirement concerns the storage and treatment of data. In addition to using code names in the files of my personal computer, to prevent the real names of the participants being revealed, I stored the forms of consent and the raw quantitative data from the scales (which were filled in on paper forms) and contact sheets from the photographic life stories in a safe at the university. The latter were kept for mnemonic support, while the participants got to keep the rest of the photos. In the publications, details (e.g. names of places and people) that could lead to someone being identified were omitted. All these arrangements were made to protect the participants from any negative consequences of being involved in the project.
7. Results and discussion

7.1 Publication I: Rethinking autism, theism and atheism: Disembodied agents and imaginary realities

This first publication explores the topic that inspired the writing of this thesis: if social relations are so complicated, how is it that autistic individuals come to relate intimately to supernatural agents? The aims of the study were: (1) to distinguish how the participants form relationships with supernatural agents, and (2) compare these to social relations with peers to shed light on cognitive specifics regarding the social difficulties that autistic individuals experience. The research questions investigate what invisible agents they perceive as significant, how they recognize the mental states of these agents, and how interaction is described in comparison to human relations.

As already discussed (see section 2.3), CSR-scholars have expected autistic individuals to find it difficult (or even impossible) to imagine invisible minds, in that mental attributions of agency are challenged in relation to peers. During my years of teaching religious education to autistic teenagers, I could however not observe any differences in the views of life between classes with autistic and typically developed pupils that I was also teaching. Several of the autistic teenagers I knew also engaged in conspiracy theories, while some struggled with the magical thinking characterizing OCD\(^1\), which indicated detection of possible agency. I therefore decided to dig deeper into the various aspects related to mentalizing in autism to understand how autistic individuals come to mindread invisible minds that they experience as present. The strategic selection of autistic individuals who defined themselves as ‘religious’ and/or ‘spiritual’ provided an opportunity to explore this topic.

During the interviews, the participants describe a broad repertoire of various agents that they engage with, such as God/Allah, the Buddha, spirits, demons and angels, and – rather surprisingly – many also describe imaginary characters from popular culture in terms of spirituality. Catzzy, for instance, interacts with the goddess Noctural in the role-playing computer game *Elder Scrolls*, and comments that

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\(^1\) Individuals diagnosed with obsessive compulsive disorder (OCD) display “Recurrent and persistent thoughts, urges, or images that are experienced, at some time during the disturbance as intrusive and inappropriate, and that cause marked anxiety and distress” (APA, 2013). The behaviour triggered by such thoughts involve obsessive washing, undoing or ’jinxing’ actions, and repeated checking of things, and is underpinned by magical thinking (causal thinking that an action is related to an effect in the world). Such notions are also displayed in religious or spiritual communities (e.g. healing rituals and exorcism), as well as in secular rituals (e.g. ’knocking on wood’ and making wishes after blowing out the candles on a birthday cake).
“At least [I don’t believe in] ‘real’ gods or anything like that, but for me it’s more games and stuff I find in movies that are interesting.” As these relations are based on mindreading (i.e. reasoning about how someone would react in a certain situation), they are included in the analysis. The study thus also came to involve a discussion about the role of ‘imaginary realities’.

A first finding concerns the difference between relations with peers and invisible agents. Autistic individuals are not – as previously expected – characterized by difficulties in distinguishing the emotions of others, unless they have an additional diagnosis of alexithymia (‘emotional blindness’). Affective competencies were examined through the subscale of empathic concern in the IRI, and results revealed no significant difference when compared to the non-autistic group. Autism is however characterized by difficulties in cognitive empathy, which means that it is challenging to understand what others have in mind: “Autistic individuals may seem unempathic, but this is due to cognitive perspective taking rather than inability to perceive emotions” (Lockwood, Bird, Bridge & Vinding, 2013).

So, how are these aspects of empathy related to supernatural agency and human communication? Typically, non-autistic individuals do not display negative feelings if these are socially undesirable, and such masking of emotions (e.g. smiling while yet feeling annoyed) becomes confusing for an autistic person who is able to feel the emotions of others, but struggles to untangle how external behaviour reflects inner states. However, gods, spirits and ghosts have no bodily expressions that contradict their perceived mental states. Individuals are also free to project whatever state of mind they perceive as likely upon such agents. Put differently: if the minds of peers are opaque to autistic individuals, supernatural relations seem to be more transparent. As noted by Tanya Luhrmann (2012):

Human interaction – real human interaction, with two people together in a room - is remarkably dense. We move, touch, gesture, mimic. The face alone is so complex that it’s forty-three muscles convey in combination as many as three thousand distinct expressions. [...] But God has no face. You cannot look him in the eye and judge that he hears you speak. He does not make the little phatic grunts we make to each other on the phone, to show we’re still listening. (72-73)

Catzzy indeed remarks that humans “wrinkle their noses that way and now he’s stretching that way so now it has to mean kind of a thousand different combinations”, which makes it difficult for her to understand what others think or want. She does, though, provide multiple suggestions as to how and why deceased kindreds, such as her great grandmother and a beloved dog, appear to make contact. Such stories reoccur throughout the material, and there are many descriptions on everyday mental interactions with invisible minds, such as Boyan who often seeks to ventilate difficulties with Allah: “I asked [Allah] for help when my grandmother was going through surgery. Can you help me? Monitor the surgeon and the scalpel, can you be present during the operation? And it all went well.”
Emotional information also comes through as central. Mina, for instance, describes how Jesus gives him ‘feelings’ of what to do or say, and John gradually came to interpret feelings of right and wrong in terms of communication with God. The first hypothesis in this study therefore suggests that mental representations of invisible minds require less effort, since they are bodiless and thereby require no synchronization between embodied and emotional input. As Frank notes, they also provide predictability: “they think the same way as me, anyway because I don’t know how anyone else thinks, so they all have sort of the same way of thinking, and then it’s much easier to imagine how they work. Because I control them.”

Another emerging theme concerns how interpretation of invisible minds is activated during difficulties. Anastazia, for instance, describes how her grandfather turns up to comfort her after his death, while Frank talks about how invisible companions kept him company during a depression. This finding highlights the possibility that supernatural beliefs actually can be motivated by so-called ‘mind-blindness’. Simon, for instance, argues that it is more relevant that God is reading his mind to help him grow as a person:

I mean, I think that for him [God] I don’t think it makes a difference what I do otherwise, but the important thing I suppose is the personal development I achieve, as I see it, which others also achieve, what you want by it, so that way it’s not really about understanding [God].

Based on these findings, it is suggested that bodiless relations may be activated to overcome social pain and that they – in contrast to peer relations – offer emotional coherence and relief from cognitive overload.

Enchantment also appears to be significant component in the narratives, as many participants describe magical worlds with exciting and predictable characters that they enjoyed thinking about. Anastazia, for example, talks about how the presence of spirits in her house triggers adrenaline and excitement, while Andrew describes how he really wants to be part of the adventures of Harry Potter and his friends at the Hogwarts School of Magic.

Looking more closely at the cognitive profiles of the participants, a majority of them appear to be fantasy prone. This means that they easily absorb into imaginary modes, such as daydreaming, reading literature or watching movies and experience these imaginary realms as realistic. It is argued in the second hypothesis that imaginary ‘realities’ are desirable for autistic individuals, and especially so if they are fantasy prone. It may even be the case that the sample consists of imaginative individuals because this draws them towards magical and supernatural frameworks – they simply wish for the world to be enchanted.

A final conclusion from the results is that the experiential dimension is of special importance. As discussed above, Sweden has been described as one of the most secular countries in the world (Thurfjell, 2015) and the majority of the participants
grew up in secularized families. Rather than being taught to attend to signs of supernatural intervention, they describe how they are guided towards supernatural ideas through feelings and odd occurrences. Gradually, these have been developed into ontological convictions of an invisible realm. In Luhrmann’s (2012) words, they seem to have developed a new theory of mind. Although most studies so far (see section 2.3) focused on what autistic individuals believe, it is here suggested that a shift of focus towards experience would be more fruitful. Notably, the convictions of these participants have grown out of a reflective process, in contrast to the naturalness hypothesis of religion that suggests that instant intuitions underpin beliefs.

In summary, the results contradict the hypothesis that the mindreading of bodiless agents would be challenging to autistic individuals. On the contrary, invisible interaction appears to be facilitated by predictability, emotional coherence and lack of confusing bodily cues. This study also suggests that various mindreading competencies are at play in supernatural attributions, and that these interact with experiences and reflections in the formation of supernatural beliefs.

7.2 Publication II: Sensory supernatural experiences in autism

This publication developed from the many narratives portraying sensory experiences that the participants understood in terms of invisible agency, such as sensing presence, seeing visions, or hearing voices, without any external input. The aims of the study were to explore how the participants had come to understand these experiences in supernatural terms and to compare the prevalence of such experiences with reports from the non-autistic group. In other words, the focus shifts from the mental concepts explored in Publication I to the role of embodied experience. The study however connects to Publication I by pursuing the examination of supernatural agency detection.

The first question in this work concerns the process of ascribing supernatural qualities to unusual experiences: How do the participants come to understand that superhuman agents are involved? This examination aligns with Ann Taves’ (2009) suggestion that religious experiences need to be explored bottom-up, in order to understand the process of ascribing supernatural qualities to events that others may interpret in secular terms:

If we want to understand how anything at all, including experience, becomes religious, we need to turn our attention to the processes whereby people sometimes ascribe the special characteristics to things that we (as scholars) associate with terms such as “religious,” “magical,” “mystical,” “spiritual,” et cetera. (8)

In other words, it is the labelling that sets supernatural experiences apart from everyday events.
The second question concerns the prevalence of unusual, somatosensory experiences in the autistic population in comparison to a matched non-autistic sample. Let us begin by examining the results from the interviews. As mentioned above, the study takes its point of departure in narratives that emerged from the interviews, in which 14 of the participants described at least one bodily experience which they attributed to an invisible agent. Nine of them had sensed the presence of an invisible body and there were also nine reports of visions. Five participants described feeling touch, three had heard sounds and one person had sensed someone’s odour, despite being alone. The majority of the participants described several different types of experiences, with seven reporting that these had re-occurred since childhood, such as David who said that he had eventually accepted that experiences of magic and spirituality are part of his everyday life: “I don’t know, sometimes things have been uncanny, like in the forest, and I really should have worked these through, but I have kind of accepted that this is a big part of my… life (smiles).”

His narrative of the event in the forest is illustrative of how embodied experiences become attributed to supernatural agents. David depicts an excursion with his school, during which he decided to walk back through the forest to the main building after a joint barbeque:

…when I turn by that bend and take another direction kind of straight down, then it kind of feels like something is towering up behind me, how it kind of stops and kind of feels… It kind of… moves behind me and it’s like something is standing behind me, staring. And I start moving slowly, and I feel how this huge thing is behind me, like towering up around me, I start walking faster and faster and run and then it’s like it’s not only one but several individuals approaching me from everywhere, and it’s like they are moving in a circle around me […] it was almost as if the spirits of the forest wanted to catch me … […] I kind of felt that, well I was attacked by something that was neither man nor animal.

He comments that this is one of the few times that he has felt that spirits have wanted to harm him. This illustrates a common process found throughout the material: (1) that there is an embodied experience that has no visible cause, (2) that this generates a question of why it has occurred, and (3) that the individual arrives at a supernatural description of who it was and what this invisible agent had in mind.

Another observation concerns the selection of agents: only one person out of 14 individuals attributes unusual experiences to God. This is Mina, who – in contrast to the others – describes yearning for physical evidence for his convictions. He is also one of the few who is actively involved in congregational activities, and his experiences can thus be compared to Tanya Luhrmann’s (2012) descriptions of how religiously active individuals learn (through practice) to pay attention to experiences. Mina’s portrayal of how he eventually experienced the presence of a Christian saint is illustrative:
And then suddenly when I visited this country, then it was this specific saint, he suddenly notices when I put my head on his coffin that is wrapped in cloth... then I heard him for the first time, and he blew in my face three times, the sign of the cross. [...] he was breathing like one, two, three and then it stopped. And then I felt like, then I said oh Lord, you listened to me and made my dream come true.

The cognitive process in this single case seems to be organized differently: (1) there is an expectation of somatic markers of invisible presence, (2) an experience occurs, and (3) this is interpreted in confirmatory terms. The other supernatural narratives appear to be based on initial surprises, which eventually turn into acceptance (and likely predictions) that such experiences may occur.

Although these narratives only concerned the autistic participants, there is also quantitative data from the comparison group. The items in the religious experience-subscale in the Views of life-questionnaire relate to organized religiosity (e.g. prayer responses, feeling that God is present in a consecrated building) and to experiences found outside traditional contexts (e.g. out of body-experience, paranormal prediction of the future). Comparing the results between the groups, the autistic participants had significantly more experiences (*p*=.008) and scored higher on all the items except ‘feeling that things are predestined’. The scores were especially high on items relating to embodied experiences, with 13 autistic participants responding that they had sensed the presence of a spirit, compared to three participants in the comparison group. In this group, there were no responses for ‘other supernatural experiences’, which nine in the autism group reported, and no out of body-experiences, which four of the autistic participants had experienced.

An interesting picture emerged when the qualitative and quantitative results were triangulated. First, the autism group described having many more supernatural experiences, and second, these appeared to occur spontaneously with input of stimuli and were in many cases frequent and had been present over a longer period of time. As no previous studies explore religious experiences in autism, I had to break down the concept to find out whether there were any previous descriptions of unusual sensory experiences within the autism spectrum.

The first clue came in an article on Tulpamancy, in which Samuel Veissiére (2016) describes how he coincidentally discovered the large proportion of autistic practitioners involved in the ritualized emanation of invisible companions that can be seen and heard outside the body. While the estimated prevalence of autistic individuals was recently raised to 2.5% (Kogan et al., 2018; Xu et al., 2019), Veissiére found that 25% in his sample were on the autism spectrum. Veissiére hypothesized that as many of these reported having invisible companions since childhood, such companions may be commonly experienced by autistic individuals. These results were later replicated by Isler (2017), who found that 28% of his sample of Tulpa-mancers were on the autism spectrum. Isler added that invisible companions perhaps are used to compensate for loneliness and social difficulties.
The prevalence of anomalous experiences among the autistic population was confirmed in a study by Milne, Dickinson and Smith (2017), who suggested that a majority of autistic individuals may have tactile, visual and auditory experiences that are not caused by external stimuli. Horder and colleagues (2014) similarly found a significant difference between their autistic and non-autistic samples. Ekblad and Oviedo (2017) accordingly found that reports of paranormal experiences were more frequent amongst their autistic participants when compared to a typically developing sample. I have not been able to find any studies with inverted findings. This is hardly surprising, considering the atypical processing of sensory experiences which is found across the autism spectrum (see section 3.2.1).

So, why do the participants attribute these unusual experiences to supernatural agents, rather than dismissing them as illusions or hallucinations? First, I suggest that such attribution is part of a sense-making process of potentially frightening experiences. A recurrent theme concerned the striving to work out why these odd sensations were happening. Gustav, for instance, describes how he was initially confused and struggled to make sense of why he was having these odd sensations. Frank similarly brooded on why he was sensing invisible bodies in his room, while Edgar says that he ‘freaks out’ if he doesn’t know why things are happening. A majority of the participants in Milne et al’s study (2017) also reported that such experiences were distressing. However, the attribution of agency specifies which agent it is, what it wants, and thereby makes the unusual experience sensible. The fact that several of the participants describe how their experiences occur during stress, such as when Anastazia lost her beloved grandfather, or when Catzzy was scared after watching a horror movie, supports the conclusion that attributions are part of a coping process. Importantly, attribution often concerns a beloved person that has been lost, which makes the agent both significant and benevolent.

Another question raised during the analysis concerns the fact that the vast majority of experiences are attributed to agents found outside traditional religiosity (e.g. ghosts, spirits, energies and demons). When looking closer at how these narratives are framed, these is a resemblance to common descriptions found in popular culture. For instance, Edgar sees deceased persons dressed in white, Anastazia describes a person with black holes for eyes as if it were in a horror movie, David experiences that he is haunted by the ‘spirits of the forest’, and Boyan describes that a house in which she stayed is haunted because a cold-blooded executioner once lived there. These depictions resemble popular themes found in thrilling movies, fantasy literature and computer games, which many of the participants indeed describe consuming. The common presence of occult themes in popular culture has been termed ‘occulture’ (Partridge, 2004-2005). Put differently, while the occurrence of unusual experiences may be caused by sensory processing, attributions are derived from cultural narratives of how and when invisible agents operate, what they want and what they look like.
Figure 4 below is modelled from this analysis, and reflects the understanding that religious experiences are complex and occur through simultaneous processing at multiple levels (e.g. neurological, psychological, sociocultural, etc.). The bottom level has a question mark since the hypothesis of signalling errors in GABA neurotransmitters is rather general. However, the neurological level is retained to illustrate that such processing also is involved in the formation of supernatural beliefs.

The question of why the participants prefer supernatural attributions to secular explanations is still not fully resolved. I speculate that motivation may be a crucial factor. Many participants appear to yearn for the world to be enchanted, which could also explain why they are drawn to supernatural narratives. It may even be the case that the sample consists of individuals who define themselves as religious and/or spiritual because it is precisely these individuals who are attracted to such frameworks. In fact, only four of the participants grew up in families where there is religious practice, and yet three of them attribute agency to ghosts and spirits. Sweden has also been described as one of the most secularized countries in the world (see section 1.2) and there is thus no overarching norm that encourages religiosity. Motivation could, in other words, explain why these individuals still have arrived at supernatural beliefs and descriptions. Importantly, many participants describe how unusual experiences and supernatural beliefs have been kept secret due to previous, negative reactions from peers and family members.

In summary, the multiple methods used in this study indicate a high prevalence of embodied and unusual experiences in the autistic sample, with occult themes in popular culture underpinning the formation of supernatural attributions and contribute to the sense-making of such occurrences. It is suggested that such experiences may be frequent on the autism spectrum, although further investigation
is required to generalize this finding to assess to what extent such experiences are
formed into supernatural beliefs, and why.

7.3 Publication III: A room of one’s own: Autistic imagination as a
stage for parasocial interaction.

When initiating this research project, I had no intention of exploring imagination.
However, I soon noted that the participants often – and enthusiastically – returned
to discuss fantastic worlds and characters. The study is an exploration of such story
worlds and parasocial (fiction-based) relations. Scholars studying the role of
literature (e.g. Derrick, Gabriel & Hugenberg, 2009) have suggested that parasocial
relationships provide social substitutes that are of psychological importance for
individuals with low social self-esteem. As these also involve mentalizing and emo-
tional attachment, this topic offers further investigation of such competencies in
autism. The study aims to: 1) to explore and isolate cognitive aspects related to
imagination and creativity, and (2) to investigate what psychological role and
function parasocial relations and narrative worlds fill in the lives of the participants.
The findings are also discussed in comparison to the invisible agents found in
supernatural contexts (see Publication I).

Based on my teaching experience, I knew many autistic pupils who engaged in
live action role playing (LARP) and cosplay, and had often overheard lively dis-
cussions on gaming worlds and events in fantasy literature. This experience was
confirmed during my field work, where I saw many pupils watching and discussing
various video clips, and some of them had gaming dates after school in which they
met in virtual worlds online. Other pupils were drawing images of unicorns and
manga figures while listening to lectures.

There are anecdotal reports of how imaginative, autistic individuals are over-
represented in roleplaying and gaming communities. Tony Attwood (2006) for
instance portrays

a teenage girl with Asperger’s syndrome [who] was an avid reader of fiction, and her
favourite book was The Secret Garden by Frances Hodgson Burnett. She kept a key in
her pocket to metaphorically open the door to the secret garden, an imaginary place
where she felt relaxed and happy (363).

These observations stand in stark contrast to the findings from experimental
research (e.g. Crespi et al., 2016; Scott, 2013) that suggested that autistic individuals
would both be disinterested and unable to engage in roleplaying and imaginary
activities. This contradiction is also noted by Attwood (2001):

The research literature makes little reference to imagination, humour and empathy
yet parents and experienced clinicians know that individuals with an Autistic
Spectrum Disorder can develop an idiosyncratic imagination, a remarkable sense of humour and acquire empathy for others.

To bridge these differing notions, the study also sets out to disentangle various aspects of imagination, to deepen the understanding of the cognitive competencies that are involved. Imagination is here separated into interpersonal (external/social) and intrapersonal (internal) subcategories. Assessing these separately, it is suggested that autistic individuals primarily are primarily challenged by interpersonal imagination, i.e. imagination about how people may react or what they expect.

Intrapersonal imagination, which involves inner fantasies, daydreaming and personal creativity, is understood as a different competency, and Judith Gould (2016) argues that such imagination often is displayed in autistic individuals. Olga Solomon (2015) similarly notes that “there is a fundamental difference between ‘thinking in pictures’ of your own making and those made by someone else.” (330) Neither the imagination subscale in the AQ-test, nor the IRI fantasy subscale revealed any statistically significant differences between the autistic and the non-autistic sample. Indeed, the participants describe how they absorb into imaginary realms populated by the various characters that they interact with, and some of these are derived from popular culture, while others are invented by the participants themselves.

A first finding concerns how parasocial relations are used to cope with loneliness and distress. Adilz, for instance, describes a daydream in which he comforts a lonely character who – similar to himself – struggles with social interaction and self-esteem, and Frank describes how the three characters that he has made up himself provided company and comfort during a period of depression. Leonardo similarly remarks that “those fantasies somehow filled the purpose of me feeling less lonely” and even felt that peers in school where intruding when he was absorbed in his imaginary realm. Notably, the participant describes themselves are active participants in these fantasies.

This finding can be understood through Jonathan Gottschall’s (2012) argument that fiction provides a simulation of reality and thereby individuals involved in narrative worlds acquire tools for dealing with existential dilemmas. Gottschall further argues that such interaction makes people more socially competent. I suggest that imaginary worlds could function as a stage on which autistic individuals practise social interaction. Attwood similarly argues that roleplaying can be used to overcome difficulties: “A tool which can be used for some children and that seems especially effective with girls with Asperger’s syndrome, is to act as a person they know or admire who could cope with the situation” (Attwood, 2006, 356).

Another hypothesis derived from my material concerns the cognitive characteristics of narrative and imaginary realms. The type of literature and gaming worlds that the participants immerse in all involve social interaction. In comparison with the ‘real’ world, these are made up of transparent minds that are made explicit
to the audience, for instance in terms of features and symbols that reveal what kind of magic they are capable of, and whether an experienced player or a ‘newbie’ player is behind an avatar. The pace of interaction is also adapted: readers may take a break before turning the page, and gamers can pause and search for complementary information before pursuing a computer game. Demands for multisensory integration is also reduced in these worlds, as noted by Shaun Loepky (2006), who highlights that autistic individuals “are not challenged with non-verbal cues because the interactions are confined to the chat component” when playing computer games.

It is thus argued that these imaginary worlds provide optimal spaces for autistic individuals who struggle with mindreading and interactions that they perceive as fragmented and fast paced. Gustav moreover comments that this is a space where he is not judged for being atypical:

> We absorbed so totally that the world around us disappeared, it was a world where we could feel that we were in control, it’s a system that we can follow. Above all, we know that we don’t have to feel insecure if we will be judged for our diagnosis or not, but we’re free to go all in.

The relief of realms where one is in charge recurs throughout this study, and is also echoed in Rachel Brezis’ (2012) study of religious cognition. Her autistic participant Nir for instance describes the thrill of creating and directing imaginary worlds:

> I’m an avid D&D [Dungeons and Dragons] player. I mostly... control games. I am the Dungeon Master... This whole game is like playing within a book and writing it at the same time. [...] I can invent towns, and I can invent plains, and I can invent monsters, and I can invent professions, and can invent anything I want!... Gods? The Dungeon Master plays them! (Brezis, 2012, 305)

Beyond such a sense of control, the participants in this study also describe that imagination-based activities fill the role of entertainment and enchantment, and eagerly describe the various quests and magical worlds that they are absorbed in.

When compared to relations with supernatural agents, there are certain similarities. Will Gervais (2013) has suggested that invisible agents can be used to overcome social pain, and Luhrmann (2018b) illustrates how individuals longing for intimacy use their minds to imagine the presence of God. The interactions described in this study suggest that the participants experience their parasocial characters as very real, similar to intimate relations with God as described by devout practitioners. However, when considering the magical potential attributed to supernatural agents, there is a difference: parasocial relations appear to mainly fulfil a social and entertaining function, and few narratives indicate notions of magical and teleological reasoning of how these characters influence everyday life.

In conclusion, the participants describe how parasocial relations are used to cope with social adversities, and it is argued that imaginary worlds provide social practice
in spaces that are optimal from an autistic point of view. This study moreover illuminates the importance of defining precisely what is studied, and suggests that the discrepancy between anecdotal reports and the results from cognitive studies can be understood in terms of different imaginary competencies: whereas interpersonal imagination generally is challenging to autistic individuals, the participants in this study describe intrapersonal imagination as seamless, enjoyable and comforting.

7.4 Publication IV: Dis:order. Cognition explored through a different lens.

This publication was sparked by my inquiry into why quantitative results on autistic cognition often diverge from humanities-oriented research, as well as the lived experiences of autistic individuals themselves (see section 3.2.2). Looking more closely into methods and terminology, many cognitive studies appear to miss the target. One such example is how a phenomenon is defined. The case of imagination that was discussed above is illustrative: in cognitive studies, fantasy, creativity and social abilities are clustered into the same category, which means that subdimensions that may draw on differing competencies are overlooked. Hence, a variety of cognitive aspects related to the studied topic are missed out.

Studies also often fail to consider atypical ways of processing information. This leads to a comparison of ‘apples and oranges’, meaning that results between groups diverge due to methodology and conceptual operationalization, rather than cognitive processing. In order to stimulate a dialogue about possible pitfalls that can invalidate research results, this publication aimed to: (1) promote a critical discussion about how methodological and terminological approaches impact results when studying populations with atypical, cognitive processing, and (2) provide suggestions on how research designs can be adapted to achieve valid results.

To begin with, there are several terminological examples which (similar to imagination) need to be specified in order to understand what studies actually explore. The naturalness hypothesis of religion for instance builds on the idea that intuitive agency detection underpins the notion of there being invisible forces in the world. Researcher however often utilize scales, which rather measure reflected beliefs. Agency detection moreover pertains to a whole pantheon of agents, but scales rarely involve ghosts, or unidentified forces that people feel impact their fate. As a result, items such as “I believe in God” and “The Devil exist” (e.g. Gervais & Norenzayan, 2012) capture reflected Abrahamic beliefs, rather than intuitive detection of invisible agency.

Second, hypothesis testing that aims at generalizing results to a whole population often misses out on cultural influences. One example is how normative topics of investigation, such as religiosity, trigger socially desirable responses (Jones & Elliott, 2016). To exemplify, many of the studies on religious cognition in autism were conducted in the US, where the population still scores rather high on religiosity and
congregational activity (Hadaway, 2009). As they were conducted through quanti-
tative self-reports, the first problem to be raised concerns the fact that people
subconsciously tend to adapt their responses to appear socially desirable (Jones &
Elliott, 2016), despite being anonymized. This also pertains to empathy scales, in
which few would want to identify with items such as “If I say something that some-
one else is offended by, I think that’s their problem, not mine” (item 16 in the
Empathy Quotient test). Put differently, such a bias causes a discrepancy between
reports and actual values and behaviour and, by extension, undermines the validity
of results.

A second difficulty arises when results from self-reports are compared between
non-autistic and autistic samples, as autistic individuals are less inclined to give
socially desirable responses: “Compared to TD [typically developing] populations,
individuals with ASD display fewer maintaining strategies and appear to place less
emphasis on preserving their reputation and managing their self image.”
(Chevallier, Kohls, Troiani, Brodkin & Schultz, 2012, 5). This autistic tendency to
overlook cosmetic potentials connects directly to typical social difficulties (e.g.
giving too frank responses, not adapting to norms if these appear irrelevant). I
specifically noted this trait difference when gathering data for this project during
the process of filling out scales. While the autistic participants were meticulous
about providing ‘true’ answers (e.g. making sure that they had understood the items
properly and requesting complementary information before ticking a box), the non-
autistic participants instead eyed the items quickly and gave responses that
approximately corresponded to their self-images and views of life. As noted by Tony
Attwood (2019), “The [autistic] person is usually renowned for being direct,
speaking their mind and being honest and determined and having a strong sense of
social justice.”

Cross-cultural replications have been conducted to assess cultural impact. Maij
and colleagues (2017), for instance, attempted to replicate the much-cited study by
Norenzayan, Gervais and Trzesniewski (2012) and found that the results from the
US- and Canadian samples could not be replicated in the Netherlands, which repre-
sents a comparably secularized setting. While the authors concluded that cultural
reinforcements in terms of CREDs (e.g. upbringing involving displays that verify
supernatural agency) are at play, I speculate that the results in the original study
were also affected by a general desire of non-autistic Americans to think of them-
selves as being religious, regardless of their intuitive viewpoints.

In addition, autistic individuals are less socially motivated (Chevallier et al,
2012). When assignments do not naturally conform to their own interests, there is
thus a likelihood that autistic participants will perform worse than their non-autistic
counterparts, who are more inclined to please others even when tasks are not very
motivating. The reward of the latter sample may thus be social liking, rather than
the pleasure of performing the task itself. Accordingly, differing results between
Third, the role of embodied cognition is often overlooked in cognitive and psychological discussions about religiosity. In fact, many neuropsychiatric conditions are characterized by unusual responses to stimuli (e.g. autism, schizophrenia, ADD/ADHD, OCD) which in turn may trigger anxiety and depression (Bergljot, Lovric & Williams, 2018). This approach, which shifts the focus from amodal (non-bodied) perception towards the role of sensory modalities, has several implications for the study of atypical populations as well as religiosity. For instance, embodiment is a fundamental aspect of religious practice, such as ritualization, metaphoric language, use of substances, material objects, bodily postures and diets (Kundtová Klocová & Geertz, 2019), as well as supernatural coping strategies (Schjødt, 2007).

Sensory processing is also central to how methodology impacts research results. One such example concerns eye-tracking, in which researchers have expected that measurements of frontal vision are an indicator of social attention and, by extension, social competencies (Boraston & Blakemore, 2007). However, autistic individuals tend to use their peripheral vision to observe people, since many are overwhelmed by the rich input of stimuli received from looking straight at a face (Williams, 1999; Wintour, 2014). While autistic individuals indeed struggle with social communication, this method is designed for a typical population and thus fails to consider the impact of atypical processing of sensory input. Lisa Zunshine (2014), whose work largely is directed towards mentalizing, similarly notes that atypical embodiment misleads non-autistic observers into concluding that autistic individuals lack certain capacities:

...given the difficulties that many autistics have with proprioception (i.e., awareness of their body) and the ability to control their body language, particularly in an environment containing sensory and/or social stressors, their observable behavior simply does not fit the neurotypical idea of a suitable “performance” of recognizable mental states. The profound irony of this situation is that it is the neurotypical observer who is “mindblind” (i.e., incapable of reading the other person’s mind) yet the label of mindblindness or “impaired” theory of mind is firmly attached to the individual exhibiting the unconventional behavior. (22)

In other words, non-autistic biases may mislead scholars towards faulty conclusions. This leads us to my final suggestion. Many individuals in the atypical samples studied in the neuroscience and cognitive psychology are verbally and intellectually non-autistic and autistic samples may in fact mirror a difference in the approach to the methods used. ²

² The samples in this study were strategically selected for exploring religiosity in self-defined ‘religious’ or ‘spiritual’ individuals. This solves the problem to some extent, since their views of life match the objectives of the study. Had the study also involved Swedish individuals identifying as secular, while yet having some notions that could be described in supernatural terms (e.g. feeling that deceased relatives are present), the responses would be more likely have been biased. Put differently, many non-autistic individuals would respond that they have no supernatural notions, since religiosity is (generally) not desirable in this cultural context.
competent, and may therefore provide researchers with insights into their specific ways of perceiving the world. Interaction with the people studied offers a unique possibility to correct methods and interpretations of results to better correspond to their lived reality. As Robbins and Jack (2006) note, “attempts to explain what it is to be human in purely mechanistic terms appear completely inadequate.” The significance of naming things is equally important, and there is no gain in automatically terming atypical ways of being in the world ‘disorders’ or describing participants as flawed or defective.

In conclusion, the study of atypical cognition requires careful attention to terminology, methodology and the biases that scholars carry with them. These considerations are central to understanding what we actually measure, in order to reach the fundamental goal of validity.
8. General discussion

8.1 Comparison of the results

When comparing the results of the empirical articles (Publications I, II and III), a number of patterns emerge. The first of these concerns the role of embodiment, which has not been acknowledged in previous studies on religious cognition in autism. The participants describe the challenge of decoding what others have in mind, and the complexity of integrating embodied information from eye-movements, body language, facial expressions and intonation appears to be central. For many of the participants (if not all), such difficulties have resulted in loneliness, social anxiety and even depression. However, they compensate for these difficulties by seeking out social contexts that are more predictable and devoid of confusing bodily cues, such as relations with supernatural and invisible agents, social interaction online, daydreams that involve imaginary interaction and fantastic narratives in literature and movies.

I also speculate that many individuals on the autism spectrum are drawn to animals because these relations involve coherence between embodied and emotional information. Many of the participants do indeed describe animals as important, and Attwood (2006) notes that ‘animals and nature’ make up the most common theme that autistic individuals take a special interest in. This has strengthened my conviction that there is a yearning for social intimacy and that interactions are highly enjoyable when adapted to autistic prerequisites.

Embodiment is also central to the findings in Publication II, which suggest that unusual sensory experiences are prevalent on the autism spectrum. 14 of the 17 participants studied had experienced unusual occurrences that they understood in supernatural terms, and these numbers were substantially higher than in the non-autistic comparison group. Especially embodied types of experiences were more frequent, such as feeling touch, seeing visions and hearing whispers when no one is around. Similar results are found in the emerging literature; a finding which is of special relevance for the study of religiosity.

This brings us to the role of experience. Throughout the material, the participants reported being guided by sensory information, emotions and coincidences that they interpreted in terms of supernatural agency. One was close to being hit by a car and felt he must have been saved by an angel, another was guided by feelings of right and wrong and said that this is how Jesus communicates with him, and a third
struggled to understand odd sensations and occurrences until he figured out that he must have a special gift for detecting spirits and demons. In all these cases, experiences preceded supernatural beliefs. This makes sense when considering the fact that the participants grew up in a country that has been described as one of the most secularized in the world and, consequently, few of them were raised in religious families. They have, in other words, not been taught to interpret the world in supernatural terms, but their supernatural ideas conceivably seem to grow out of experiences that they need to make sense of.

Of course, not all individuals who experience odd occurrences think of these in supernatural terms. However, the material suggests that most of the participants in the study seem drawn to *enchantment*. Wishing for the world to be enchanted, they come to seek out magical ingredients in their lives. This pattern becomes clear when looking at the literature, movies and computer games they engage in. Those who are gamers for instance talk about role-playing games in the fantasy genre; similar to those who enjoy literature. Autistic people are stereotypically portrayed as reading train timetables and specialist literature on physics, engineering, or space rockets. No such individuals are found in this study. Contrary to popular expectations, these participants seek out social contexts that are suitable for autistic sociality, and some of these involve fantastic narratives.

The material also suggests that such fantastic environments are cognitively optimal from an autistic point of view as they are clear-cut, coherent and predictable. When also considering the impact of *culture*, it appears that a vast number of young (Western) adults do grow up in a world that is saturated by occult and magical themes. For instance, occult reality TV-shows on haunted houses, which much resemble themes found in horror movies (see Moberg, 2015), as well as fantasy literature with elves, wizards, witches and heroes who possess magical powers are widely consumed. These themes indeed seem to influence the choices of supernatural attributions among the participants. The finding that God is more rarely attributed with agency than spirits – also among those who describe themselves as Christian or Muslim – indicates that popular culture is highly influential.

This brings us to the question of learning. The emergent study of CREDs (e.g. Lanman, 2012) has so far focused on how individuals are taught to interpret events in supernatural terms through religious upbringing. Tanya Luhrmann (2012) similarly illustrates how Pentecostal practitioners are taught to pay attention to clues in their surroundings and thereby learn that God is present in their everyday lives. However, the millennials studied here appear to find confirmation of supernatural agency through popular media and fan cultures, rather than from home. Put differently, occulture can be understood in terms of a CRED that complement the impact of one’s family background.

In conclusion, religious cognition in these autistic participants comes through as embodied, experiential, enchanted and encultured. Only the latter has been addressed in previous research (i.e. Maij et al., 2017) and the results from this thesis
thereby illustrate the need for a more dynamic outlook on various aspects involved in cognitive processing, both with regard to autism and religiosity.

### 8.2 Methodological considerations

As in all research projects, this thesis is constrained by its methodological points of departure. In this section, I begin by considering the methodological contributions of the project, and then move on to discuss how its methodological limitations may have influenced the results.

The anthropological and participatory approach to studying autism and religiosity is at the core of this thesis. I have only been able to find one previous study (Brezis, 2012; see also Visuri, 2012) on religious cognition in autism that utilizes personal descriptions. Such a shift of focus means that this thesis explores what the participants describe as relevant, rather than prioritizing matters that the researcher expects to be significant. Besides providing the participants with agency, surprising aspects that have not been previously considered in the CSR are revealed, such as the influence of occult and fantastic themes and the role of autistic embodiment. This nicely illustrates Taves’ (2009) argument that insider descriptions of religiosity have the potential to highlight aspects that may otherwise be overlooked.

The anthropological approach also involves attention to the specific needs and perspectives of those being studied. In this project, this meant that I had to spend a lot of time with the autistic participants in order to make them comfortable and gain their confidence. Many (perhaps even most) autistic individuals have experienced bullying and mistreatment, which makes many of them cautious of people they do not know. When they were given time to find out who I was and what my objectives were, the participants gradually opened up, and some even shared experiences that they had never told anyone before. These disclosures would likely have remained untold if I had rushed in too quickly to gather empirical material. The ‘bracketed ethnography’ used moreover renegotiated the role of the researcher and the participants. The participants were involved throughout the project in deciding where and when to meet, how long these meetings would be, and in preparing photos and notes for the interviews. They seem to have felt that this project offered a safe space in which they were free to discuss ideas and occurrences that were of importance to them.

Another contribution concerns the mixing of methods. Initially, quantitative scales and psychometric tests were introduced as a way to speak the ‘language’ of cognitive scientists and psychologists. However, I discovered along the way that these measurements were also valuable for detecting additional aspects, such as the significant difference in the number of supernatural experiences between the autistic and the non-autistic groups, which led me to investigate whether other studies had similar findings. The methodological discussion about social desirability in Publication IV was also inspired by observations of dissimilarities between the
groups, such as how the autistic participants took much time to consider each item carefully when filling in the scales, while the non-autistic participants quickly generalized their responses.

There are – of course – also limitations to the methods used. A first observation concerns the composition of the sample. The fact that so many participants in the autism group were highly imaginative suggests that such individuals may be specifically drawn towards supernatural beliefs. As indicated in the previous section, they seem to yearn for enchantment. This means that the sample is not broadly speaking representative of autistic individuals, but may compose a subgroup.

The measurements selected for this project also constitute a limitation. Had I chosen other scales and psychometric tests, different results may have emerged. By way of clarification, all measurements affect the results of a study in terms of the items they contain, and how these are formulated. Scales are, in other words, not a neutral measure of values, ideas or competencies, but tap into specific aspects of a phenomenon as defined by those composing the questions and formulations. Put differently, the quantitative results from this study are naturally constrained by my choice of tools.

Anthropological and ethnographic researchers moreover acknowledge the fact that we may project our various outlooks, positions and experiences onto the people we study. This project is for instance moulded by the fact that I grew up in Sweden, was trained in the humanities and have experience of being around autistic individuals. If another researcher had used exactly the same design and procedure, the results may yet have been different. My outlook is thus that there are no neutral positions, and I myself am one of the tools that has crafted this thesis.

The sample studied is moreover based on young adults, but what about older individuals on the autism spectrum? First, it may be the case that older individuals who similarly label themselves as religious and/or spiritual individuals are less invested in popular culture than the millennials described here. Second, Lynn Schofield Clark (2003) suggests that young people may be more open to supernatural experiences as they are more apt at conjuring vivid visual imagery, and thus experience imaginary phenomena as real. Gregory and Greenway (2017) similarly found that young people appear to recall counterintuitive representations more frequently than older individuals. These questions call for future studies involving autistic individuals of different ages and generations.

8.3 Conclusions

In the introduction to this thesis, I presented the questions that sparked the writing of this thesis: why do autistic individuals engage in supernatural minds when human minds seem so complicated to them? And how do autistic Swedes, who grew up in a highly secularized culture, come to embrace supernatural ideas?
Summarizing the results from this study, several patterns appear. The first of these pertains to social cognition in autism. Mentalizing is a complex construct that consist of different types of processes, and the aspect which primarily seems to challenge autistic individuals is that of decoding embodied information. Human minds are hidden behind bodies that convey an overwhelming amount of information in terms of mimicry, eye-movements, bodily postures and vocal intonation. While non-autistic individuals gain useful information from such expressions, bodily cues appear to be unsynchronized and confusing for those who are autistic. Humans are moreover inclined to hide their emotions and may for instance smile despite being annoyed or sad to avoid negative reactions. Since autistic individuals generally are apt at sensing emotions, but struggle to decode minds, such ambiguous behaviours make them apprehensive and insecure.

How is this, then, related to superhuman minds? To begin, supernatural agents have no bodies that require decoding. Similar to interaction over the internet, in which bodies are hidden behind screens, the autistic individuals in this study appear to find that communication that is devoid of embodied complexities and allows for temporal adjustments is less complicated than interactions face-to-face. Gods neither require instant responses, nor fake their emotions or intentions. I was initially surprised to find that the participants also engaged in parasocial relations that they had found in popular culture, such as characters from fantasy literature, deities from computer gaming worlds, animated movie characters, and ‘persons’ that they had invented themselves. In light of the conclusions above, this finding makes sense: parasocial relations are similarly predictable and coherent, and mindreading is supported by textual information and clear-cut characteristics. In cases where there are no bodies at all, such as in supernatural agents and daydreaming characters, autistic individuals are also free to project whatever mental information that seems suitable. Several of the participants indeed comment that they ‘control’ these interactions. Put differently, supernatural and imaginary realms come through as optimal, autistic spaces.

Another finding concerns the enculturation of autistic embodiment. A majority of the participants report unexplainable, sensory experiences that seem to occur without any input of stimuli: touch by invisible hands, visions of things that other cannot see, whispers when no one else is to at home, and sensations of invisible bodies being present. The autistic participants scored significantly higher on supernatural experiences when compared to the non-autistic sample, and the emergent literature suggests that unusual, sensory experiences are prevalent among autistic individuals. But, rather than dismissing these experiences as ‘hallucinations’ or figments of imagination, the participants studied here understand them in terms of supernatural agency. This interpretation appears to be intimately related to cultural frameworks at hand. Concepts found in Christianity, Islam, esotericism, horror movies, occult reality-TV and fantasy literature are echoed throughout the participants’ narratives on why various experiences occur. Secularized norms are also at
play and many participants describe how they carefully choose whom to talk to, to avoid being labelled irrational.

It is further suggested in this thesis that individuals from the millennial generation are especially inclined to draw on ‘occultural’ narratives from popular media, which they often consume, and which are saturated with contents such as haunted houses, deceased ancestors that pay people visits from the ‘other side’, and characters that possess magical power. This proposal is built from the finding that most of the participants who label themselves Christian or Muslim, of which some grew up in homes where there is religious practice, still ascribe unexplainable events to agents found outside such traditions. For them, signs of God being present seem less thrilling than the idea that there might be ghosts.

The results also indicate that distress triggers the participants to seek out supernatural ascriptions and invisible relations. Several participants describe times of grief when they have felt that a significant, invisible other has been present to comfort them. Others recruit parasocial companions when feeling lonely, and some immerse into daydreaming, fantasy literature or computer gaming to cope with anxiety. Reversely, supernatural attributions that relate to benevolent agents also seem to make potentially distressing, sensory experiences less frightening, such as thinking that it was a deceased friend or relative that one saw or whose touch one felt. In cases where the participant has not been able to locate whom it might have been, experiences are described as more fearsome.

In conclusion, the thesis has generated several new findings to the cognitive science of religion. The results for instance challenge the popular CSR hypothesis that fast and intuitive mentalizing is central to the formation of religious ideas (see section 2.2). On the contrary, the participants in this study describe how supernatural ideas gradually are shaped from reflections of unusual events, emotional prompts and existential issues, and cultural frameworks escort them towards various conclusions on supernatural agency. It is moreover argued that the experiential dimension, which is often overlooked in the CSR, is central for the formation of supernatural beliefs.

Fantasy proneness and a propensity for absorption is another aspect which seems to have drawn these strategically selected individuals, who all describe themselves as ‘religious’ and/or ‘spiritual’ towards enchanted interpretations of reality. In other words, religious notions in autism likely come in various shapes, depending on individual, cognitive characteristics: while some may autistic individuals find supernatural ideas to be irrelevant and irrational, others yearn for the world to be enchanted. This illustrates the need for CSR scholars to embrace the interdisciplinary character of the field: when regarding religiosity through both individual and general patterns, we can advance towards a fuller picture of how ideas and experiences become moulded into supernatural shapes.
8.4 Future research

The results presented in this thesis point towards some new and promising directions. Beginning with research on religiosity, the material suggests that the millennial generation differs in their understanding of the supernatural when compared to older individuals, presumable because they are avid consumers of popular culture such as computer gaming worlds, movies and fantasy literature that are all saturated with magical themes. Continued attention towards personal descriptions enables us to rethink and reconsider previous assumptions of what people hold as sacred, magic or supernatural. It also opens up new fields of research that share qualities of other things studied, such as the role of parasocial relations that has often been discussed in research on literature and digital media.

Second, embodiment provides an opportunity to bridge cognitive science and comparative religion, in that it connects bodily experience to abstract, mental processing (see Judith Kovach, 2002). Some scholars appear to get caught up in the Christian/Lutheran idea that religiosity mainly consists of mental ideas and beliefs, but when widening the notion to also include embodied processing we get hold of the bodily and material aspects that are at play: postures, movements, foods, scents, touches, sounds, objects, images, bright lights, darkness etc. Current research illustrates how such embodied and enacted input is highly influential in moulding people’s perceptions and ideas (see section 2.2.1).

While the humanities-oriented study of religions pays much attention to encultured and situated impact, CSR-studies on human cognition would benefit from further attention to such influences. As it is acknowledged that cross-cultural comparisons are of significance, I argue that we need to dig deeper. For instance, the validity of results will suffer if the scales and experiments utilized are not aligned with local understandings of the supernatural. Interdisciplinary and multidisciplinary collaborations enable researchers to cast light upon various aspects at stake, which may be overlooked when utilizing only one method or perspective. Importantly, such partnerships require a joint language to enter into dialogue, and an openness to perspectives provided by complementary epistemologies.

One such suggestion pertains directly to the finding in this thesis. While humanities-oriented work is well suited for generating hypotheses through rich and deep data, nomothetically-oriented researchers have the tools for testing whether these are valid in a larger context, or if they pertain to local circumstances. The hypotheses that were generated here would benefit from such attention:

1. The first hypothesis concerns communication with bodiless agents (e.g. gods, angels and spirits). I argue that autistic individuals experience such interactions as less complex than interaction with peers since it is unrestricted by multisensory input such as body language, facial expressions and intonation.
I have not been able to find any previous research that tests whether there are differences concerning mindreading of embodied and bodiless agents.

2. It is suggested in the second hypothesis that the autistic participants in this study absorb into ‘imaginary realities’ and that this is facilitated by fantasy proneness. It may thus be the case that there are subgroups with autistic individuals who are drawn towards religious, magical and supernatural contents. Larger samples are required to ascertain whether or not this is the case.

3. The third hypothesis concerns the significantly higher number of unusual somatosensory experiences found in this and previous studies. To what extent are such experiences prevalent across the autistic population? Do these mainly pertain to subgroups, and to what extent are such traits related to supernatural attributions?

4. Fourth, esoteric content in fantasy literature, movies and computer games appears to influence the supernatural attributions in these young adults. Is this a general trend among Western millennials, and perhaps also in other parts of the world? Are autistic individuals more prone to escape into imaginary realms, as they often experience everyday life as complicated and fragmented?

5. The fifth hypothesis suggests that a separation between interpersonal and intrapersonal imagination is necessary, because these draw on different competencies. This suggestion challenges the many previous cognitive studies involving predefined tasks and instructions that autistic individuals generally struggle to decode. I argue that they would perform much better if the personal motivations and prerequisites of each autistic participant were considered. Such designs would allow for closer examination of intrapersonal, rather than interpersonal, competencies. Non-verbal individuals could also be studied through such tasks. Here, caregivers could be an important asset in describing the extent to which their children and teenagers involve themselves in imaginary areas.

6. The final hypothesis attends to the role of parasocial relations. The participants describe interacting with imaginary characters for both for pleasure and to cope with adversity. Imaginary realms appear to make up optimal ‘autistic spaces’ for simulating and practicing social interaction. The prevalence of parasocial relations among autistic individuals has not (as far as I am aware) been previously explored.

Put differently, I argue that we first need to zoom in close to detect details and nuances and then zoom out to view the larger picture. As the role of cognitive psychology is to generalize traits, studies tend to miss variance. However, humanities oriented research lacks the tools for generalizing results towards larger popu-
lations. Therefore, researchers from differing epistemologies need to complement each other’s work.

Finally, we need to adapt our tools to the people we want to learn about. As argued by Stina Bäckström (2013): “What we can see is not by itself enough; we want the kind of knowledge that only comes with a mutual cognitive relation to the person.” (212). Autistic individuals are studied because they are atypical in several ways, which means that they may also react differently to research tasks. A good way of learning about how to create optimal settings is to involve individuals who can describe their own perspectives and experiences from the inside. Simple adaptations, such as dimming the lights in the lab, may make a difference. In other cases, methods require rethinking, otherwise we risk drawing faulty conclusions. Many autistic individuals are intelligent and verbal and, as previously described, CAS scholars call for cognitive research to acknowledge their perspectives. Such collaboration holds potential for new findings that challenge old ‘truths’.
VARIETIES OF SUPERNATURAL EXPERIENCE
9. Sammanfattning
(Summary in Swedish)


Baserat på min erfarenhet av många års arbete som lärare i religionskunskap för just autistiska tonåringar visste jag att många av dessa ändå har föreställningar kring övernaturliga, personliga krafter. Jag valde därför att vända på frågan: hur kommer det sig att autistiska individer formar uppfattningar av osynliga varelsers viljor och avsikter trots att de har svårt att läsa av andra människor? Och, hur skiljer sig sådana relationer från social interaktion i vardagen? Det faktum att de dessutom vuxit upp i Sverige, som ofta beskriver som ett av världens mest sekulariserade länder, är också centralt eftersom det innebär att religiositet inte nödvändigtvis är något svenska ungdomar lär sig i hemmet.

Deltagarnas övernaturliga föreställningar undersöks i studien från en tvärvetenskaplig utgångspunkt, vilket innebär att undersökningen baseras på teorier och metoder från olika forskningsfält. Avhandlingen rör sig dels mellan kognitiv religionsvetenskap och humanistisk, religionsvetenskaplig forskning, och dels mellan kognitionsvetenskaplig autismforskning samt psykologisk antropologi och kritisk autismforskning (som baseras på kulturell respektive lingvistisk analys). Med kognition avses de sätt som människor bearbetar information på, och begreppet övernaturlig används här som ett paraplybegrepp för olika fenomen som relaterar till osynliga, icke-empiriska krafter som anses verka i världen.


En andra hypotes som materialet genererat bygger på de övändade resonemang om imaginära karaktärer från fantasylitteratur, datorspel och filmer, som många av deltagarna väver in i beskrivningen av sina livsåskådningar. Dessa relationer beskrivs på liknande sätt som övernaturliga agenter och deltagarna absorberas in i ‘imaginära verkligheter’ genom dagdrömmar, litteratur och datorspel där de interagerar med sina favoritkaraktärer. Dessa fantasivärldar framstår för deltagarna som förutsägbara, koherenta och behagliga, och de utgör därmed en kontrast mot
vardagslivet som beskrivs som oförutsägbart, fragmenterat och komplicerat. Övernaturliga agenter och fantasivärldar verkar således ha karaktärsdrag som underlättar mentalisering för autistiska individer. Detta motsäger tidigare forskning där man förväntat sig att dessa borde vara ointressanta ur ett autistiskt perspektiv.

**Publikation II** baseras på deltagarnas beskrivningar av till synes oförklarliga, kroppsliga upplevelser. Fjorton av sjutton personer berättar att de upplevt osynlig närvaro i form av beröring, dofter, ljud och syner trots att ingen person verkat vara närvarande. Vid en jämförelse av enkätsvar ur synen till synes oförklarliga, kroppsliga upplevelser framkommer det också att de autistiska deltagarna har betydligt fler sådana än jämförelsegruppen, trots att samtliga även i denna har religiös/andlig livsåskådning. Framförallt är det det förkroppsligade karaktären som är vanligt förekommande. Den första hypotesen bygger på detta fynd samt tidigare forskning med liknande resultat, och det föreslås att oförklarliga, kroppsliga upplevelser är vanligt förekommande hos autistiska individer.


I **Publikation III** utvecklas analysen av magiska världar genom ett fokus på så kallade **parasociala relationer** med imaginära karaktärer. Som redan nämnts ovan beskriver deltagarna att de tenderar att absorberas in i dagdrömmar och magiska narrativ som innehåller olika karaktärer. Vid närmare granskning verkar många av dessa relationer också fungera som socialt stöd som används för att hantera svårigheter. Flera deltagare beskriver exempelvis hur de ofta känt sig ensamma, och många verkar ha haft ’osynliga kompisar’ redan i barndomen. De berättar också hur deras fiktiva världar fungerar som en estrad där de iscensätter sådant som de behöver bearbeta, exempelvis utanförskap och konflikter med föräldrar och klass-

Kognitivt orienterade autismforskare har dock under lång tid hävdat att autistiska personer har begränsad förmåga att fantasiera om och tänka på abstrakta fältet, och att de som eventuellt uppskattar berättelser snarare kopierar historier som de iscensätter ordagrant och i detalj. Resultaten från denna avhandling motsäger detta antagande, och därför presenteras ytterligare en hypotes vad gäller definition av fantasy och kreativitet (*imagination* på engelska). Genom att dela upp dessa i en yttre/mellanmänsklig och en inre/personlig dimension föreslås att autistiska personer har svårt att föreställa sig och fantasiera om hur andra människor ska agera, medan förmågan till inre fantasier och relationer med karaktärer som de skapat på sina egna premisser inte påverkas av att de är autistiska.

Denna uppdelning skulle kunna förklara varför autistiska personer så ofta presterar sämre i kliniska tester när de ska lösa ’kreativa’ uppgifter som forskare förberett för att testa deras förmåga till fantasy, trots att många av dem uppskattar fantasivärldar och dagdrömmar när detta sker på deras egna villkor. I artikeln diskuteras också det faktum att exempelvis data på ett sätt som förenklar interaktion med andra spelare, exempelvis genom textstöd och möjlighet att pausa när man behöver tid att tänka.

Till skillnad från övernaturliga relationer verkar deltagarna inte uppfatta att de parasociala karaktärerna existerar utanför fantasierna, trots att de interagerar med dem i vardagen; på liknande sätt som kristna kan fundera över hur Jesus skulle resonera i en viss situation fungerar dessa karaktärer också som mentala ’bollplank’. Däremot beskrivs deras övernaturliga relationer i termer av agens, vilket innebär att de tros ha verklig kraft att påverka världen. På så sätt skiljer de sig från de parasociala relationerna som beskrivs i intervju materialet, medan de på ett relationellt och psykologiskt plan förefaller fylla liknande funktioner.

**Publikation IV** är ett teoretiskt och metodologiskt bidrag som baseras på insikter från avhandlingsarbetet och fokuserar på kognitionsvetenskaplig religionsforskning som berör neuropsykiatriska populationer med atypiska, kognitiva processer (t.ex. autism). Huvudargumentet är att forskare behöver tänka om vad gäller definitioner och metoder när dessa appliceras på individer som processar information på ett annat sätt än typiska personer. Exempelvis behöver man ta hänsyn till de förkroppsligade aspekter som är centrala inom religiös praktik (t.ex. ritualer, rörelser, beröring, dofter,
ljus och mörker). Detta är särskilt viktigt eftersom många neuropsykiatiska diagnoser just karakteriseras av annorlunda sensoriska uppfattningar.

Även definitionen av 'religion' påverkar resultaten från studier. Såsom framkommit i denna undersökning verkar unga vuxna inkludera magiska narrativ utanför traditionellt andliga och religiösa kontexter i sin förståelse av detta begrepp. När forskare enbart delar ut enkätfrågor som berör huruvida människor tror på Gud eller går i kyrkan riskerar de att missa jämföbara fenomen som bygger på samma kognitiva processer. Kulturens roll lyfts också fram. Ett belysande exempel berör tidigare studier där amerikanska deltagare med och utan autism fyllt i enkäter om religiös tro, och resultatet indikerade att de autistiska deltagarna var mindre religiösa. Autistiska personers svårighet att läsa av andra medför också att de är mindre benägna att uppfatta och följa kulturella normer. I ett kristet präglat land som USA svarar många typiska deltagare sannolikt att de tror på den starka och går i kyrkan i högre utsträckning än vad som faktiskt är fallet, eftersom detta är det socialt förväntade. När deras svar jämförs med autistiska personer, som är mer måna om att vara ärliga i sina svar, blir konsekvensen att dessa framstår som mer religiöst avvikkande än de faktiskt är. Med andra ord blir det en asymmetrisk jämförelse mellan 'äpplen och päron'. Om forskningen missar att ta hänsyn till de annorlunda sätt som personer processar information på riskerar vi att dra felaktiga slutsatser från våra resultat.

Sammanfattningsvis visar avhandlingen att förkroppsligade, kulturella och erfarenhetsmässiga aspekter samverkar med autistisk såväl som religiös kognition. Ett av de viktigaste fynden är att deltagarna inte dras till övertygande eller imaginär relationer *trots* svårigheter med mentalisering, utan *på grund av* att oförkroppsligade relationer är lättare att tolka. En avgörande anledning till att resultaten från denna avhandling skiljer sig markant från tidigare forskning är att deltagarna involverats i att bidra med sina egna perspektiv och beskrivningar av vad de uppfattar som religion och andlighet i deras liv. Utformandet av studien har också tagit hänsyn till de särskilda behov som de har, exempelvis genom att skapa struktur och förutsägbarhet, liksom tid och plats för möten har anpassats enligt deras önskemål. En rekommendation för framtidens kognitionsforskning är att i högre utsträckning lyfta fram autistiska perspektiv. Icke-autistiska forskare behöver också vara ödmjuka inför det faktum att de inte alltid kan förutsäga hur en autistisk individ uppfattar ett visst fenomen. Därför behöver fler autistiska röster höras inom kognitionsvetenskaplig forskning.

Studien begränsas naturligtvis av de metoder som tillämpats, liksom forskarens 'glasögon' och perspektiv som färgar tolkningen av materialet. Det är också sannolikt att urvalet av deltagare består av särskilt fantasibenägna individer, något som delvis kan förklara varför de attraheras av övertygande ämnen trots sin relativt sekulariserade bakgrund. De hypoteser som genererats skulle därför gynnas av hypotesprövande studier på större populationer, för att utröna huruvida de är tillämpliga i en större kontext. Kvantitativ forskning behöver dock uppmärksammat skillnader mellan kulturella kontexter, både vad gäller geografi och ålderskategorier,
samt anpassas för att fånga in den bredd av fenomen som är relaterade till forskningsfrågorna. Tvär- och mångvetenskapliga samarbeten mellan forskare med skilda epistemologiska och metodologiska utgångspunkter kan här möjliggöra att vi får syn på den mångfald av faktorer som påverkar både autistiska och icke-autistiska personers religiositet.
So that is how to create a single story. Show a people as one thing, as only one thing, over and over again. And that is what we become. (Chimamanda Ngozi Adichie)

Of all the studies conducted, there is as yet no study of religiosity in which all the autistic participants responded that they were rid of supernatural ideas and engagements, and no experiment on imagination in which every autistic person failed to be creative. This thesis is a description of the people hidden behind the numbers that do not count; the numbers that did not contribute to an increased $p$-value. They are the people who challenge previous generalizations and assumptions by responding positively in interviews as well as scales that religiosity and imagination indeed are significant in their lives.

The endeavor to capture such narratives from the personal points of view of my participants lies at the heart of this thesis. A recurrent topic that has developed from these conversations is how tired they are of explaining to people that one is not ‘Rainman’, or devoid of typical competencies. The voices of my participants bring us a more nuanced and multifaceted picture of how autistic individuals may experience the world. Importantly, their stories also highlight what it means to be non-autistic; I have for instance come to pay increased attention to my own sensory world.

Their narratives further illustrate how autistic individuals share the normative frameworks and general interests of non-autistic individuals in the same generation and culture. Being different to others in one way does not automatically mean being different in every way. Literary scholar James McGrath (2016), who is also autistic, uses the metaphor of “one piece of Lego” to illustrate the simplified idea of autism: descriptions are often made in terms of deficiencies, where the personal growth of autistic persons is rarely recognized. McGrath’s argument much resembles Chimamanda Ngozi Adichie’s (2009) discussion about “the single story” (quoted above), in which she notes that there are few representations of Africa beyond poverty and war. If people in the communities that we study do not recognize themselves in our descriptions, then these require reconsideration.

The same applies to religiosity: there is no single story, but a multitude of different narratives. Some of these are shared, others are unique. While encouraged in a certain context, others find such ideas to be nonsensical. For some, the journey towards religiosity begins with seemingly unexplainable events, while others acquire their views of life from home. In all cases, researchers need to challenge their own, favourite explanations and dare to look beyond them to gain a fuller picture of the
complexities underlying various phenomena. My hope is that this thesis will contribute to recognition of new nuances to the understanding and study of religious cognition in autism.
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How do autistic individuals come to embrace ideas about supernatural agents such as spirits, angels, gods and ghosts – that are understood to have their own minds and intentions – despite the fact that they struggle to ‘mindread’ other people? The overall aim of this PhD thesis is to contribute with new insights to the discussion about autism in the cognitive science of religion. The study takes its point of departure in 17 young adults (16–21 years of age) who are diagnosed with high-functioning autism and describe themselves as religious and/or spiritual. The material is based on mixed methods, including a matched non-autistic sample, and an anthropologically informed approach that centers first-person narratives. Beyond mentalizing and embodiment, the thesis also examines the role of imagination and parasocial (fiction-based) relations, which the participants describe as significant. Contrary to the previous notion that mentalizing difficulties would make autistic individuals skeptical towards supernatural beliefs, the results indicate that certain properties found in imaginary realms and invisible companions are especially attractive to them.

Ingela Visuri pursues interdisciplinary work in connection to the cognitive science of religion and the humanities-oriented study of religions. She is especially interested in how embodied and encultured aspects of cognition interact in the formation of supernatural experiences, and her exploration of autistic cognition was sparked by her background teaching non-confessional religious education to high-functioning, autistic teenagers.

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