Nonreligiosity and Life Satisfaction: Reexamining a Supposedly Negative Relationship

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1 Introduction

"This sort of happiness in the absolute and everlasting
is what we find nowhere but in religion."
William James

To date, there seems to be a wide consensus that most previous research on the relation between religiosity and subjective well-being, either explicitly or implicitly, suggests that nonreligiosity is connected to a lack or disadvantages. Consequently, this could be interpreted as nonreligiosity being maladaptive or unnatural (Caldwell-Harris, 2012; Morgan, 2013). Based on a historical analysis of atheism by Hyman (2006), Caldwell-Harris (2012) states that "In the nineteenth century, atheists were characterized as immoral, while in the twentieth century they were portrayed as psychologically troubled." (p.8). And while the idea that atheists and other nonreligious individuals lack morality is also still prevalent the general public of many countries worldwide, e.g., in the US (Zuckerman, 2012), scientific research nowadays rather focuses on the relationship between (non)religiosity and well-being. Thus, atheists and other nonreligious individuals are oftentimes not only judged negatively by others because of their supposed lack of morality but they are also described by scientific research as being confronted with a lower quality of life. Morgan (2013) concludes that "The implicit consequence is already drawn: any degree of religious belief is better than nonbelief for your physical and psychological health." (p.12).

This research shall not contribute to the polarizing debate between advocators of religiosity and those of nonreligiosity by identifying which of the two is "better" or more suited for maximizing one's happiness and well-being. But it shall assess whether much previous research on the relation between (non)religiosity and life satisfaction was to a certain extent biased by cultural stereotypes about nonreligiosity and therefore has come to debatable conclusions. In addition to reexamining whether

religious individuals are on average more satisfied with life than nonreligious individuals, it is necessary to explore whether potential differences in average life satisfaction are related to religious or supernatural beliefs per se or whether variations in other aspects account for them, such as the size of social networks, the amount of perceived discrimination, or the tendency for socially desirable or self-esteem preserving answers in surveys (e.g., Galen, 2018; Wilkins, 2008).

Perhaps, it is time for a relativization of the proclaimed universal benefit of religiosity for an individual's well-being.

1.1 Overview of the theoretical and empirical research

The present research calls a general negative link between nonreligiosity and life satisfaction as found by the majority of previous research on this relationship into question and it does this in a literature review (Chapter 2) and two empirical studies (Chapters 3 and 4) that were conducted in collaboration with Thomas Schlösser and Detlef Fetchenhauer.

Chapter 2 presents an extensive and critical review of the literature on the association of religiosity, nonreligiosity, and life satisfaction. In this chapter, I identify several conceptual and methodological issues of most previous research on this topic that might have led to nonreligiosity and its relationship to life satisfaction not having been researched adequately in the past. More recent lines of research show empirical evidence that government regulations of civil, religious, and political freedoms, social norms of religiosity, and the level of societal development in a country influence the relationship between individual (non)religiosity and life satisfaction. At the individual level, empirical research points toward nonbelief certainty or existential dogmatism, an affirmative nonreligious identity, belief in science, secular sources of meaning in life, and secular social group memberships or engagements being central to nonreligious individuals' life satisfaction. These findings emphasize the need for multidimensional conceptualizations of (non)religiosity, for representative samples with a substantial number of

nonreligious individuals, for a differentiation between (non)religious subgroups, for considering influences of context factors, and for testing for both linear and nonlinear relationships between the variables. When one or several of these aspects were included in empirical research, differences in the level of life satisfaction between religious and nonreligious individuals largely disappeared. This chapter discusses the theoretical basis for the empirical studies (Chapters 3 and 4) in detail and was therefore placed first in this dissertation as an introduction into the topic. Chapter 2 is, however, based on a manuscript that was submitted to a journal at a later point of time than the two empirical studies in Chapters 3 and 4. Thus, there is a certain overlap in the content of the Chapters 2, 3, and 4, and Chapter 2 also includes descriptions of the results from the empirical studies in Chapters 3 and 4 (referring to Chapter 3 as Pöhls, Schlösser, & Fetchenhauer, 2020a, and to Chapter 4 as Pöhls, Schlösser, & Fetchenhauer, 2020b) and already outlines directions for future research**.**

Chapter 3 and Chapter 4 present two empirical studies that were designed to overcome several (though not all) of the conceptual and methodological issues of much previous empirical research as described in Chapter 2. Together with Thomas Schlösser and Detlef Fetchenhauer, I examined whether religious individuals are on average more satisfied with life than nonreligious individuals - independent of differences between subgroups and the cultural context of the country the individuals are living in. For this purpose, we examined the association between several aspects of (non)religiosity (self-identification in Chapter 3 and different kinds of belief/nonbelief and nihilism in Chapter 4) and life satisfaction in large representative samples from different cultures (samples from 24 countries worldwide in Chapter 3 and a German sample in Chapter 4). These samples also included a substantial number of nonreligious individuals which allowed for a differentiation between (non)religious subgroups. Additionally, we tested for nonlinear relationships between the variables and analyzed the influence of context factors on this relationship.

In Chapter 3, we combined and reexamined four (partly) competing lines of previous research on the relation between (non)religiosity and life satisfaction in an intercultural comparison across 24 countries worldwide. Based on most previous empirical research on (non)religiosity and life satisfaction (e.g., Lim & Putnam, 2010; Tay, Li, Myers, & Diener, 2014), one would predict a general positive association across all countries, while a second line of research (Galen & Kloet, 2011; Mochon, Norton, & Ariely, 2011) indicates that religious and nonreligious individuals who are very certain of their (non)belief are more satisfied with life than uncertain religious and nonreligious individuals. Two other lines of research on the fit between individual (non)religiosity and different context characteristics (e.g., Li & Bond, 2010; Stavrova, Fetchenhauer, & Schlösser, 2013) lead to the hypotheses that in societies which are very religious (respectively, characterized by a low level of societal development), religiosity is positively related to life satisfaction, while in more secular (respectively, highly developed) societies, there is no or a negative relationship to life satisfaction. In this empirical study, we focused on the dimension of (non)religious self-identification with the labels religious, not religious, or atheist. Religious individuals were further differentiated into highly and weakly religious individuals based on their rating of the importance of religion in their lives (very or rather important vs. not very or not at all important). We tested for a nonlinear relationship between non-religiosity and life satisfaction and examined whether different levels of religious social norms and societal development in a country have an influence on the relationship between individual (non)religiosity and life satisfaction. When controlling for the influence of context-level variables, there was no difference in the level of life satisfaction of highly religious and indistinct nonreligious individuals or highly religious and atheist individuals. In contrast, weakly religious individuals were less satisfied with life than highly religious individuals. Thus, the results indicate that only in religious societies, identifying as not religious or atheist is related to lower life satisfaction than high religiosity. When the fit between individual and country characteristics was controlled

for, a curvilinear relationship between (non)religiosity and life satisfaction emerged.

In Chapter 4, we examined the relationship between a different aspect of (non)religiosity, an individual's kind of belief/nonbelief, and life satisfaction. Additionally, we explored whether nonreligiosity is associated with nihilism (i.e., the belief that life has no meaning and purpose), and whether nihilism in turn is negatively related to life satisfaction. In contrast to the cross-cultural comparison in Chapter 3, we decided to examine these relationships with a representative sample from a rather secular country, Germany, as the data from the large-scale survey ALLBUS provided a more detailed description of participants' (non)belief and a larger share of the representative sample described themselves as nonreligious, which ensures more variation in sociodemographic characteristics. We differentiated between four subgroups of (non)religiosity based on different descriptions of the individual's kind of (non)belief: theists (who believed in a personal God), alternative spiritualists (who believed in a higher being or a spiritual power), uncertain individuals (who did not know what to believe in), and atheists (who did not believe in a personal God, a higher being, or a spiritual power). We also controlled for the contextual influence of living in former West vs. former East Germany. Only uncertainty what to believe in was related to higher levels of nihilism, while atheists were not more likely to indicate nihilistic tendencies than theists, which indicates a curvilinear relation between (non)religiosity and nihilism. Atheists were slightly less satisfied with life than theists, but an individual's (non)belief was only weakly related to his or her life satisfaction. In contrast, there was a stronger negative link between nihilism and life satisfaction.

As Chapter 2 already presents a detailed discussion of empirical research on this topic and directions for future research, Chapter 5 only briefly discusses the research contribution and the practical implications of the literature review and our empirical studies to/for the field of research on the relationship between (non)religiosity and life satisfaction.

1.2 Coauthors' contribution

The second chapter of this dissertation is based on a single-author manuscript published by the *Journal for the Scientific Study of Religion*.

The third chapter is based on a manuscript published by the *Journal of Happiness Studies*. This manuscript was co-authored by Thomas Schlösser and Detlef Fetchenhauer. Thomas Schlösser provided advice on the design of the study, the statistical analyses, the interpretation of the empirical results, and the preparation of the manuscript for publication. Detlef Fetchenhauer gave advice on the design of the study, the interpretation of the empirical results, and the preparation of the manuscript.

The fourth chapter is based on a manuscript submitted to the *Kölner Zeitschrift für Soziologie und Sozialpsychologie*. This manuscript was co-authored by Thomas Schlösser and Detlef Fetchenhauer. Thomas Schlösser adviced on the design of the study, the statistical analyses, the interpretation of the empirical results, and the preparation of the manuscript for publication. Detlef Fetchenhauer provided advice on the design of the study, the interpretation of the empirical results, and the preparation of the manuscript.

2 A complex simplicity: The relationship of religiosity and nonreligiosity to life satisfaction[1]

2.1 Introduction

Most of the previous research on the relationship between (non)religiosity and subjective well-being has found a general positive association between religiosity and life satisfaction, happiness, mental health, and even physical health (e.g., Ellison & Levin, 1998; Hackney & Sanders, 2003; Koenig & Larson, 2001; Myers, 2000; Tay et al., 2014). Thus, a simple linear relationship is widely assumed: Religious individuals are more satisfied with life than nonreligious individuals and highly religious individuals are more satisfied with life than weakly religious individuals.

Conclusions about a negative relationship between individual nonreligiosity and life satisfaction are, however, mainly drawn on the basis of research comparing low to high religiosity or low religiosity combined with nonreligiosity to high religiosity (Galen, 2018). In some studies on this relationship, nonreligious individuals were even excluded from the sample (Reed, 1991). None of these studies explicitly researched nonreligiosity as a phenomenon distinct from low religiosity. Instead, those who are weakly religious, indifferent, or undecided, and those who are atheist, agnostic, or otherwise nonreligious are often all encompassed in a heterogeneous comparison group labeled “no religious affiliation” or simply described as the “nones” (Galen, 2015; Hwang, Hammer, & Cragun, 2011; Pasquale, 2012). Thus, until a few years ago, nonreligious individuals and their well-being had remained

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largely unresearched (e.g., Weber, Pargament, Kunik, Lomax, & Stanley, 2012; Whitley, 2010).

Recent empirical studies, however, have shown a much more complex and differentiated picture in which the relationship between (non)religiosity and life satisfaction is influenced by many different factors on the individual and context level, such as, e.g., the certainty of (non)belief or characteristics of the culture an individual is living in (e.g., Diener, Tay, & Myers, 2011; Galen & Kloet, 2011; Pöhls et al., 2020a).

Subsequently, the line of research that suggests a general positive relationship between religiosity and life satisfaction will be reviewed, and conceptual and methodological issues will be discussed. Then, an overview of several empirical studies on the relationship between (non)religiosity and life satisfaction will be presented, which gives a more nuanced impression characterized by many influences and interactions rather than a universal positive relationship between religiosity and life satisfaction. These empirical studies show that to understand how (non)religiosity and life satisfaction are related, it is essential to (1) consider the fit to the context an individual lives in (e.g., to the country's dominant (non)religion or (non)religious norms), (2) differentiate between different subgroups of (non)religious individuals, (3) utilize multidimensional measures of nonreligiosity and look beyond the absence of classical indicators of religiosity, and (4) test for nonlinear relationships. The empirical results from these studies indicate that government regulations of civil, religious, and political freedoms, social norms of religiosity, and the level of societal development in a country are relevant aspects on the context level that interact with the relationship between individual (non)religiosity and life satisfaction. On the individual level, nonbelief certainty or existential dogmatism, an affirmative nonreligious identity, belief in science, secular sources of meaning in life, and secular social group memberships or engagements are central to nonreligious individuals' life satisfaction. Finally, the implications of these empirical results for future research will be discussed.

2.2 Definitions and conceptualizations

Life satisfaction is a major component of subjective well-being (Diener, Suh, Lucas, & Smith, 1999), and in contrast to positive or negative affect, it is defined as a cognitive overall evaluation or judgement based on a comparison "of one's circumstances with what is thought to be an appropriate standard" (Diener, Emmons, Larsen, & Griffins, 1985, p.71).

Currently, there are no generally accepted definitions of religiosity and nonreligiosity (Hwang et al., 2011). However, a wide variety of multilevel and multidimensional conceptualizations of religiosity can be found (Hill & Hood, 1999; Hill & Pargament, 2003). While there is no consensus (Hall, Koenig, & Meador, 2008), many of the concepts focus on similar dimensions and indicators. For example, Saroglou (2011) proposes believing, bonding, behaving, and belonging as the Big Four Religious Dimensions, while Hall et al. (2008) see belief, experience, coping, and support as the most commonly used dimensions in multidimensional concepts. Even larger conceptual problems can be found concerning distinguishing religiosity from spirituality, and concepts of spirituality often also contain nontranscendent aspects or overlap with indicators of well-being (Galen, 2018; Zuckerman et al., 2016). Thus, in the following, the relationship of life satisfaction to religiosity, not to spirituality, will be reviewed.

The field of research on nonreligiosity and secularity faces similar problems in finding broadly accepted definitions and concepts (Pasquale, 2012; Jong, 2015), especially when conceptualizing nonreligiosity beyond scoring low on the commonly used indicators of religiosity (Coleman & Jong, in press). Lee (2012) defines nonreligiosity as "anything which is *primarily* defined by a relationship of difference to religion" (p.131), which includes worldview stances such as agnosticism, some forms of humanism, some kinds of secularism, anti-religiosity, irreligiosity, and indifference towards religion but not rationalism and alternative forms of spirituality. Some nonreligious beliefs (e.g., in science), forms of belonging (e.g., to secular groups),

values (e.g., freedom of (non)religiosity), attitudes towards individual and institutional religiosity (e.g. anti-religiosity), the strength of nonbelief and/or the centrality of nonreligiosity in one's life (see e.g., Zuckerman et al., 2016) are compatible with Lee's definition of nonreligiosity but still go beyond the mere absence of religious belief, behavior, belonging, self-identification, and values. Therefore, these aspects could be included in multidimensional concepts of nonreligiosity. However, according to Coleman and Jong (in press), sociological research has, to date, mainly focused on counting (non)religious identifications (e.g., not being religiously affiliated or identifying as atheist), on counting (non)belief (e.g., indicating not to believe in a God/gods), or on single-item attitudinal and behavioral measures (e.g., rating the importance of religion in one's life or the frequency of attending religious services). In psychological research, several scales measuring nonreligiosity in a multidimensional way have been developed, e.g., the NonReligious-NonSpiritual Scale (NRNSS) by Cragun, Hammer, and Nielsen (2015); the Reasons of Atheists and Agnostics for Nonbelief in God's Existence Scale (RANGES) by Bradley, Exline, Uzdavines, Stauner, and Grubbs (2018); the Dimensions of Secularity (DoS) by Schnell (2015); or the Existential Orientation Scale (EOS) by Rosenkranz and Charlton (2013) (for an overview of the first three scales mentioned, see also Coleman & Jong, in press). However, most of these scales only contain a few or no aspects of nonreligiosity beyond the absence of typical indicators of religiosity and are not yet frequently utilized in empirical research on the relationship between (non)religiosity and life satisfaction. As long as this is the case, it should clearly be specified which dimension(s) and indicator(s) of (non)religiosity was(were) researched, and the results of empirical studies using only one or two different indicators should not be interpreted as measuring (non)religiosity in general.

In the following, when reporting empirical results concerning the relationship between (non)religiosity and life satisfaction, it will therefore be clearly mentioned which facet of (non)religiosity was measured in the study at hand.

2.3 The positive relationship between religiosity and life satisfaction

The historical debate following the opposite views of James (1902/1985) and Durkheim (1912/2001) concerning whether personal (e.g., religious belief or experience) or social (e.g., belonging to a religious community) aspects are more essential to religiosity is still reflected in contemporary empirical research on the relationship of religiosity to subjective well-being (see, e.g., Helliwell & Putnam, 2004; Lim & Putnam, 2010). Thus, indicators of religious belief and of attending religious services are the most researched aspects of religiosity in studies on this topic. Other aspects of religiosity are researched, as well, though rarely more than three or four simultaneously in one study.

Witter, Stock, Okun, and Haring (1985) performed an early meta-analysis of 28 empirical studies from 1930 to 1979 on the relationship between religiosity and subjective well-being. Religiosity was more strongly related to subjective well-being in earlier than in later studies and stronger in older than in younger samples. Effect sizes varied significantly with different operationalizations of religiosity. Studies researching aspects of religious behavior (e.g., church attendance) were related to higher effect sizes than those researching religious beliefs or attitudes (e.g., the importance of religiosity or interest in religiosity), while there was no difference between indicators of subjective well-being.

Hackney and Sanders (2003) included 28 empirical studies from 1990 to 2000 on the relations between various indicators of religiosity and life satisfaction in a meta-analysis and found a mean effect size of 0.10 [CI: 0.08 to 0.11] when aspects of institutionalized religion were measured, of 0.12 [CI: 0.10 to 0.14] on the relationship between aspects of ideological religion and life satisfaction, and of 0.14 [CI: 0.13 to 0.16] when aspects of personal devotion were measured. They also found a significant relationship between which aspect of religiosity was used in a study and the magnitude of the effect size.

An often-cited empirical study on the relationship between religiosity and subjective well-being was conducted by Ellison (1991). In a sample from the General Social Survey of 997 US participants, he found a relationship between certainty in religious belief and life satisfaction, divine interaction (i.e., feeling close to God and praying) and life satisfaction but not between attending religious services and life satisfaction. He also found significant variations in the level of life satisfaction between different religious denominations. According to Ellison, attending religious services and divine interaction have an indirect effect on subjective well-being by strengthening religious belief certainty.

Helliwell and Putnam (2004) found a positive relationship between the average national level of considering God or religion important in one's life and individual life satisfaction, between considering God or religion important in one's life and life satisfaction, but not between attending religious services and life satisfaction when using a sample from three waves of the World Values Survey and the European Values Survey. In a Canadian sample of 7,500 participants from an empirical study of the Social Sciences and Humanities Research Council of Canada, they found no relationship between considering God or religion important in one's life or attending religious services and life satisfaction.

Greenfield and Marks (2007) found in a representative sample of 3,032 US participants from the MIDUS that a stronger religious social identity was associated with higher levels of life satisfaction and that the strength of the religious social identity mediated the association between attending religious services and life satisfaction.

Lim and Putnam (2010) examined two waves of the Faith Matters (FM) Study with a sample of 1,915 US participants. They found that individuals with no religion had lower levels of life satisfaction than those who indicated that they had a religious affiliation, but this difference disappeared when including the frequency of attending religious services in the analysis. The positive relationship between church attendance and life satisfaction in turn was mediated by the

number of friends in the congregation (not by the size of the social network in general), and congregational friendship had a larger effect among individuals who considered religion to be very important to their sense of self. They conclude that “only when people have both a strong sense of religious identity and within-congregation networks does religion lead to greater life satisfaction” (pp.923-924). They found no evidence for a significant positive relationship of various private or subjective aspects of religiosity (e.g., strength of religious faith, praying, or belief in God) to life satisfaction independent of congregational friendship and religious identity. The results of a panel data analysis with the two waves of the study confirmed these cross-sectional results: A change in the number of congregational friends was related to a change in life satisfaction. Lim and Putnam did, however, mention that their results do not necessarily imply that there is something unique about religious social networks and that it is possible “that networks based on non-religious social identity have a similar effect as long as the members of these networks meet regularly in a certain context and share a strong sense of identity” (p.929).

In a more recent literature review, Tay et al. (2014) found a small but, according to them, consistent positive relationship between religiosity and subjective well-being in the majority of selected studies from both Western industrialized societies as well as from several other countries and interpreted this as the “pan-cultural positivity of religiosity and SWB” (p.163). However, few of the reviewed studies included life satisfaction as an indicator of subjective well-being. For example, only two of the 12 reviewed studies with international samples researched life satisfaction: Abdel-Khalek (2010) found in a convenience sample of 224 Muslim University students in Kuwait significant positive correlations between the general level of religiosity and life satisfaction and between strength of religious belief and life satisfaction (without controlling for the influence of sociodemographic variables), and Lazar and Bjorck (2008) found a positive relationship between support from the religious community and life satisfaction in a convenience sample of 277 Jewish participants from religious neighborhoods in several cities

in Israel. Tay et al. (2014) also mentioned the possibility that there might be an influence of contextual moderators such as life circumstances, difficulty of societal circumstances, social norm effects, and religious regulation on this relationship.

Other empirical studies have linked aspects of religiosity such as features of religious or spiritual struggles (e.g., Wilt, Grubbs, Exline, & Pargament, 2016) or religious doubt (e.g., Gauthier, Christopher, Walter, Mourad, & Marek, 2006; Krause, 2006) to a lower level of psychological well-being, including life satisfaction. Thus, religiosity not only has benefits but also costs.

In general, the previously described empirical results on the relationship between religiosity and life satisfaction are less consistent and more complex than often reported, sometimes even conflicting (e.g., concerning which aspect(s) of religiosity is(are) related to life satisfaction). In addition, it is still unclear which underlying mechanisms link religiosity and life satisfaction.

Thus, the claim of a unique and universal benefit of religiosity is questionable, and there is limited potential for drawing conclusions about nonreligious individuals' life satisfaction due to most of the empirical studies on the relationship between religiosity and subjective well-being having several of the following conceptual and methodological issues:

1.) Most of the research on religiosity and well-being is conducted in the USA with samples largely consisting of Christian US participants or even specific demographic groups of Americans, such as certain age groups, denominations or ethnicities (Brewster, Robinson, Sandil, Esposito, & Geiger, 2014; Moore & Leach, 2016). The USA is, however, characterized by a higher level of average religiosity than most other Western secularized countries (Norris & Inglehart, 2011), and Helliwell and Putnam (2004) also found a positive relationship between the average national level of religiosity and individual life satisfaction. Thus, it is questionable whether the empirical results can be generalized for other countries, concerning both more and less religious ones, and for non-Christian religious cultures.

2.) The samples do not consist of a substantial number of nonreligious individuals, or there is no information on the number of nonreligious individuals in the sample provided (Hwang et al., 2011).

3.) Aspects of religiosity are defined and measured differently across studies, and often only a few aspects are researched simultaneously in one study; thus, there is no control for the influence of other aspects of religiosity (Hackney & Sanders, 2003; Lim & Putnam, 2010). It would be preferable if a multidimensional concept of both religiosity and nonreligiosity was the theoretical basis for the selection of measures.

4.) Several of the commonly used religiosity measures are biased in the sense that they are difficult to answer for nonreligious individuals (Coleman & Jong, in press). For example, a convinced atheist probably has difficulty answering questions on the importance of God or religion in his or her life or on the certainty of his or her religious beliefs if he or she wants to indicate that it is a central aspect in his or her life not to believe in God or adhere to a religion and that he or she is certain of his or her nonbelief. Cragun et al. (2015) call such questions that assume religiosity as the norm and are therefore difficult to answer out of a non-religious perspective “one-and-a-half barreled items”. This might be one reason why Ellison (1991) did not find any nonlinear effects in his study because a question on the certainty of religious belief is difficult to answer for nonreligious individuals.

5.) Nonreligious individuals are not differentiated from weakly religious individuals and are often functioning as a residual group (Farias & Coleman, 2019; Galen, 2015; Hwang et al., 2011; Moore & Leach, 2016; Pasquale, 2012; Zuckerman et al., 2016). Additionally, there is no differentiation between types of nonreligious individuals (e.g., atheists, agnostics, indifferent individuals, etc.), even though they might vary substantially in their level of life satisfaction (Galen & Kloet, 2011; Whitley, 2010). This lack of differentiation may have also prevented previous research from finding nonlinear relations (Galen & Kloet, 2011).

6.) Most studies do not control for secular functional equivalents of aspects of religiosity, e.g., by measuring both the size of religious networks and of other social networks as Lim and Putnam (2010) did (Galen, 2018; Zuckerman et al., 2016), which might confound the effects of religiosity with the effects of social group membership (Galen & Kloet, 2011).

7.) The influences of sociodemographics, personality traits, or context variables on the relationship between religiosity and life satisfaction are rarely examined, thus it would be preferable if more studies tested for interactions with these variables.

Consequently, these studies show certain positive relationships between different aspects of religiosity and subjective well-being, but they do not point towards a universal positive effect of religiosity or necessarily imply that nonreligious individuals are per se less satisfied with life. Zuckerman et al. (2016) describe this as the problematic assumption of a ”dose-response” relationship: Just because higher levels of religiosity are related to higher levels of life satisfaction, this does not indicate that moderate levels of religiosity are associated with moderate levels of life satisfaction and low levels of religiosity with low levels of life satisfaction.

Several more recent lines of empirical research provide a more detailed insight into the relationship of both religiosity and nonreligiosity to life satisfaction by measuring (non)religiosity in a multidimensional way, differentiating between (non)religious subgroups, testing for nonlinearity, utilizing samples with a substantial share of nonreligious individuals, and analyzing the influence of different context variables.

2.4 Multidimensionality of religiosity and testing for nonlinear relations

Yeniaras and Akarsu (2017) present the criticism that the majority of previous research on the link between religiosity and subjective well-being does not consider a nonlinear relationship nor use representative samples and that additionally, this research was based on

unidimensional instead of multidimensional measures of religiosity. In their empirical study, they used a stratified random sample of 413 Turkish adults who self-identified as Muslim to explore the (linear or nonlinear) relationship of different facets of religiosity with life satisfaction. Based on a modified version of Glock's (1962) five-dimensional scale by Shabbir (2007), they tested for the relationship of the ideological (beliefs of a religion), the ritualistic (activities prescribed by a religion), the experiential (feelings, emotions, and impressions connected to the sacred), the intellectual (knowledge of a religion), and the consequential (how a religion affects the behaviors and attitudes towards others, i.e., religious norms) dimension of religiosity with life satisfaction.

Combining these five dimensions into a unidimensional religiosity scale, Yeniaras and Akarsu found both a linear positive relationship between religiosity and life satisfaction and a U-shaped nonlinear relationship when they included the quadratic term of the measure. When the five religiosity dimensions were added separately to a regression model, the ideological and intellectual dimensions had a negative linear relationship with life satisfaction, while the consequential dimension had a positive linear relationship. When the quadratic terms of the five religiosity dimensions were also added to a statistical model, the ideological and consequential dimensions additionally had a nonlinear relationship with life satisfaction. This statistical model explained an additional 10 % of the variance compared to the model with the unidimensional religiosity measure. As Yeniaras and Akarsu's sample only consisted of Muslims from Turkey and none of them identified as nonreligious, the empirical results cannot be generalized for other countries, other religions, or for the whole range from religious to nonreligious individuals. However, their approach of testing for linear and nonlinear relationships with life satisfaction while differentiating between several dimensions of religiosity should be adapted by research with a focus on nonreligiosity. At this point, however, there is no multidimensional scale that measures both

nonreligiosity and religiosity in similar detail without conflating low religiosity with nonreligiosity.

2.5 Differentiating between (non)religious subgroups and testing for nonlinearity

Horning, Davis, Stirrat, and Cornwell (2011) differentiated in a sample of 134 elderly US participants between four different belief groups based on their self-identification: atheism, agnosticism, low religiousness, and high religiousness. They found no difference in the level of life satisfaction between the four groups.

Mochon et al. (2011) replicated the traditionally found positive association between religiosity and subjective well-being (a composite of seven measures on life satisfaction, hopelessness, depression, self-esteem, how participants felt in that moment, their general life satisfaction and their satisfaction with their spiritual and religious life) with a cross-sectional sample of the US population (N=6,465). In contrast to much previous research, they used both a scale measuring religiosity (from 1 least religious to 7 most religious) and an open-ended question about participants' religion or nonreligion, thus allowing a differentiation between weakly religious and nonreligious individuals. This differentiation led to the empirical finding that individuals with weak religious beliefs were less well than nonreligious individuals (atheists and agnostics), which indicates a nonlinear relationship between religiosity and subjective well-being. Mochon et al. (2011) concluded that religiosity clearly has a positive effect on the subjective well-being of highly religious individuals but that it might not be beneficial for everyone, and they even wondered whether weakly religious individuals might be happier if they left their religion altogether.

Similar empirical results were found by Newport, Witters, and Agrawal (2012) in a US sample from the Gallup-Healthways Well-Being Index interviews (N= 676,000). The most religious individuals had the highest level of life evaluation, but nonreligious individuals reported a higher level of life evaluation than the moderately religious.

These findings are also supported by Berthold and Ruch (2014), who examined a sample of more than 20,000 German-speaking participants from Germany, Austria, and Switzerland. Religiously affiliated individuals who practiced their religion reported more meaning in life and a higher level of life satisfaction than religiously affiliated individuals who did not practice their religion and nonreligious (i.e., religiously unaffiliated) individuals. There was, however, no substantial difference between the religiously affiliated who did not practice their religion and the nonreligious.

Galen and Kloet (2011) examined this nonlinear relationship between (non)religiosity and life satisfaction in more detail. To avoid a commingling of the effects of (non)belief and of belonging to a social group, they used a nonrepresentative US sample consisting only of members of a church and members of a secular group (N=658). Instead of using one of the most common indicators of religiosity (e.g., frequency of churchgoing), they measured individuals' certainty of (non)belief in God (*absolutely certain there is no God* through *not sure* to *absolutely certain there is a God*). They found a curvilinear relationship resembling a U-shape: Individuals with higher belief or nonbelief certainty had higher levels of life satisfaction and emotional stability than those with lower belief certainty (i.e., the weakly religious), though there was no longer a significant relationship between certainty and life satisfaction when controlling for sociodemographic characteristics. There was also a correlation between self-identification as religious or atheist and a high certainty of (non)belief and between self-identification as spiritual or agnostic and a low certainty of (non)belief. Galen and Kloet theorized that existential certainty or worldview coherence, rather than (non)religious belief content, may mediate a positive relationship between (non)religiosity and life satisfaction.

Similarly, Moore and Leach (2016) found a curvilinear effect of existential dogmatism (which included an item on (non)belief certainty similar to the one used by Galen & Kloet, 2011) on life satisfaction in an online sample of 4,667 participants recruited from different community forums on religiosity and nonreligiosity. The sample contained a

substantial number of atheist and other nonreligious individuals. They found no significant difference in the level of life satisfaction between individuals who were absolutely certain God exists and those who were absolutely certain God does not exist and both higher religious and higher nonreligious existential dogmatism (in contrast to uncertainty) were related to higher life satisfaction, even when controlling for general social support. Existential dogmatism accounted for 1% of the variability in life satisfaction, while general social support had a stronger relationship to life satisfaction.

Hayward, Krause, Ironson, Hill, and Emmons (2016), differentiated between three groups of nonreligious individuals in a large representative US sample. They found that religiously affiliated individuals had higher mean levels of life satisfaction than agnostic individuals but no difference to individuals without a religious preference and to atheists. Consequently, they also found evidence for a curvilinear relationship, yet they did not interpret the results in this sense.

Thus, these studies present empirical evidence for the necessity of differentiating between (non)religious subgroups and for considering a nonlinear relationship between (non)religiosity and life satisfaction.

2.6 Context-dependence

As previously mentioned, most of the previous research on the relationship among religiosity, nonreligiosity, and life satisfaction has been conducted in the USA, a country with a higher level of average religiosity than most other Western secularized countries (Norris & Inglehart, 2011). Helliwell and Putnam (2004) found no significant relationship between aspects of religiosity and life satisfaction in a Canadian sample. Snoep (2011) also found a positive relationship of time spent with people at church, belonging to a church organization, belonging to a religious denomination, attending religious services, and the importance of God in life to life satisfaction in a representative sample from the USA, but found no significant relationships between

any of these factors nor between praying and life satisfaction in representative samples from Denmark and the Netherlands.

If context variables, e.g., on the country-level, have an influence on the link between individual (non)religiosity and subjective well-being, a simultaneous examination of variables at the individual and aggregate levels is required by using multilevel analyses. Several recent lines of research try to identify which context variables are responsible for the variations between countries concerning the relationship of (non)religiosity and life satisfaction.

Elliot and Hayward (2009) identified the level of government regulation of civil, religious, and political freedom as a relevant context factor. In a cross-sectional analysis of 65 countries using the fourth wave of the World Values Survey, they found a positive relationship between personal religious identity (i.e., identifying as religious) and life satisfaction and between attending religious services and life satisfaction across countries. However, these associations were influenced by the level of government regulation: The positive relationship between identifying as religious and life satisfaction increased under higher government regulation, while the relationship between attending religious services and life satisfaction was positive when government regulation was low and negative when regulation was high, perhaps because participation was not perceived as voluntary and meaningful under such conditions. These results also indicate that the life satisfaction of individuals identifying as nonreligious or atheist is particularly negatively influenced by government regulations of civil, religious, and political freedoms. Elliot and Hayward also tested for the possibility of a U-shaped relationship between aspects of religiosity and life satisfaction and did not find one, which was possibly based on having collapsed individuals identifying as nonreligious and as atheist into one category and not having differentiated between highly and weakly religious individuals, thus making it impossible to detect a curvilinear relationship.

Li and Bond (2010) hypothesized that differences between countries concerning the relationship between (non)religiosity and life

satisfaction were based on a country's level of societal development (i.e., the level of health, education, and standard of living, United Nations Development Programme, 2015, measured with the human development index, HDI). They demonstrated that secular values were only related to higher life satisfaction in high-HDI countries; thus, the relationship between secular values and life satisfaction was moderated by the country level of societal development. According to Li and Bond, a better "cultural fit" between individuals who endorse secular values and high-HDI countries enhances the level of life satisfaction. This view is supported by the *existential security framework* by Barber (2011) and Norris and Inglehart (2011) which posits that the need for religiosity declines with economic development, income security, and improved health.

Both Eichhorn (2012) and Stavrova et al. (2013) examined the average level of religiosity in a country as a relevant context factor related to the association between religiosity and life satisfaction.

Eichhorn (2012) utilized representative samples of 43 European and Anglo-Saxon countries from the World Values Survey to test for the influence of the average country-level religiosity on the relationship between individual religious attitudes and practice (measured as importance of God in life and attendance of religious services) and life satisfaction. When this cross-level interaction was considered, no significant relationship between religiosity and the level of life satisfaction could be found. Individual religiosity (considering the importance of God in life) was only positively related to life satisfaction in more religious countries (concerning both the average attendance of religious services and importance of God in life), thus indicating social conformity mechanisms rather than an inherent benefit of religiosity.

Stavrova et al. (2013) combined the average level of religiosity with the social desirability of religion in a country, thus representing an indicator of the social norm of religiosity. In a representative sample of 64 countries from the World Values Survey and the European Values Study, religious individuals (measured by attendance of religious services, self-categorization, importance of God, and importance of

religion combined) were, on average, more satisfied with life than nonreligious individuals. However, this relationship varied between countries and was stronger in very religious countries, indicating the importance of a person-culture fit (Stavrova, 2014) which is consistent with the social norms theory (Cialdini & Goldstein, 2004). In a second study with a sample of 22 countries from the European Values Study, they found evidence that this relationship was partly mediated by nonreligious individuals in more religious countries perceiving negative attitudes towards themselves (i.e., to be treated by others with less respect or unfairly and not to receive appropriate recognition for what they do).

Diener et al. (2011) found empirical evidence that both quality of life conditions (i.e., average fulfillment of basic needs, safety, income, education, and life expectancy) and a country's level of religiosity have an influence on the relationship between religiosity (measured as importance of religion in life and church attendance) and life satisfaction in a representative sample from 153 countries from the Gallup World Poll. Religious individuals had higher levels of life satisfaction than weakly religious combined with nonreligious individuals in countries that were more religious and had lower average quality of life conditions, while in less religious countries, there was no difference between the two groups. In countries with higher quality of life conditions, weakly religious/nonreligious individuals had slightly higher levels of life satisfaction than religious individuals.

Lun and Bond (2013) identified the average importance of religious socialization and the average social hostility toward religions as additional relevant context factors on the country-level (which both correlated with the HDI). In a sample from the World Values Survey, they found the belief in religious authorities, the importance of God/gods in life, the importance of religion in life and belonging to a church or religious organization to be positively related to life satisfaction, while attendance of religious services was not related to life satisfaction. Praying or meditating was positively related to life satisfaction, but only in countries with a high average level of

agreement to the statement that children should be encouraged to learn religious faith (thus representing a person-culture fit). In contrast, in countries where religious socialization was not seen as important, individuals who regularly prayed or meditated had lower levels of life satisfaction than those who did not pray or meditate. Belief in religious authorities was more strongly related to life satisfaction in countries with higher average social hostility toward religions.

Pöhls et al. (2020a) combined a differentiation between religious and nonreligious individuals with the examination of the influence of context factors in a representative sample of 24 countries from the World Values Survey. There was no significant difference in the level of atheist and of other nonreligious individuals' life satisfaction compared to highly religious individuals when the fit between the individual (non)religiosity and a country's social norm of religiosity and societal level of development was controlled for. However, weakly religious individuals were less satisfied with life than highly religious individuals, thus indicating a curvilinear relationship. Atheist individuals' life satisfaction was positively associated with living in a country with a higher proportion of atheists and other nonreligious individuals, while the life satisfaction of other nonreligious individuals was not, indicating a different level of sensitivity towards social norms of religiosity.

The previously described studies have shown evidence that the country-level factors low government regulations of civil, religious, and political freedoms; lower levels of average religiosity; and a higher level of societal development have an influence on the relationship between nonreligiosity and life satisfaction. While several studies have shown that nonreligious individuals are not necessarily less satisfied with life than religious individuals, especially in countries with less religious social norms and good living conditions, there is still little research on which aspects of individual nonreligiosity are related to life satisfaction.

2.7 Aspects of nonreligiosity related to life satisfaction

The absence of certain aspects of religiosity has been shown to be positively related to life satisfaction under certain circumstances (e.g.,

not praying in countries where religious socialization is not valued, Lun & Bond, 2013). Similarly, Speed and Fowler (2017) showed in a representative sample of Ontario, Canada that for religiously unaffiliated individuals, church attendance had a negative relationship to life satisfaction.

Concerning aspects of individual nonreligiosity that go beyond the mere absence of aspects of religiosity, the previously described studies show empirical evidence that nonbelief certainty or existential dogmatism might both indicate a coherent worldview and that they are an essential factor related to life satisfaction (Galen & Kloet, 2011, Moore & Leach, 2016).

An affirmative nonreligious identity or self-categorization (e.g., openly identifying as atheist) has also been shown to be related to similar levels of life satisfaction as self-identifying as (highly) religious (Hayward et al., 2016; Pöhls et al., 2020a) and could also be interpreted as an expression of a coherent worldview (Galen & Kloet, 2011). A strong nonreligious identity might, however, have benefits beyond that. Based on the self-categorization theory by Turner, Hogg, Oakes, Reicher, and Wetherell (1987), Elliot and Hayward (2009) speculate concerning a religious identity that when "followers 'self-categorize' as members of a given religion about which they have positive attitudes", then "religion will provide a source of social identity, or a shared sense of self, that is positive for psychological well-being" (p.286), e.g., through collective self-esteem. This might function in a similar way for nonreligious individuals who choose a label as, e.g., "atheist", if they have positive attitudes about atheism and feel connected to other individuals using this label (Doane & Elliott, 2015).

Belief in science and progress or a naturalistic worldview is also central to many nonreligious individuals (e.g., Kosmin & Keysar, 2007; Silver, Coleman, Hood, & Holcombe, 2014; see also Galen, 2018). Scientific theories have been shown to have the potential to provide a sense of control and of living in an orderly and predictable world, similar to the way belief in God does (Preston & Epley, 2009; Rutjens, van Harreveld, & van der Pligt, 2013; Rutjens, van der Pligt, & van

Harreveld, 2010). An enhanced sense of personal control through belief in scientific-technological progress has in turn been shown to contribute to an individual's life satisfaction, even more than religiosity (Stavrova, Ehlebracht, & Fetchenhauer, 2016). This relationship was stronger in countries with a higher average belief in scientific-technological progress, which presents another example of a person-culture fit and of the influence of a country-level context variable.

Meaning and purpose in life is another aspect of (non)religiosity that has been researched in several of the previously described studies and has been shown to be positively related to life satisfaction (Horning et al., 2011; Steger, Oishi, & Kesibir, 2011). While there might be some differences between religious and nonreligious individuals, e.g., in the level of meaning they experience/report or how they find meaning in life, this does not necessarily seem to be related to a lower level of life satisfaction. Speed, Coleman, and Langston (2018) used three different indicators of (non)religiosity to explore the relationship to meaning in life in a US sample from the General Social Survey (GSS). Individuals who did not believe in God had higher levels of endogenous meaning in life (i.e., the belief that life is only meaningful if oneself provides the meaning) than those who believed in God, thus indicating a secular source of meaning in life, but there were no significant differences in the level of fatalism and nihilism. Similar results appeared when comparing religiously unaffiliated to affiliated individuals. In contrast, individuals who were raised religiously unaffiliated did not have higher levels of endogenous meaning in life than those who were raised religiously affiliated (while there were still no differences in fatalism and nihilism). In a representative German sample, Pöhls et al. (2020b) found that individuals who were uncertain about what to believe in were more likely to indicate nihilistic tendencies than individuals who believed in a personal God, while there was no difference between spiritual individuals and nonbelievers compared to believers in God. However, there was no difference in the level of life satisfaction between uncertain individuals and believers in God. In contrast, nonbelievers were slightly less satisfied with life than believers in God, which was thus not based

on a higher level of nihilism. Horning et al. (2011) showed in a small nonrepresentative sample that highly religious individuals indicated higher levels of presence of meaning in life than atheists and agnostics, but that this was not related to higher levels of life satisfaction. Berthold and Ruch (2014) showed the same for religiously affiliated individuals who practiced their religion in comparison to nonreligious individuals. Similarly, Schnell and Keenan (2011) found in a nonrepresentative German sample that atheists showed lower levels of meaning in life than religious individuals, but that they did not experience crises of meaning more frequently. Additionally, atheists differed in their sources of meaning in life from religious and other nonreligious individuals. Schnell and Keenan also identified three different types of atheists with varying levels of meaning in life, crises in meaning, and different sources of meaning; thus, this implies heterogeneity among atheists and may point towards a need for further differentiation beyond a self-categorization in research on some aspects of (non)religiosity.

Social aspects, such as belonging to a secular group, social engagements, or having social networks, also seem to be central to nonreligious individuals' life satisfaction. Members of a secular group have been shown to have equal levels of life satisfaction as church members (Galen & Kloet, 2011), while attending church has been shown to be negatively related to nonreligious individuals' life satisfaction (Speed & Fowler, 2017). Thus, it appears that a match between one's worldview and the kind of social belonging or engagement (religious vs. nonreligious) is most beneficial for life satisfaction (Galen, 2018). Horning et al. (2011) found highly religious individuals to have a greater number of social supports than atheists and agnostics, yet there were no significant differences in the level of satisfaction with social support or in the level of life satisfaction. This finding might either point towards nonreligious individuals having a lower need for social contacts than highly religious individuals or towards an effect of social desirability, which leads to highly religious individuals overreporting their number of social supports.

Thus, nonbelief certainty or existential dogmatism, an affirmative nonreligious identity, belief in science, secular sources of meaning in life, and secular social group memberships or engagements all seem to be central nonreligious variables related to life satisfaction. Most of these variables are not included in research on (non)religiosity, in which classical indicators of religiosity, such as the attendance of religious services, belief in God, etc., are usually preferred. However, when specifically researching the well-being of nonreligious individuals, the described indicators of nonreligious belief, behavior, and belonging should be considered.

2.8 Discussion

To conclude, the classic line of research proposing a benefit of religiosity for life satisfaction provides empirical evidence for certain positive relations between different aspects of religiosity and life satisfaction. However, these relations seem to be less consistent and more complex than they are often described to be, and this line of research can be criticized concerning several conceptual and methodological issues. Several more recent lines of research add to the relationship's complexity, e.g., by accentuating the importance of cross-level interaction effects.

Many of the previously described more recent studies on nonreligiosity share several methodological and conceptual issues with the classical studies on religiosity (e.g., not measuring on the basis of a multidimensional concept of nonreligiosity, using nonrepresentative samples, etc.) and only show improvement concerning a few of the issues. In addition, almost all of the described studies are cross-sectional, and hence, it is still unclear whether there is a direct and causal association between (non)religiosity and life satisfaction (Lim & Putnam, 2010; Mochon et al., 2011). However, even these few changes in the conceptualization and methodology already give a different impression of the relationship between (non)religiosity and life satisfaction, which provides implications for the directions of future research on this topic. Specifically, this review emphasizes the need for

considering the following aspects in research on the relationship between (non)religiosity and life satisfaction:

1.) The relationship between (non)religiosity and life satisfaction varies between cultures; therefore, empirical results from only one or a few countries should not be generalized. Context factors on the country-level that have been shown to interact with this individual-level relationship include government regulations of civil, religious, and political freedoms; social norms of religiosity; and the level of societal development.

2.) Samples should consist of a substantial number of nonreligious individuals to ensure sufficient variation in sociodemographic characteristics and allow for further differentiation between religious and nonreligious individuals into subgroups.

3.) Preferably, a multidimensional conceptualization of nonreligiosity should be developed and utilized as the basis for the selection of measures. Nonbelief certainty or existential dogmatism, an affirmative nonreligious identity, belief in science, secular sources of meaning in life, and secular social group memberships or engagements have been shown to be important aspects of nonreligiosity beyond the absence of classical indicators of religiosity.

4.) Researchers should test not only for linear but also nonlinear relations to identify differences in the level of life satisfaction between (non)religious subgroups.

2.8.1 Directions for future research

Several empirical studies have explored the interactions between individual (non)religiosity and context factors on the country-level. However, little is known about how context factors on other levels, such as the family-level (e.g., nonreligious individuals growing up in religious families) influence the relationship between (non)religiosity and life satisfaction, and this should be explored in future research.

On the individual level, nonbelief certainty or existential dogmatism, an affirmative nonreligious identity, belief in science, secular sources of meaning in life, and secular social group memberships or engagements are all variables of interest for future

research on the relationship of nonreligiosity to life satisfaction. These factors should be researched in more detail and more systematically. Other aspects that might also be relevant for the relationship between (non)religiosity and life satisfaction include differences in coping strategies between religious and nonreligious individuals (Horning et al., 2011; McDougle, Konrath, Walk, & Handy, 2016). The relationship between other nonreligious beliefs in addition to belief in science and progress and life satisfaction has not yet been researched. For example, Farias and Coleman (2019) discuss "Humanism, Positivism, Existentialism, Marxism, Transhumanism" (p.4) as other relevant nonreligious belief systems. Furthermore, Moore and Leach (2016) propose the relationship of the salience of an individual's ideological identity (i.e., how central belief or nonbelief is in a person's life) to life satisfaction as an aspect of interest for future research.

Future research should also examine which aspects of (non)religiosity are essential factors contributing to nonreligious individuals' life satisfaction as functional equivalents to aspects of religiosity and for which aspects nonreligious individuals simply have lower needs (e.g., concerning the idea that there is a certain meaning to life, Steger et al., 2011) while still holding comparable levels of life satisfaction as religious individuals.

In addition, the interactions between aspects of (non)religiosity and sociodemographic characteristics (e.g., Galen & Kloet, 2011) and personality traits (Berthold & Ruch, 2014; Caldwell-Harris, 2012; Galen, 2018; Morgan, 2013) should be researched in more detail. For instance, Gauthier et al. (2006) found in a nonrepresentative empirical study of 192 US students and church members that higher religious belief salience was related to higher life satisfaction for women but not for men.

Aspects with a potential negative relationship to life satisfaction are negative stereotypes, the level of perceived discrimination of nonreligious individuals, and the context factor level of discrimination in a society, which has been shown to be related to the level of religious social norms in a country (Stavrova et al., 2013). In many countries,

nonreligious individuals are seen in a more negative way than religious individuals; thus, they are confronted with a negative bias (Weber et al., 2012). According to Galen (2018), favorable outcomes in well-being are often misattributed to factors related to religiosity, simply based on the stereotype that religious belief and behavior are associated with well-being. Thus, self-fulfilling prophecies can occur and have negative consequences if nonreligious individuals internalize the stereotype of being maladapted or disadvantaged. In addition, an open self-identification as atheist is often associated with negative consequences, such as negative perception, and in some cases, even physical danger or legal punishment (e.g., Doane & Elliott, 2015; Hammer, Cragun, Hwang, & Smith, 2012; Zuckerman, 2006). For example, in an empirical study by Hammer et al. (2012) with a US sample of 817 self-identified atheists, participants reported on average to have experienced 10 of the 29 possible types of discrimination. The most common types of discrimination were slander (e.g., witnessing anti-atheist comments in newspapers or on television or being told one's atheism is sinful, wrong, or immoral) and types of coercion (e.g., being expected to participate in religious prayers against one's will). Doane and Elliott (2015) found in a large US sample of self-identified atheists that perceived discrimination was significantly related to a lower level of life satisfaction. Thus, discrimination has the potential to profoundly decrease nonreligious individuals' subjective life satisfaction, both directly and indirectly, e.g., by making "social connections, community involvement, and civic participation more difficult" (Hammer et al., 2012, p.57), and this relationship should be researched further, particularly with a differentiation between nonreligious subgroups.

Galen (2018) not only questions whether nonreligiosity and well-being are negatively related and presumes that nonreligious equivalents might fulfill similar functions as religiosity but he also proposes to focus more on secular mechanisms, e.g., through (non)belief certainty or self-categorization, which might also be the basis of many relationships between aspects of religiosity and subjective well-being. For example, Rutjens and Preston (in press) review empirical studies that show how

both religion and science fulfill the psychological functions of explanation, control, and meaning (which, as previously described, have a positive relationship to life satisfaction). Several of these secular mechanisms have already been mentioned when reviewing empirical research on nonreligious individuals, but there is no conclusion yet about the extent to which the relationship between religiosity and life satisfaction can be explained by secular mechanisms rather than by the unique influence of a supernatural or transcendent belief content (Galen, 2018). Thus, this constitutes another aim of future research: To not only research which aspects of (non)religiosity are related to life satisfaction but also to examine the underlying functional mechanisms and whether these are unique to religiosity or are rather secular in nature.

What this review has already shown, however, is that the relationship of religiosity and nonreligiosity with life satisfaction is clearly more complex than usually reported and that it is very unlikely that (one specific form of) religious belief and practice would be beneficial for everyone's life satisfaction, independent of individual characteristics and the context in which a person lives.

3 Nonreligious identities and life satisfaction: Questioning the universality of a linear link between religiosity and well-being[2]

3.1 Introduction

The well-being of religious individuals has long been a focus of empirical research which has often suggested that they are healthier, happier, and more satisfied with life (for an overview, see Koenig & Larson, 2001; Myers, 2000). Keysar and Navarro-Rivera (2013) estimate that at least 450-500 million people worldwide do not believe in God(s). In addition, there are individuals who do believe in God(s), but do not practice any religion, those who weakly believe in religious doctrines, and individuals who are not sure about what to believe in. Some of these individuals could be labeled secular or nonreligious (or more specifically, atheist or agnostic), while others are better described by terms such as unaffiliated or weakly religious. However, are all of these individuals challenged with a lower level of well-being?

Several researchers question whether religiosity provides a general advantage in terms of subjective well-being, at least as long as this is based on research which treats the diverse range of nonreligiosity as an equivalent phenomenon to low religiosity (e.g., Galen, 2015; Pasquale, 2012). Empirical studies that examine the influence of context factors on the relation between religiosity and subjective well-being also challenge the idea of a universal benefit. While most of the research on the topic is conducted in the USA, the effect has not been found in several other countries (e.g., Snoep, 2008). This variation might be explained by factors such as a country's social norm of religiosity (e.g., Eichhorn, 2012; Stavrova et al., 2013), a country's level of development (Li & Bond, 2010), or both of these (Diener et al., 2011).

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Pöhls, K., Schlösser, T., & Fetchenhauer, D. (2020). Non-religious identities and life satisfaction: Questioning the universality of a linear link between religiosity and well-being. *Journal of Happiness Studies, 21*(7), 2327–2353. doi:10.1007/s10902-019-00175-x

There clearly has been a lack of research on the relation between (non)religiosity and well-being that takes into consideration that the diverse types of nonreligiosity might differ from each other and that country characteristics might moderate the individual level relations. This study aims to fill this gap and to reevaluate the previous empirical results on the link between (non)religiosity and life satisfaction. For this purpose, we combined elements from four (partially) competing lines of research in an intercultural comparison across 24 countries. We examined whether two different types of religiosity (high and low religiosity) and two different types of secularity (atheism and indistinct nonreligiosity) which could be interpreted as having different levels of (non)belief certainty differed in their level of life satisfaction. This approach allows an examination of the potential influence of a person-culture fit concerning the subtypes of individual (non)religiosity and the contextual factors of the social norm of religiosity and the societal level of development. Subsequently, the four different lines of reasoning in previous empirical research on (non)religiosity and subjective well-being will be presented.

3.1.1 The benefit of religiosity for subjective well-being

While the process of secularization has long been a topic of research interest in the social sciences (e.g., Dobbelaere, 2002; Halman & Draulans, 2006), individual nonreligiosity (also called secularity) has remained largely unexplored (e.g., Weber et al., 2012; Whitley, 2010). Instead, conclusions about nonreligious individuals' well-being are usually drawn on the basis of research on religiosity. It is widely assumed that religiosity has a positive effect on well-being based on a vast amount of empirical research which has found a positive relation between religiosity and life satisfaction, happiness, and mental health (e.g., Ellison, 1991; Koenig & Larson, 2001; Tay et al., 2014). Well-being is, e.g., related to a strong religious group identity (Lim & Putnam, 2010), attending religious services (Ferriss, 2002; Helliwell & Putnam, 2004; Lim & Putnam, 2010) and building social networks in the religious community (Lim & Putnam, 2010).

Based on this first line of research, it is hypothesized that religiosity predicts subjective well-being, that this relationship is linear, and that consequently, nonreligiosity is negatively related to well-being.

3.1.2 Differentiating between secular individuals: The curvilinear relation between (non)religiosity and well-being

Several researchers question the assumption that nonreligiosity is generally negatively related to subjective well-being. In the first place, nonreligiosity describes many different modes of nonbelief such as atheism (belief that there is no God/gods), agnosticism (belief that one cannot know whether there is a God/gods), or indifference towards religiosity (see Lee, 2012) and these might differ in their relation to life satisfaction (Galen & Kloet, 2011; Whitley, 2010). Second, many empirical studies do not differentiate between the weakly religious and the nonreligious, who actually might present two distinct groups (Galen, 2015; Galen & Kloet, 2011). Third, religious church members are often compared to nonreligious individuals without any affiliation to a secular group and thus, the effects of religiosity are confounded with the effects of social group membership (Galen & Kloet, 2011).

Based on this criticism, Galen and Kloet (2011) compared more than 600 members of a church and a secular group in an empirical study with a nonrepresentative sample. They differentiated between (non)religious individuals based on their certainty of (non)belief in God (*absolutely certain there is no God* through *not sure* to *absolutely certain there is a God*). Contrary to previous research, they found a curvilinear relation that resembles a U-shape: Individuals with higher belief certainty displayed higher levels of life satisfaction and emotional stability than those with lower certainty. Additionally, the self-identification of individuals as religious or atheist correlated with a high certainty of belief and the self-identification as agnostic with a low certainty of belief. They conclude that independent of a (non)religious belief content, the existential certainty or worldview coherence may mediate a positive relation between belief and well-being and that previous research has been unable to detect this curvilinear association

because researchers did not differentiate between weakly religious, doubtful (non)religious, and convinced nonreligious individuals.

Similarly, Newport et al. (2012) found in an analysis of the Gallup-Healthways Well-Being Index interviews with more than 676,000 US residents that the most religious individuals had the highest level of well-being, but that the nonreligious reported a higher level of well-being than the moderately religious. Many other empirical studies have also found evidence for the existence of a curvilinear relation between (non)religiosity and subjective well-being and health, both in nonrepresentative samples of different ages and cultures (e.g., Mochon et al., 2011; Ross, 1990; Yeniaras & Akarsu, 2017; see also Weber et al., 2012) and in representative country samples (e.g., Baker, Stroope, & Walker, 2018; Dilmaghani, 2018). To the best of our knowledge, the current study is the first to examine this curvilinear relation in intercultural research.

Many large-scale secondary data sources do not include items on the certainty of (non)religious belief. Based on the research by Galen and Kloet (2011), atheistic self-identification could be used as an indirect indicator of high certainty in nonreligious beliefs. A self-classification (e.g., with terms as "religious", "spiritual but not religious", "not religious", "undecided", and "atheist") contains several advantages. It is a simple overall measure which gives information about an individual's personal and social identity and allows a differentiation between the diverse types of (non)religiosity which cannot be measured with the most frequently used variables such as an overall scale of religiosity (ranging from very religious to not religious), behavioral variables (e.g., the frequency of churchgoing), or variables on values (e.g., the importance of God(s) in one's life).

The identification as atheist is often connected to disadvantages, ranging from negative perception/discrimination to physical danger or legal punishment (e.g., Doane & Elliott, 2015; Weber et al., 2012; Zuckerman, 2006). Thus, it is likely that only nonreligious individuals with a high certainty of nonbelief would indicate being an atheist. A high certainty of nonbelief could function as a buffer against

discrimination by offering a distinct worldview and providing a feeling of belonging to a group. It might serve as an important aspect of the individual's social identity (Ysseldyk, Matheson, & Anisman, 2010), perhaps similarly to how religious minorities maintain a positive group image. In contrast, those who do not identify as religious might simply express not belonging to an organized form of religion, while still believing in God(s). Or it might signify confusion or indifference concerning what to believe in. Yet, these individuals might be able to adapt easier to religious societies and may be perceived as less norm-deviating. Thus, atheists probably differ from other nonreligious individuals both concerning having to cope with more negative consequences such as discrimination (especially in very religious societies) and concerning certain positive aspects, such as a higher sense of belonging to a group.

To conclude, this second line of research hypothesizes that there are differences between religious and secular subgroups and that atheists (who presumably have a high nonbelief certainty) are just as satisfied with life as their religious counterparts.

3.1.3 The influence of country-level factors

In addition to the above-mentioned neglect of differentiation between types of secularity, country-level variables that potentially moderate the relation of (non)religiosity to well-being are rarely examined. Most research on this topic has been conducted in the USA, which has a highly religious population and represents a special case among the more secularized states of the western world (see Norris & Inglehart, 2011). Snoep (2008) found a positive relation between religiousness and life satisfaction in the USA but not in the Netherlands or in Denmark. Lu and Gao (2016) found no significant relation between religious identity and happiness in China, while religious belief and practice even had a significantly negative relation to happiness. Two different lines of research propose explanations for this variation between countries.

3.1.3.1 Person-culture fit: Social norm of religiosity

Several empirical studies provide evidence that a country's social norm of religiosity moderates the link between religiosity and different indicators of well-being such as social self-esteem and psychological adjustment (Gebauer, Sedikides, & Neberich, 2012), health (Stavrova, 2015), and subjective well-being (Eichhorn, 2012; Stavrova et al., 2013).

Stavrova et al. (2013) found in their cross-cultural study with 64 countries that religious individuals were on average happier and more satisfied with life than those who were nonreligious. However, consistent with the social norms theory (e.g., Cialdini & Goldstein, 2004), this effect varied significantly between countries and was stronger in countries with a negative attitude towards nonreligious individuals. This influence of social norms on the relation between individual level variables is also referred to as person-culture fit (Stavrova, 2014).

Eichhorn (2012) examined the effect of context factors on the relation between religiosity and life satisfaction in a cross-cultural study with 43 representative European and Anglo-Saxon country samples. He found that the often observed positive relation between religiosity and life satisfaction disappeared when controlling for societal religiosity. Personal attitudinal religiosity (operationalized as the importance of God in one's life) was only positively related to life satisfaction in countries with high levels of religious practice (i.e. attending religious services) and of attitudinal religiosity, thus, when there was a conformity to (visible) societal religiosity levels.

This third line of research indicates that not being in accordance with social norms of religiosity is negatively related to subjective well-being and that secular individuals are consequently more satisfied with life when they live in countries with a low norm of religiosity. However, the person-culture fit concerning social norms has been found in many empirical studies, so we do not aim to simply replicate this effect, but to go beyond previous research by combining the moderating effect of the societal norm of religiosity with a differentiation between nonreligious subgroups. Thus, we hypothesize that atheists are more sensitive to

societal norms of religiosity than indistinct nonreligious individuals. As previously mentioned, atheists and other nonreligious individuals differ concerning the risk of being sanctioned because of their worldview. The likelihood for discrimination and similar issues probably varies with the norm of religiosity in a society. Therefore, it seems plausible to hypothesize that individuals who openly identify as atheist are to a greater extent affected by the social norm of religiosity than other nonreligious individuals who deviate less from religious norms.

3.1.3.2 Person-culture fit: Societal level of development

Li and Bond (2010) also assume that a person-culture fit might explain the differences between countries concerning the relation of (non)religiosity to subjective well-being. However, they proposed a society's level of development (i.e., the level of a population's health, education, and standard of living, United Nations Development Programme, 2015) as the relevant context factor. In their empirical study, the relation between secular values and life satisfaction was moderated by a country's human development index (HDI), with a positive relation between secular values and life satisfaction that was found only in high-HDI countries. Drawing on the *existential security framework* (ESF) by Barber (2011) and Norris and Inglehart (2011) which states that the need for religion declines with economic development, income security, and improved health, Li and Bond (2010) argue that their results indicate a better "cultural fit" between secular individuals and high-HDI countries that promotes well-being.

Thus, this fourth line of research suggests a positive link between nonreligiosity and life satisfaction in countries with a high level of societal development.

From a theoretical perspective, this line of research clearly differs from the research on the social norms of religiosity, yet it is unclear whether these aspects can be easily separated in empirical research. Diener et al. (2011) examined both a country's level of religiosity and quality of life conditions (concerning average fulfillment of basic needs, safety, income, education, and life expectancy) as potential influences on the relation between religiosity and subjective well-being with 153

representative country samples from the Gallup World Poll (2005-2009). Their results indicate that both aspects are relevant moderating factors: Religiosity was positively associated to well-being in countries with bad living conditions and in highly religious countries, but it was not or negatively related in the least religious countries and under good living conditions.

3.1.4 The present research

This study combines for the first time elements of all the above-described competing lines of research on the relation between (non)religiosity and well-being to both reexamine and go beyond previous empirical results. Our research questions the negative relation between nonreligiosity and well-being, specifically by taking into account a differentiation between types of (non)religious identities and the effect of context factors on the relation between (non)religiosity and well-being in an intercultural comparison. For this purpose, we converted the described lines of research into the following hypotheses:

Hypothesis 1 (Universal benefit of religiosity): Religious individuals are more satisfied with life than nonreligious individuals across all cultures.

Hypothesis 2 (Curvilinear relation between (non)religiosity and life satisfaction): Highly religious individuals and atheists reach higher levels of life satisfaction than weakly religious and indistinct nonreligious individuals. This relation might be based on highly religious individuals and atheists having a higher (non)belief certainty.

Hypothesis 3 (Person-culture fit: Social norm of religiosity): The societal level of religiosity moderates the influence of individual (non)religiosity on well-being and this effect is more pronounced for individuals who openly identify as atheist than for other nonreligious individuals. Thus, atheists are as satisfied with life as highly religious individuals when they live in an environment with many likeminded others, i.e., a low social norm of religiosity. This would be indicated by a cross-level interaction effect between identifying as atheist and a country's social norm of religiosity.

Hypothesis 4 (Person-culture fit: Societal level of development): The level of development and equality in a society moderates the link between (non)religiosity and well-being. Hence, atheist and other nonreligious individuals are just as (or even more) satisfied with life as religious persons when they live in highly developed societies. This would be indicated by a cross-level interaction effect between identifying as indistinct nonreligious/as atheist and a country's level of societal development.

When researching the relation between identifying as not religious or atheist and life satisfaction in an intercultural comparison with representative samples, we are confronted with the problem that in many countries worldwide, the number of individuals identifying as atheist is relatively low. This variation might not be random as the average religiosity in a country has been found to vary with a country's level of development (e.g., Norris & Inglehart, 2011) and this is probably also associated to the number of people identifying as atheist in a country. Additionally, some countries and societies even persecute an open identification as atheist or not religious, either through law enforcement (e.g., in countries practicing the shari'ah) or through social sanctions (such as social rejection, e.g., Doane & Elliott, 2015). It can be expected that this increases the problem of socially desirable answers in surveys on (non)religion (e.g., Hadaway, Marler, & Chaves, 1998) and leads to an underestimation of the number of nonreligious, including atheist, individuals per country. Also, including country samples with very few (or even no) atheists into a quantitative cultural comparison would imply very little individual variation in this group, e.g., concerning sociodemographic characteristics or other factors which also influence subjective well-being considerably. Similar to Eichhorn (2012), but in contrast to Stavrova et al. (2013) and Diener et al. (2011), we thus have had to limit our research to those countries in which a substantial share of the sample openly identified as atheist to obtain statistically meaningful results and valid conclusions. Therefore, our results are not representative for all countries worldwide, but rather for

countries with a considerable number of individuals who openly identify as atheists.

3.2 Method

3.2.1 Data

The research questions were examined using a quantitative intercultural comparison research design. The analyses in this research project are based on survey data from wave 6 (2010 to 2014) of the World Values Survey (WVS), a cross-national longitudinal survey of human beliefs and values. The representative national samples are attained with stratified random sampling and the data collection is conducted with a uniformly structured questionnaire in face-to-face or phone interviews (WVS, 2016a). The original sample consists of more than 85,000 survey participants from 57 countries worldwide (WVS, 2016b).

Individuals who self-identified as atheist but also indicated a belief in God were excluded from the sample due to possible misconceptions of the term "atheist" in these cases. Additionally, country samples with less than 20 individuals who identified as atheist were excluded from the analyses. This criterion was chosen as a compromise between losing country variation and having too little individual variation between atheists per country, which would not generate meaningful results. Based on these requirements, only one predominantly Muslim country (Kazakhstan) and no African country remained in the sample. Unfortunately, this entails excluding the majority of countries which are both very religious and have a low level of societal development. Thus, we will not be able to test our hypotheses across the whole range of countries from a very high norm of religiosity/very low level of development to a very low norm of religiosity/very high level of development.

Consequently, the dataset used for the following analyses consisted of 33,879 participants from 24 countries. 36.6% of the sample indicated to be highly religious, 15.0% were weakly religious, 37.6% labeled themselves as not religious, and 10.8% identified as atheist. In Mexico,

1.2% of the sample identified as atheist, in contrast to 44.7% in Hong Kong.

3.2.2 Measures

The dependent variable individual *life satisfaction* was defined as a person's well-being with a focus on the overall satisfaction with his/her life instead of on short-term affective states (Diener, Oishi & Lucas, 2009). It was measured with the item "All things considered, how satisfied are you with your life as a whole these days?" (1 *completely dissatisfied* to 10 *completely satisfied*), one of the most commonly used items for measuring life satisfaction in empirical research. It has also been shown to have a suitable reliability and validity because it is stable under unchanging conditions but sensitive to changing circumstances (e.g., significant life events) and it reflects differences in life satisfaction between nations or groups based on living under diverse objective conditions (Diener, Inglehart, & Tay, 2013).

The independent variable *(non)religious self-identification* was used to compare two religious and two secular subgroups. It was measured with the item "Independently of whether you attend religious services or not, would you say you are: A religious person, not a religious person, an atheist?". This self-identification as religious, indistinct nonreligious, or specifically atheist expresses religious or secular belief and a potential group membership that might be relevant to the individual's social identity. To differentiate further between religious individuals, we combined religious self-identification with an item on the importance of religion in life. Religious individuals who indicated that religion is very or rather important in their lives were categorized as highly religious, while religious individuals who indicated that religion is not very or not at all important in their lives were categorized as weakly religious. This item presents neither a self-identification, nor a direct measure of belief strength, but rather of religious values. Yet, in contrast to, e.g., behavioral variables, this variable can be understood as an evaluation of the self-identification as religious and is rather neutral towards different cultures and religions. Thus, we expect it to be the most suitable variable to differentiate between weakly and highly religious

individuals. As mentioned above, Galen and Kloet (2011) observed a correlation between the use of different labels describing (non)belief and the strength of (non)belief (i.e., religious and atheist individuals hold a higher level of (non)belief strength). We attempted to validate for this study's data set that this self-identification indirectly measures (non)belief certainty (see Results section).

The moderator variable *social norm of religiosity* was operationalized as the share of religious individuals in a country. It was measured as the percentage of individuals per country who indicated on the variable (non)religious self-identification that they would call themselves a religious person. This reflects the specific descriptive social norm of identifying as religious. The variable was computed before excluding cases with missing data to avoid any bias concerning nonrandomly missing data (e.g., data missing on account of lower educational status). The moderator variable *societal development* was measured with the inequality-adjusted human developmental index (IHDI) which combines the three indicators of the HDI (the average level of life expectancy, years of schooling, and the gross national income per capita in a country) with an adjustment for inequality in a country (United Nations Development Programme, 2015).

On the individual level, the variables *gender*, *employment status* (with the dummy variables employed, unemployed, and not in the labor force), *marital status* (with the dummy variables married, living together as married, divorced/separated/widowed, and single), *educational level* (with the dummy variables no formal education, primary education, secondary education, and tertiary education), *income* (measured as a rating of one's income in comparison to the population of one's country), *age* (transformed to *z*-scores), and *age squared* were controlled for, because they are known to substantially influence life satisfaction (Frey & Stutzer, 2002; Helliwell & Putnam, 2004).

On the societal level, the *countries' predominant religious denomination* (Central Intelligence Agency, 2014) was controlled for (with the dummy variables Protestant culture, Catholic culture, Orthodox culture, Muslim culture, eastern religious culture, mixed

religious culture, and secular culture). Another relevant factor is whether a process of enforced secularization has occurred in a country. Empirical research suggests that the enforced secularism in the former Soviet countries led to religion being substituted by political ideology, so that the collapse of these systems (and the sudden lack of guiding principles) caused a strong decrease in citizens' levels of well-being in these countries (Inglehart & Klingemann, 2000). Thus, countries with a history of enforced secularism might differ from those with voluntary secularism concerning the hypothesized effects. Therefore, the variable of whether a country's population experienced *enforced secularism* was controlled for.

3.2.3 Missing values

Cases with missing values for the dependent variable, life satisfaction; the independent variable, (non)religious self-identification; or the control variable, gender, were excluded from the dataset. Missing values for the control variables employment status, marital status, and educational level were replaced with the country mode for these variables. In the case of missing values for the control variables income and age, the country mean was inserted. With regard to the countries Hong Kong, Taiwan, Japan, and New Zealand, no information on their IHDI was available, so, the HDI value was utilized in place of the IHDI.

3.2.4 Analytic approach

First, the suitability of the independent variable (non)religious self-identification as an indirect indicator of (non)belief strength was validated by comparing its association to other indicators of (non)religiosity. Second, we tested whether highly religious, weakly religious, indistinct nonreligious, and atheist individuals differed in terms of sociodemographic characteristics. Subsequently, the hypotheses were examined using two-level hierarchical linear regression analyses with individuals nested in countries to simultaneously test for effects on the individual and on the societal level. Multilevel modeling allowed for the analysis of whether differences between religious and nonreligious individuals varied between countries and whether the

hypothesized moderator variables on the societal level were able to explain (a substantial part of) this variation.

3.3 Results

Table A1 in the Appendix presents a descriptive overview of the countries included in the analyses with the frequencies and percentages of the participants per country, the percentages of each (non)religious subgroup per country, and the country-level variables social norm of religiosity, IHDI, and predominant religious denomination.

Chi-square and Kruskal-Wallis tests were conducted to examine whether the four types of (non)religious self-identification differed with regard to the sociodemographic variables (Table A2 and A3 in the Appendix). All tests showed significant differences between the groups (all $p < .001$, except for $p = .019$ for the variable unemployment). Indistinct nonreligious individuals and atheists were significantly more often male, employed, living together as married or single, and they were also younger. Individuals who identified as atheists more often had a tertiary education. Weakly religious individuals were also more often living together as married, or were divorced/separated/widowed. Highly religious individuals were significantly more often female, unemployed, not in the labor force, married or divorced/separated/widowed and more often had no or primary education. They also indicated having a lower income.

Because the World Values Survey does not contain a direct measurement of belief certainty, the suitability of the variable (non)religious self-identification as an indicator for an individual's strength of (non)belief was examined. This assumption was validated by comparing different indicators for (non)religious belief, belonging, behavior, and values across the four types of (non)religious self-identification (see Table A4 in the Appendix). On average, individuals who were highly religious indicated the highest and individuals who identified as atheist indicated the lowest values on these variables with significant differences between the four groups on all selected variables (all $p < .001$). Accordingly, the four groups differed substantially from

each other and this was consistent across many dimensions of (non)religiosity (e.g., concerning the importance of God in life: $M_{highlyrel}$ = 8.47, $M_{weaklyrel}$ = 6.59, M_{nonrel} = 4.41, M_{ath} = 2.07; or the frequency of praying: $M_{highlyrel}$ = 5.99, $M_{weaklyrel}$ = 4.09, M_{nonrel} = 2.68, M_{ath} = 1.50). They were distinct and represented a range from religiosity to secularity. Contrary to most previous research, we do not interpret this as a range from high to low belief certainty but as a range from high belief certainty through (dis)belief uncertainty to high disbelief certainty.

Based on these validations, it seemed suitable to divide the sample into the four groups of highly religious, weakly religious, indistinct nonreligious, and atheist individuals and it also seemed plausible to expect that these types of (non)religious self-identification are related in different ways to other variables, such as an individual's life satisfaction.

3.3.1 Results from the multilevel regression analyses

Multilevel regression analyses were computed to test for the proposed hypotheses based on four different lines of previous research. The multilevel regression models were calculated with a random intercept and a random slope. The covariance structure variance components (VC) was chosen for all models on account of too little covariation of the slopes for the application of a model with an unstructured (UN) covariance structure. For the analyses, dummy variables were coded for all categorical variables (including for self-identification as highly religious/weakly religious/indistinct nonreligious/atheist).

To reexamine whether religious individuals are more satisfied with life than nonreligious individuals across all cultures (*Hypothesis 1*), we compared the results from different statistical models. In all models, we included a differentiation between the subtypes of (non)religious individuals (*Hypothesis 2*) and then added stepwise control variables and the relevant interaction terms to test for moderating context factors (*Hypotheses 3 and 4*). Because the country's social norm of religiosity and the societal level of development (IHDI) correlated significantly, r = -.34, $p < .001$, it was not possible to interpret their individual influence;

thus, *Hypotheses 3* and *4* were tested combined in one statistical model.

Model 1 (see Table 1) contained only the individual level variables of identifying as weakly religious, as indistinct nonreligious, and as atheist (with the reference category identifying as highly religious). Consistent with most previous research, being weakly religious, b = -0.16, SE = 0.06, standardized coefficient = -0.03, t (22.31) = -2.75, p = .012, identifying as indistinct nonreligious, b = -0.21, SE = 0.06, standardized coefficient = -0.05, t (22.54) = -3.79, p = .001, and identifying as atheist, b = -0.25, SE = 0.07, standardized coefficient = -0.04, t (23.21) = -3.48, p = .002, was related to significantly lower levels of life satisfaction compared to being highly religious.

Equivalent results appeared when the control variables on the individual and societal levels (Model 2 in Table 1) were added to the model (all p < .001). However, in Model 1, the slopes of the variables identifying as weakly religious, identifying as indistinct nonreligious, and identifying as atheist varied significantly across countries and thus indicated that although there were significant main effects, these might not be equally strong (or even exist) in all of the examined countries. In Model 2, the slopes of the variables identifying as weakly religious and identifying as atheist did not vary significantly, which signified that a substantial amount of variation between countries with regard to the difference in weakly religious/atheist compared to highly religious individuals' life satisfaction was explained by the variation in the sociodemographic and country characteristic variables that were added to the model. However, the slope of the variable identifying as indistinct non-religious still varied significantly between countries in Model 2.

Thus, Models 1 and 2 partly support *Hypothesis 1 (Universal benefit of religiosity)* and do not support *Hypothesis 2* (*Curvilinear relation between (non)religiosity and life satisfaction)* because, overall, highly religious individuals were significantly more satisfied with life than weakly religious, indistinct non-religious, and atheist individuals; however, this relation did not appear to be equally strong or existent for all country samples.

Table 1: A random-intercept-and-slope model on life satisfaction

Variable	Model 1 *b* (*SE*)	Model 2 *b* (*SE*)	Model 3 *b* (*SE*)	Model 4 *b* (*SE*)
Intercept	5.47 (0.19)***	-1.01 (3.28)	1.97 (1.44)	-1.54 (3.30)
Identification as weakly religious	-0.16 (0.06)*	-0.19 (0.03)***	-1.09 (0.34)**	-0.88 (0.32)**
Identification as indistinct nonreligious	-0.21 (0.06)**	-0.26 (0.05)***	-0.55 (0.43)	-0.37 (0.42)
Identification as atheist	-0.25 (0.07)**	-0.26 (0.04)***	-0.66 (0.57)	-0.06 (0.31)
Country's social norm of religiosity		-0.0004 (0.01)	0.002 (0.01)	-0.01 (0.01)
Country's IHDI		1.01 (1.54)	4.56 (1.53)**	2.24 (1.64)
Identification as weakly religious* country's social norm of religiosity			0.001 (0.002)	-0.001 (0.002)
Identification as indistinct nonreligious*country's social norm of religiosity			-0.001 (0.003)	-0.003 (0.003)
Identification as atheist*country's social norm of religiosity			-0.002 (0.004)	-0.01 (0.002)*
Identification as weakly religious* country's IHDI			1.23 (0.34)***	1.04 (0.32)**
Identification as indistinct nonreligious*country's IHDI			0.50 (0.45)	0.38 (0.44)
Identification as atheist*country's IHDI			0.65 (0.62)	0.07 (0.34)
Male		-0.12 (0.04)**		-0.12 (0.04)**
Employment		-0.08 (0.03)**		-0.08 (0.03)**
Unemployment		-0.59 (0.05)***		-0.59 (0.05)***
Married		0.42 (0.05)***		0.42 (.05)***
Divorced/separated/widowed		-0.18 (0.04)***		-0.18 (0.04)***
Living together as married		0.26 (0.04)***		0.27 (0.04)***
No education		-0.26 (0.06)***		-0.26 (0.06)***
Primary education		-0.16 (0.03)***		-0.16 (0.03)***
Secondary education		-0.11 (0.03)***		-0.12 (0.03)***
Income		0.25 (0.03)***		0.25 (0.03)***
Age		-0.10 (0.04)*		-0.10 (0.04)*
Age squared		0.16 (0.02)***		0.16 (0.02)***
Protestant culture		-0.28 (0.69)		-0.29 (0.68)
Catholic culture		0.32 (0.61)		0.32 (0.60)
Orthodox culture		-1.27 (0.73)		-1.25 (0.73)
Muslim culture		0.41 (0.97)		0.44 (0.96)
Eastern religious culture		-1.44 (0.69)		-1.44 (0.68)
Mixed religious culture		-1.25 (0.74)		-1.26 (0.73)
Enforced secularism		-0.98 (0.51)		-1.00 (0.50)
Variance components				
Var (intercept)	.622 (.201)	.598 (.239)	.529 (.175)	.584 (.234)
Var (identification as weakly religious)	.024 (.012)	-	-	-
Var (identification as indistinct nonreligious)	.027 (.011)	.019 (.008)	.020 (.009)	.019 (.008)
Var (identification as atheist)	.036 (.017)	-	.035 (.017)	-
Var (male)		.010 (.005)		.011 (.005)
Var (married)		.015 (.006)		.015 (.006)
Var (income)		.014 (.004)		.014 (.004)
Var (age)		.038 (.013)		.039 (.013)
Var (age squared)		.004 (.002)		.004 (.002)
Var (residual)	3.971 (.031)	3.509 (.027)	3.976 (.031)	3.508 (.027)
Deviances	143,091.12	139,108.64	143,121.98	139,116.79
Parameters	9	33	16	39

Note. Estimation method: REML. Covariance Structure: Variance Components (VC). The presented coefficients are unstandardized regression coefficients. Reference categories: for (non)religious self-identification – identification as highly religious, for employment status – not in the labor force; for marital status – single; for educational status – tertiary education; for religious culture – secular culture.

[a] The results were equivalent when only including control variables on the individual level.

*p < .05, **p < .01, ***p < .001.

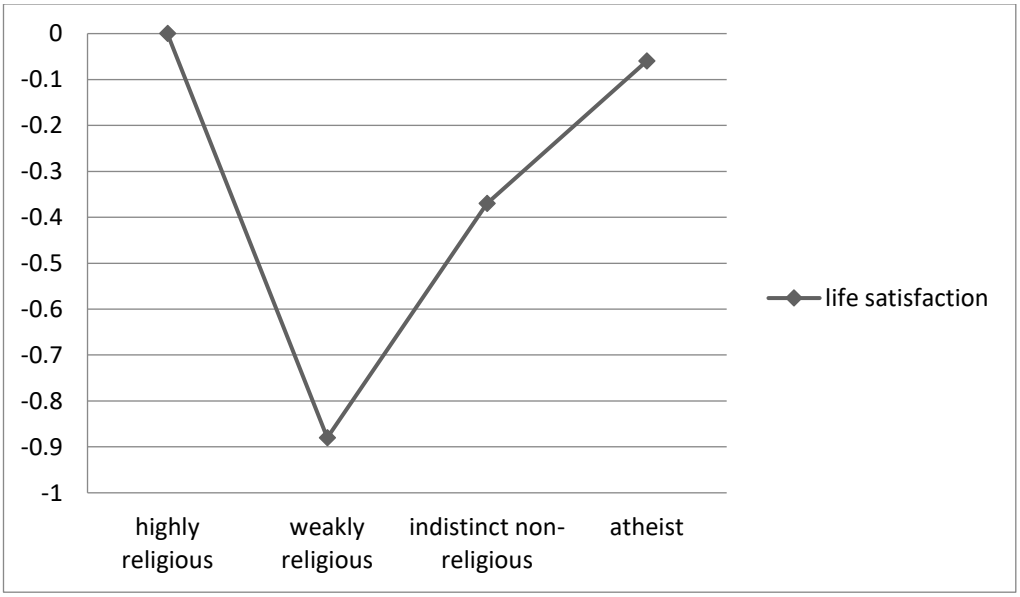
As a next step, interaction terms with the social norm of religiosity and the level of societal development were added to a statistical model without control variables to examine whether the influence of individual (non)religiosity on life satisfaction was moderated by the fit between personal and context characteristics (*Hypotheses 3 and 4*). Model 3 (see Table 1) showed different results than Models 1 and 2: There were no significant differences between the levels of life satisfaction of highly religious, indistinct nonreligious, and atheist individuals. Yet, highly religious individuals were still significantly more satisfied with life than the weakly religious, b = -1.09, SE = 0.34, standardized coefficient = -0.18, t (25146.08) = -3.21, p = .001. Additionally, there was a significant positive relation to the countries' IHDI, b = 4.56, SE = 1.53, standardized coefficient = 0.28, t (31.60) = 2.98, p = .006, and a cross-level interaction effect between identifying as weakly religious and the IHDI, b = 1.23, SE = 0.34, standardized coefficient = 0.15, t (27425.37) = 3.63, p < .001.

Thus, the difference in life satisfaction between highly and weakly religious individuals varied depending on a country's IHDI, with weakly religious individuals being more satisfied with life in countries with a high level of development and equality. The slopes of the variables identifying as atheist and identifying as indistinct nonreligious varied significantly between countries. Thus, the results of this model raise doubts concerning *Hypothesis 1 (Universal benefit of religiosity)* but provide a certain support for *Hypothesis 2 (Curvilinear relation between (non)religiosity and life satisfaction)* and *Hypothesis 4 (Person-culture fit: Societal level of development)*.

Furthermore, there were also no significant differences in the levels of life satisfaction of highly religious individuals compared to indistinct nonreligious and atheist individuals when the individual- and societal-level control variables were added to the model (Model 4 in Table 1). But again, highly religious individuals were significantly more satisfied with life than the weakly religious, b = -0.88, SE = 0.32, standardized coefficient = -0.15, t (30710.28) = -2.77, p = .006. Thus, individuals who identified as atheist or indistinct nonreligious did not differ from highly

religious individuals in their level of life satisfaction when taking into account the fit between a person and his or her environment, while this did not explain the difference in life satisfaction between highly and weakly religious individuals. These differences in the level of life satisfaction between the four groups do not exactly represent a symmetrical, perfectly U-shaped curve, but yet, a curvilinear instead of a linear relation which is illustrated by Figure 1. Thus, these results support *Hypothesis 2 (Curvilinear relation between (non)religiosity and life satisfaction)*.

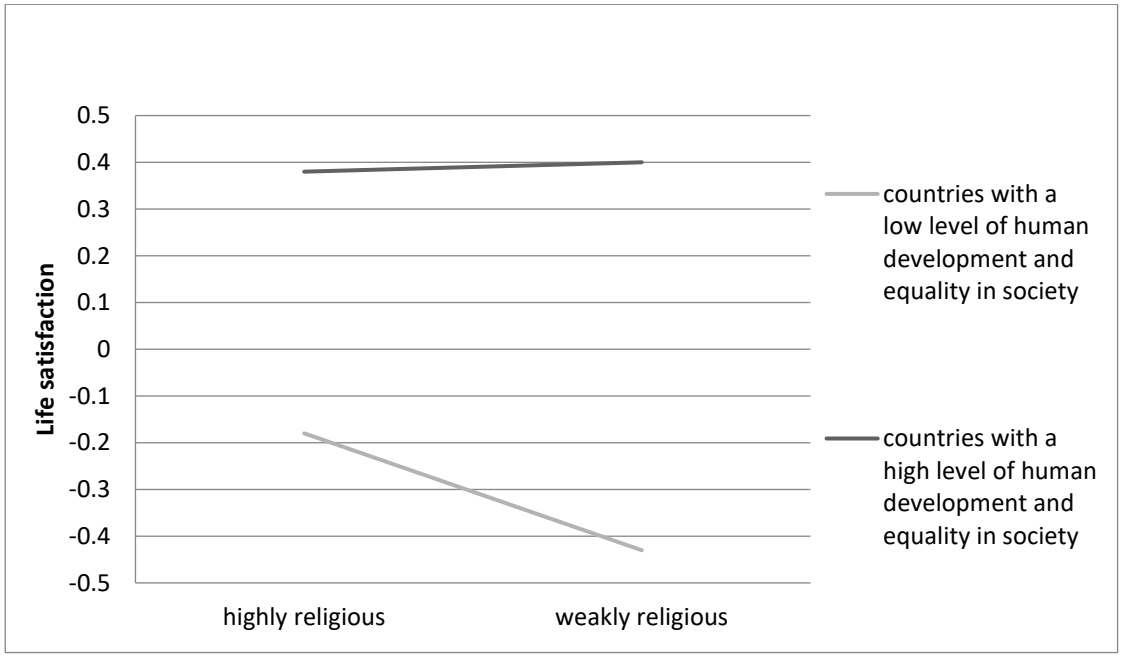
Figure 1: Predicted life satisfaction values by identifying as highly religious, weakly religious, indistinct nonreligious, or atheist (based on Model 4 in Table 1)



There was still a significant cross-level interaction effect between identifying as weakly religious and a country's IHDI, b = 1.04, SE = 0.32, standardized coefficient = 0.13, t (31015.22) = 3.26, p = .001, which is illustrated by Figure 2 (for living in countries with an IHDI 1 SD above the mean compared to 1 SD below the mean). But in contrast to Model 3, Model 4 did also show a significant cross-level interaction effect of identifying as atheist and the country's social norm of religiosity, b = -0.01, SE = 0.002, standardized coefficient = -0.06, t (20,630.42) = -2.31, p = .021. Hence, the difference in the level of life

satisfaction between individuals who identified as atheist compared to individuals who identified as highly religious was dependent on and varied with the level of a country's social norm of religiosity when individual- and country-level control variables were included (see Figure 3 for living in countries with a social norm of religiosity 1 SD above the mean compared to 1 SD below the mean). More precisely, atheist individuals' life satisfaction increased significantly when they lived in countries with many other individuals who identified as either indistinct nonreligious or atheist. Thus, these results support *Hypothesis 3 (Person-culture fit: Social norm of religiosity).*

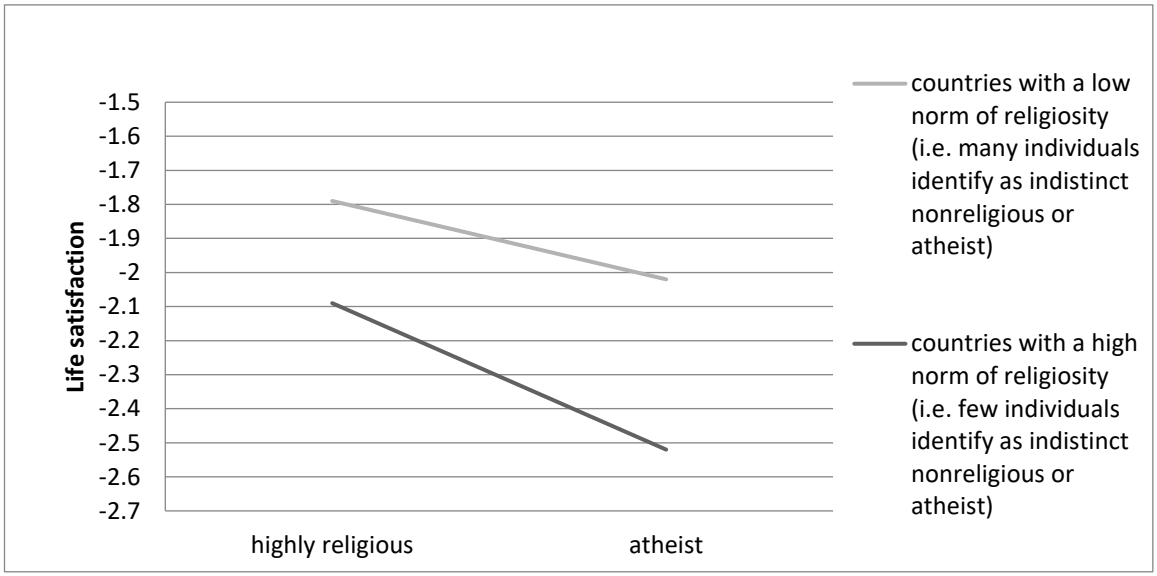
Figure 2: Predicted life satisfaction values by identifying as highly or weakly religious in countries with a low versus a high level of human development and equality in society (based on Model 4 in Table 1)



However, living in a country with many other secular individuals did not appear to be equally relevant for indistinct nonreligious individuals (see Model 4). Including the interactions with the social norm of religiosity and the societal level of development in the analyses (i.e., the fit between a person and his or her culture) also led to the difference between indistinct nonreligious and highly religious

individuals' life satisfaction being nonsignificant. However, there was no significant interaction with these context factors. Nevertheless, there was significant variation of this variable's slopes between countries. This variation was not explained by the variables that were included in the model, which means that the life satisfaction of indistinct nonreligious individuals seems to have been influenced to a larger extent than atheists' life satisfaction by as yet unknown factors that varied between cultures.

Figure 3: Predicted life satisfaction values by identifying as highly religious or atheist in countries with a low versus a high social norm of religiosity (based on Model 4 in Table 1)



Thus, Model 4 does not support *Hypothesis 1 (Universal benefit of religiosity)*, but confirms *Hypothesis 3 (Person-culture fit: Social norm of religiosity)* and shows some evidence for *Hypotheses 2 (Curvilinear relation between (non)religiosity and life satisfaction)* and *4 (Person-culture fit: Societal level of development)*.

Additionally, to test even more specifically whether atheists reached higher levels of life satisfaction than indistinct nonreligious individuals (as proposed by *Hypothesis 2* on the curvilinear relation between (non)religiosity and life satisfaction), the reference category of the variable (non)religious self-identification was changed to identifying

as atheist. There was no significant difference between the level of life satisfaction of atheist and indistinct nonreligious individuals, only weakly religious individuals were significantly less satisfied with life than atheists, b = -0.73, SE = 0.33, standardized coefficient = -0.12, t (32193.52) = -2.24, p = .025. [3]

3.4 Discussion

This study focused on a reevaluation of conclusions from four lines of research on the relation of (non)religiosity to life satisfaction. The comparison of our statistical models explains why many previous studies have found the religious to be more satisfied with life than the nonreligious: These results emerged (Model 1 and 2), but, consistent with Eichhorn (2012), the differences in life satisfaction varied significantly between countries and they disappeared concerning highly religious, indistinct nonreligious, and atheist individuals when variables for the fit between a person's (non)religiosity and his/her environment were included in the statistical models. Thus, a self-identification as highly religious did not seem to be generally related (i.e. independent of societal context) to a higher level of life satisfaction compared to a self-identification as not religious or atheist. This result calls into question a universal benefit of religiosity for an individual's well-being across all cultures (*Hypothesis 1*) and presents further evidence for the importance of considering a fit between an individual's (non)religiosity and a culture's characteristics (*Hypotheses 3 and 4*).

We did not only find evidence for the moderating effect of two context factors, but in the combined Model 4, we also found the hypothesized differences between the nonreligious subgroups, i.e., atheist individuals' life satisfaction was directly influenced by the society's level of religiosity, while that of indistinct nonreligious individuals was not (*Hypothesis 3*). However, these differences did not

[3] At the suggestion of a reviewer, we also controlled for differences between Western and Asian countries concerning their level of life satisfaction. There was no significant difference and including this variable into our multilevel regression analyses did yield equivalent results concerning the main variables (results of this check are available on request).

appear with regard to the level of life satisfaction (as proposed by *Hypothesis 2* on the curvilinear relation between (non)religiosity and life satisfaction). Nevertheless, this result was hardly surprising, given that we also did not find significant differences between indistinct nonreligious and highly religious individuals' level of life satisfaction in this model, a presumption upon which this hypothesis was based.

In addition, the variation across countries with regard to atheist compared to highly religious individuals' life satisfaction could be explained by including individual- and country-level control variables, while in contrast, indistinct nonreligious (compared to highly religious) individuals' life satisfaction seemed to be influenced by latent factors that varied between cultures but that were not included in the statistical models and are thus as yet unknown.

While the absence of a significant difference in the level of life satisfaction of indistinct nonreligious and atheist individuals does not support the idea of a perfectly U-shaped relation between (non)belief certainty and life satisfaction, the significant difference between the highly religious and the weakly religious (and respectively between atheists and the weakly religious) shows evidence for a curvilinear rather than a linear relation and thus, supports *Hypothesis 2 (Curvilinear relation between (non)religiosity and life satisfaction)*.

A significant cross-level interaction effect for the societal level of development (IHDI) could only be found concerning weakly compared to highly religious individuals. Yet, due to its correlation with the country's social norm of religiosity, it cannot be ruled out that both variables were relevant for the previously significant differences in the level of life satisfaction between the other three groups to disappear (*Hypothesis 4*). We also assume that the exclusion of countries with very few atheist inhabitants from the sample might have contributed to the absence of this effect of the IHDI on subjective well-being.

Accordingly, although *Hypotheses 2 (Curvilinear relation between (non)religiosity and life satisfaction)* and *4 (Person-culture fit: Societal level of development)* could be only partly supported, these results in combination with the evidence found for *Hypothesis 3 (Person-culture fit:*

Social norm of religiosity) indicate that the type of (non)religious subgroup to which an individual belongs, the country's social norm of religiosity and the societal level of development are all relevant for explaining the relation of (non)religiosity to life satisfaction. When all of these elements were included in the statistical models, we could not find evidence for a universal benefit of religiosity for subjective well-being (*Hypothesis 1*). Thus, our results are largely consistent with both Diener et al. (2011) and Eichhorn (2012), even though we used a self-classification instead of behavioral and value variables to measure (non)religiosity and had to limit our sample to countries with a certain level of openly-identifying atheists to not just replicate previous empirical results, but to be able to go beyond the existing knowledge concerning the influence of social contexts on the well-being of different secular subgroups.

However, why were atheist individuals sensitive to a lack of fit to the societal norm of religiosity and benefited from a match, while indistinct nonreligious individuals appear not to be? This may be due to atheist individuals' life satisfaction being negatively influenced by discrimination in religious societies. In this case, the significant interaction would indicate a decrease of discrimination with rising levels of secularity in society. Indistinct nonreligious individuals may be less often affected by prejudices, especially because our results show that many of them still belong to a religious denomination and exhibit religious behavior. Thus, they assimilate to the social norms of religiosity and are therefore perceived to be less norm-deviating in religious social environments. In contrast, simply using the label atheist may be perceived by religious individuals as an expression of blasphemy and a provocation (by claiming that God(s) do(es) not exist), which may lead to social exclusion.

Another possible explanation is that the self-identification is more relevant to atheists' self-perception and identity than it is to other nonreligious individuals. As a consequence, they may be more aware of whether they are surrounded by many supportive, likeminded individuals (which in turn promotes their life satisfaction) or whether

they represent a (possibly threatened) minority in society. Therefore, atheists may hold comparatively low values of life satisfaction in countries with a high social norm of religiosity and, in contrast, may reach higher levels of life satisfaction in countries with a high social norm of secularity.

A strength of this study is its comparison of the results from different statistical models. This comparison emphasizes the dependence of the link between (non)religiosity and life satisfaction on other variables, and it simultaneously shows why many empirical studies come to the conclusion of a general advantage connected to religiosity. Additionally, our research establishes atheists as a distinct group that differs from other nonreligious individuals in several dimensions. Although we were unable to use a direct measure of (non)belief certainty, the results lead to the conclusion that atheist and highly religious individuals reach higher (non)belief certainty than indistinct nonreligious and weakly religious individuals, given their more ambiguous answers on different indicators for (non)religious belief, belonging, behavior, and values. This is consistent with the idea that life satisfaction is related to (non)belief certainty rather than to belief content/religiosity per se.

3.4.1 Limitations

The results of this study are based on survey data which do not allow causal interpretations. Therefore, it cannot be ruled out that other variables (partially) account for the observed effects. Additionally, a differentiation between two types of secular individuals presents a first step towards the research on individual nonreligiosity and its effects; however, it is not sufficient for detailed conclusions about the whole range of nonreligiosity. Individuals who identified as atheist scored significantly lower on all indicators of religiosity available in the WVS, and they could thus be described as holding a higher level of nonreligiosity compared to indistinct nonreligious individuals. Whether this can actually be interpreted as a higher nonbelief certainty cannot be proved until an explicit measure of belief certainty is included in a large-scale cross-cultural survey as the WVS to allow for a direct

comparison. Similarly, it would be preferable if the WVS included an explicit differentiation between highly and weakly religious self-identification rather than combining two different variables. Thus, our operationalization cannot be considered ideal; however, it was constructed with the most suited variables available in large-scale cross-cultural survey data.

The research on (non)religiosity is in general prone to being flawed by socially desirable answers (e.g., Hadaway et al., 1998), especially in countries where openly identifying as atheist may lead to disadvantages (e.g., Doane & Elliott, 2015). Thus, the actual number of atheists in a society may be underestimated. Disproportionately many African and predominantly Muslim countries had to be excluded from our sample due to too few atheists in the country sample or too many individuals identifying as atheist but also indicating to believe in God. We cannot determine whether this is based on a misconception of the term atheist in some cultures, or whether this is related to social desirability or even actual threat. However, this is problematic for the representativeness of our sample, so our results are only representative of Europe, America, Oceania, and parts of Asia. We cannot draw any conclusions about secular individuals' well-being in countries with very few individuals identifying as atheist (i.e. in most cases, countries with a high social norm of religiosity and a low level of societal development). On the basis of our results, we assume that in these countries, the religious hold higher average levels of well-being than secular individuals.

Finally, the variable social norm of religiosity does not reflect a measure of an overall religiosity norm (as an index combining indicators of religious belief, behavior, belonging, and values would) but rather the specific descriptive social norm of identifying as religious. However, the identification as religious/not religious/atheist combined with a rating of the importance of religion in their lives reflects how individuals themselves classify and label their worldviews and we could demonstrate that this correlated with diverse measures of (non)religious belief, behavior, belonging, and values.

3.4.2 Implications and future research

Our study indicates strongly that the results from empirical studies on the relation between religiosity and well-being should not be interpreted as general principles, especially when these studies are conducted in very religious countries. Instead, the results should be clearly characterized as being dependent on the specific societal context. Our research emphasizes the importance of sharing a worldview with likeminded others and of the strength of one's beliefs for an individual's well-being, which seems to be more relevant than the specific belief or worldview content.

Because it is difficult to obtain representative samples from very religious countries with enough secular individuals to ensure variation on the sociodemographic characteristics and to allow a differentiation between secular subtypes, qualitative studies are probably more suited to research the influence of nonreligiosity on life satisfaction in these countries. This could, e.g., shed light on whether indistinct nonreligious individuals are in general less affected by social norms of religiosity than atheists or whether their well-being is also influenced negatively, but only when living in very religious societies.

Further research is also necessary on the relation between (non)religiosity and well-being with a more refined differentiation between types of individual nonreligiosity, e.g., with an explicit measure of (non)belief certainty. This could help clarify why, in our study, the indistinct nonreligious were not directly affected by the social norm of religiosity and to discover other relevant influences on this group's well-being. Our study presents a first step towards a detailed differentiation between secular subgroups. However, it focused on the dimension of (non)religious self-identification and thus, it cannot directly be compared to studies that have utilized a more general measure for religiosity by combining, e.g., aspects of belief, belonging, and behavior (e.g., Stavrova et al., 2013). We do not doubt that belonging to a religious community or regular praying might contribute to a person's well-being. However, large-scale cross-cultural surveys do not contain items on possible secular equivalents (e.g., belonging to a secular

group). Thus, at this point, further research would largely profit from a combined index of (non)religiosity that measures nonreligiosity beyond an absence of religiosity. Such more comprehensive measures of nonreligiosity would make it possible to compare the effects of different dimensions such as beliefs, behavior, belonging, or values on subjective well-being across the whole range from very religious to very non-religious and contribute to describing and researching the complex reality of worldview orientations and their effect on individuals' subjective well-being more adequately.

4 Belief, nonbelief, nihilism, and life satisfaction

4.1 Introduction

Previous research has frequently found that religious individuals hold a higher level of subjective well-being than nonreligious individuals (for an overview, see Koenig & Larson, 2001). In addition to aspects such as attending religious services or belonging to a religious community, meaning in life has been researched as one of the aspects of religiosity that has a positive association with several indicators of subjective well-being. Empirical studies have found, e.g., that religious individuals reported more meaning in life (e.g., Abeyta & Routledge, 2018; Steger & Frazier, 2005) and that meaning in life was associated with happiness (e.g., Debats, 1996) and life satisfaction (e.g., Steger & Frazier, 2005; Steger et al., 2011).

There are, however, many empirical studies that provide evidence that the relation between religiosity and subjective well-being is not universal and unique, but rather dependent on a fit of personal characteristics to the context (e.g., Diener et al., 2011; Eichhorn, 2012; Stavrova, et al. 2013), how (non)religiosity is measured (e.g., Galen & Kloet, 2011), how one differentiates between (non)religious subgroups (Pöhls et al., 2020a), and whether nonlinear relations are tested for (e.g., Galen & Kloet, 2011; Pöhls et al., 2020a).

By further exploring the relation between different aspects of (non)religiosity and subjective well-being, this study will examine whether nonreligious individuals in a rather secular European country, such as Germany, report higher levels of nihilism (i.e., no meaning in life) and less life satisfaction than religious individuals or whether both theists and atheists are less nihilistic and more satisfied with life than individuals who are uncertain what to believe. For this purpose, the representative sample from the ALLBUS was divided into two religious, one uncertain, and one nonreligious subgroup based on how individuals described their (non)belief in a personal God, a higher being, or a spiritual power.

4.1.1 (Non)Religiosity and subjective well-being

A large amount of empirical research has confirmed a positive association between religiosity and life satisfaction, happiness, and mental health (e.g., Ellison, 1991; Koenig & Larson, 2001; Tay et al., 2014). For example, a strong religious group identity (Lim & Putnam, 2010), the attendance of religious services (Ferriss, 2002; Lim & Putnam, 2010), social networks in the religious community (Lim & Putnam, 2010), or subjective religious beliefs (e.g., Ferriss, 2002) have been shown to be related to subjective well-being.

However, an important aspect in researching the relation of (non)religiosity and subjective well-being is determining how to conceptualize and measure nonreligiosity. In most empirical studies, individuals who are weakly religious or alternatively spiritual (i.e., do not adhere to a traditional religion) are not differentiated from types of nonreligiosity, such as individuals who are indifferent to existential questions, agnostics, or convinced atheists, although all of these groups represent different worldviews that might be linked to a person's well-being in different ways (Galen, 2015; Galen & Kloet, 2011; Pöhls et al., 2020a). Commonly used indicators of religiosity, such as the frequency of attending religious services, the frequency of praying, or the importance of God or religion in life, are not suitable to differentiate between low religiosity and nonreligiosity (or even to distinguish additional subgroups). Many empirical studies and large cross-cultural surveys use composite measures of the previously mentioned indicators of religiosity. As a result, in some empirical studies, the choice of indicators of religiosity does not match the theoretical foundation or research interest (Siegers, 2019), some effects can be found for some of the indicators but not for others, and diverse phenomena, such as the effects of group memberships, social networks, values, and behaviors, are mixed together with the effects of religious belief content (Galen & Kloet, 2011).

Galen and Kloet (2011) differentiated between religious and nonreligious individuals in a nonrepresentative US sample of more than 600 members of a church and a secular group based on their certainty

of (non)belief in God ("absolutely certain there is no God" through "not sure" to "absolutely certain there is a God"). Contrary to previous research, they found a curvilinear relation that resembles a U-shape: Individuals with higher belief certainty displayed higher levels of life satisfaction and emotional stability than those with lower certainty, independent of the belief content. Thus, existential certainty or worldview coherence may mediate a positive relation between (non)religiosity and life satisfaction or other aspects of well-being. Several other studies have found similar evidence for a curvilinear relation (e.g., Baker et al., 2018; Mochon et al., 2011; Moore & Leach, 2016; Newport et al., 2012; Yeniaras & Akarsu, 2017). However, these studies have mainly focused on US samples (except for a Turkish sample in the study of Yeniaras and Akarsu, 2017), several samples were not representative of the population and/or did not include a substantial share of nonreligious individuals, and in several cases, the relation to mental or physical health was researched rather than the relation to subjective well-being.

Previous research has also been challenged by several approaches considering context effects, i.e., the fit of an individual's characteristics to the environment he or she is living in. The strong relation between religiosity and subjective well-being has mainly been found in empirical studies with US samples but not in several other countries (Lu & Gao, 2017; Snoep, 2008). Empirical evidence shows that these cross-cultural differences are explained by, e.g., moderating effects of a country's social norm of religiosity (e.g., Eichhorn, 2012; Gebauer et al., 2012; Stavrova et al., 2013), the level of societal development (e.g., Li & Bond, 2010), or both (Diener et al., 2011; Pöhls et al., 2020a).

In an intercultural comparison of 24 representative country samples from the World Values Survey, Pöhls et al. (2020a) examined how a country's social norm of religiosity and level of societal development moderate the relation between individual (non)religiosity and subjective well-being. Highly religious, nonreligious, and atheist individuals did not differ in their level of life satisfaction when the country's social norm of religiosity and level of societal development

were controlled for. Weakly religious individuals, however, were less satisfied with life than highly religious individuals. This represents further evidence for a curvilinear relation between (non-)religiosity and life satisfaction and for the influence of country-level context factors on this relation. Additionally, atheists' life satisfaction was positively related to living in a country with many other atheist and nonreligious individuals, while nonreligious individuals' life satisfaction was not. Accordingly, secular subgroups differed in their sensitivity towards the social norms of religiosity.

Consequently, the relation of (non)religiosity to subjective well-being needs to be researched further with empirical studies that take the evidence of these new lines of research into consideration. For this purpose, it is necessary to specifically define which aspect of the complex phenomenon of (non)religiosity is under study, select a sample with a substantial share of nonreligious individuals, differentiate between (non)religious subgroups, adequately measure (non)religiosity, test for nonlinear relations and consider the cultural context in which a study takes place when interpreting the results.

4.1.2 Meaning and purpose in life vs. nihilism

One aspect of (non)religiosity that could explain potential differences in the level of the subjective well-being of religious and nonreligious individuals is the way in which they experience meaning and purpose in life (in contrast to nihilism). Meaning in life has been defined as "the extent to which people comprehend, make sense of, or see significance in their lives, accompanied by the degree to which they perceive themselves to have a purpose, mission, or overarching aim in life" (Steger, 2009, p. 682). Thus, having dedicated one's life to an important cause or a higher ideal is related to higher levels of meaning (Steger, 2009). While the term nihilism can have many different meanings in philosophy but also in popular culture, in the following, we will use the term nihilism consistent with Koltko-Rivera (2004) as describing a worldview in which life has no meaning or purpose.

Unstable sources of meaning in life have been shown to be related to lower levels of life satisfaction (Steger & Kashdan, 2013), while

meaning in life has been found to be positively associated with happiness (e.g., Debats, 1996), life satisfaction (e.g., Schnell, 2009; Steger & Frazier, 2005; Steger et al., 2011), mental well-being (e.g., Moomal, 1999), and subjective well-being (e.g., Zika & Chamberlain, 1987, see also Steger, 2009 for an overview). In a cross-cultural study with representative samples from 166 countries, Jebb, Morrison, Tay, and Diener (2019) found significant relations between life meaning and life satisfaction across the entire lifespan and in every region of the world.

For many people worldwide, religion offers purpose and meaning in life (Park, Edmondson, & Hale-Smith, 2013), both directly through dogmas and guidelines (e.g., the purpose of life is to fulfill God's/gods' wishes or to show oneself worthy of a good afterlife) and indirectly, e.g., through providing community or helping others through charitable giving and volunteering (see Abeyta & Routledge, 2018). Empirical studies with US samples show a positive relation between religiosity and meaning and purpose in life (Abeyta & Routledge, 2018; Steger & Frazier, 2005). Thus, it may seem consequential that religious individuals are less prone to nihilistic tendencies.

In contrast, nihilism has in the past often been connected to nonreligiosity (Speed et al., 2018), possibly with the intention to imply that nonreligious individuals are generally immoral (e.g., Campbell, 1971), which is even currently a common prejudice in many countries worldwide, e.g., in the USA (Zuckerman, 2012). However, describing nonreligious individuals as nihilists probably also reflects the prejudice that if one does not believe in God/gods, it is impossible to believe in anything else and experience any purpose in life.

It is necessary, however, to differentiate between subjective and objective meaning in life. While objective (or universal) meaning in life is given by an authority, such as a God/gods, subjective (or personal) meaning in life can be created or discovered by every individual him-/herself (Young, 2007). Nietzsche originally described this as follows: "If a man knows the wherefore of his existence, then the manner of it can take care of itself" (1911, p.2). While creating one's own meaning in life

is the (existentialist) ideal, Baumeister (1991) describes this process in reality rather as choosing consciously from fragments of meaning offered by culture and society.

Schnell (2009) identified, in addition to religiosity and spirituality, 24 other sources of meaning in life combined into four dimensions: horizontal self-transcendence (i.e., social commitment, being in unison with nature, self-knowledge, health, and generativity), self-actualization (i.e., challenge, individualism, power, development, achievement, freedom, knowledge, and creativity), order (i.e., tradition, practicality, morality, and reason), and well-being and relatedness (i.e., community, fun, love, comfort, care, attentiveness, and harmony). Thus, nonreligious individuals may, e.g., derive meaning from acting upon humanist ethics and values, through secular social networks, in working life success, or in creative undertakings.

Subsequently, only a simultaneous lack of objective and subjective meaning and purpose in life is labeled nihilism. Thus, a person who expresses that there is no meaning in life, either given by God/gods (or a similar authority) or created or consciously chosen by every individual him-/herself, will be considered nihilistic.

Following this approach, Speed et al. (2018) found in a US sample from the American General Social Survey that atheists, religiously unaffiliated persons, and persons raised religiously unaffiliated did not differ from theists, religiously affiliated persons, and persons raised religiously affiliated, respectively, in their level of fatalism and nihilism. However, atheists and religiously unaffiliated persons reported more often that their meaning in life was self-produced, i.e., endogenous. Thus, these groups differed not in their level of meaning in life but in whether the source of meaning was religious/objective or secular/subjective.

In an empirical study by Horning et al. (2011) with a sample of US elderly, highly religious individuals indicated a higher level of meaning in life than atheists and agnostics, but there were no differences in the individuals' level of life satisfaction. Likewise, in a study by Schnell and Keenan (2011) with a nonrepresentative German sample, atheists

reported lower degrees of meaningfulness than religious and other nonreligious individuals, but they did not suffer from crises of meaning more often. These two studies point towards some nonreligious individuals experiencing less meaning in life than religious individuals, yet this does not seem to be negatively related to their life satisfaction.

In this empirical study, we will examine whether nonreligious individuals in Germany believe in a void of purpose and meaning in life compared to religious individuals or whether they instead construct or find subjective meaning in the secular world. In addition, we will analyze whether potential differences in meaning in life are related to individuals' subjective well-being.

4.1.3 (Non)Religiosity in Germany

Using data from large-scale cross-cultural surveys has both advantages and disadvantages. It allows to test for more universal phenomena and to involve the influence of country characteristics, such as religious social norms or the level of societal development, but it also makes it difficult to differentiate between the influences of the indicators of (non)religiosity and the characteristics of different religions and religious cultures worldwide (Siegers, 2019). Thus, in this study, we decided to focus on only one country, Germany, using representative data from the 2012 wave of the ALLBUS with the main topic "Religion and world view" (Gesis, 2018), which contained a large variety of items on religiosity and worldview orientations.

In 2015, 28.9% of the German population belonged to the Roman Catholic Church, 27.1% to the Protestant Church, 4.4% were Muslim, 1.9% Orthodox Christian, 1.7% belonged to other religious groups and 36% did not belong to any religious group (FOWID, 2016). A historical characteristic specific to the situation of religiosity in Germany is that during the several decades during which Germany was divided into two countries, the Eastern part of the country experienced a process of enforced secularization with the aim of replacing religious beliefs with political ideology. After the German reunification, the population in former East Germany did not return to religious communities and beliefs and thus stayed more secular than the population of former

West Germany. In addition, the collapse of the political system and its ideology caused a decrease in citizens' levels of well-being (Inglehart & Klingemann, 2000). Potential differences between the populations in former East and West Germany concerning the effects of (non)belief on other variables (i.e., interactions between these variables) will therefore be considered in our analyses.

4.1.4 The present study

Pöhls et al. (2020a) used (non)religious self-identification combined with a rating of the importance of religion in one's life to differentiate further between religious individuals as an indicator of (non)religiosity. This generated two religious and two nonreligious subgroups labeled highly religious, weakly religious, not religious, or specifically atheist. Individuals identifying as atheist were interpreted as having a higher nonbelief certainty than individuals identifying simply as not religious. A self-identification has several advantages compared to the commonly used indicators of religiosity (such as the frequency of church attendance or belonging to a religious denomination) because it measures nonreligiosity beyond an absence of religiosity and allows a differentiation between nonreligious subgroups. It also focuses on (non)belief content instead of religious behaviors, such as churchgoing, which might be positively related to subjective well-being due to belonging to a community and not due to religiosity per se.

In the present study, our aim was also to study the relation between (non)religious belief and life satisfaction. We did, however, utilize another alternate measure that depicts (non)religious subgroups with even more focus on what they believe in and that can also be interpreted as containing information about an individual's (non)belief certainty when there is no direct measure available. Thus, in this study, instead of using (non)religious self-labeling, we focused on how both religious and nonreligious individuals describe their (non)belief in God, a higher being, or a spiritual power.

The 2012 wave of the ALLBUS contains an item that allows us to differentiate between four subgroups of (non)belief: individuals who believe in a personal God, individuals who believe in a higher being or

spiritual power, individuals who are uncertain what to believe in, and individuals who do not believe in a personal God, a higher being, or a spiritual power. In the following, these four groups will be labeled theists, alternative spiritualists, uncertain individuals, and atheists. These four subgroups do not characterize the full complexity and range of individuals' (non)belief, yet it is necessary to categorize different (non)beliefs in a representative survey. In contrast to self-labeling (e.g., with the term atheist), this variable describes detailed and comprehensible kinds of (non)belief content which prevents misconceptions of technical terms and tendencies of social desirability.

This variable does not present a direct measurement of (non)belief certainty, but it does contain certain information about it. Uncertainty regarding what to believe clearly indicates low (non)belief certainty, and in contrast, theists most likely hold higher belief certainty and atheists higher nonbelief certainty. Alternative spiritualists probably also hold a higher belief certainty than uncertain individuals, but it is unclear how this group compares to theists. Believing in a personal God is consistent with traditional ideas of Christianity, while believing in a higher being or spiritual power is not. Thus, in a historically Christian culture, such as Germany, it is possible to believe as strongly in a higher being or spiritual power as in a personal God, yet this belief is possibly related to more effort and a certain quest for individual belief content, which many might not complete successfully. Indicating alternative religious beliefs could also imply doubt towards traditional Christian dogmas, and thus, the preference for a more abstract and less rigid form of religiosity probably conveys less existential certainty than conventional religiosity. Thus, the average belief certainty of this group might be slightly lower than that of theists. To date, however, this is only a theoretical consideration not yet supported by empirical results, and thus, we decided to research this group exploratively, and we do not hypothesize on the level of nihilism and life satisfaction of this group.

For the other three (non)belief subgroups, our hypotheses concerning the relation between (non)religiosity and nihilism and life

satisfaction in a rather secular country, such as Germany, are the following:

Hypothesis 1: We propose that uncertain individuals indicate higher levels of nihilism than theists. Thus, nonreligiosity is not generally related to higher levels of nihilism than religiosity. This curvilinear relation of (non)belief might be based on different levels of (non)belief certainty.

Hypothesis 2: We hypothesize a negative relation between nihilism and life satisfaction.

Hypothesis 3: We propose that uncertain individuals report lower levels of life satisfaction than theists and atheists. Thus, nonreligiosity is not generally related to lower levels of life satisfaction than religiosity. This curvilinear relation of (non)belief might also be based on different levels of (non)belief certainty.

4.2 Method

4.2.1 Data

The research questions were examined using a quantitative comparative research design between four groups with different (non)beliefs in Germany. Survey data from the German General Social Survey (ALLBUS) were used for the analyses in this research project. The main topic of the 2012 wave of the ALLBUS was "Religion and world view" (Gesis, 2018); thus, this wave of the survey contained the most recent data on variables suitable for our study. The representative sample of the survey consisted of 3,480 participants, and the data were collected from April to September 2012 by TNS Infratest (Munich) (Gesis, 2018). The survey oversampled participants living in former East Germany (33.3% in this sample vs. 19.8% in the population in 2012, Statistisches Bundesamt (Destatis), 2019). We controlled for this variable but did not adjust for it by using weights because we did not intend to report average values for the German population.

4.2.2 Measures

The variable *nihilism* is the dependent variable in our first analysis and an independent variable in our second analysis. It consists of two items from a list of different conceptions about the purpose of life. The list was introduced by a short text: "Many people wonder what purpose life actually has. The following list contains different conceptions of the purpose of life. Please indicate how much you agree with each view on this list (1 *I agree completely* to 5 *I do not agree at all*)." Of the list, the two items "Life has little meaning in my opinion." and "In my opinion, life serves no purpose." (r = .62, p < .001, Cronbach's α = .756) were selected and combined into an index representing a nihilistic conception of life. For this purpose, the values of the two original items were recoded to a scale ranging from 0 to 4 and then summed. Unfortunately, this item had a very skewed distribution (skewness = 2.98); therefore, we decided to transform the summed variable into a binary variable with the levels *no nihilism* (sum of raw values = 0) and *nihilism* (sum of raw values = 1 to 8).

The variable individual *life satisfaction* is the dependent variable in our second analysis. It is defined as a person's subjective well-being with a focus on overall satisfaction with his/her life instead of on short-term affective states (Diener et al., 2009) and is measured with the item "And now one more general question: How satisfied are you at the moment - all things considered - with your life? Please tell me using the following list (0 *completely dissatisfied* to 10 *completely satisfied*)". This item is very commonly used in surveys, and Diener et al. (2013) showed that it is stable under unchanging conditions but sensitive to changing circumstances (e.g., significant life events) and thus has suitable reliability and validity. The values of this item were transformed to z-scores for the analyses.

The independent variable *(non)belief* was measured with the item "I want to return to the topic belief in God. Which of the following statements comes closest to your own conviction? A There is a personal God. B There is some kind of a higher being or a spiritual power. C I do not know exactly what to believe in. D I do not believe that there is a

personal God, a higher being, or a spiritual power.". We interpreted these answer options as a continuum from high belief certainty to high nonbelief certainty with the belief in a personal God (theists) indicating high belief certainty, not knowing what to believe in (uncertain individuals) indicating low (non)belief certainty, and no belief in a personal God, higher being, or spiritual power (atheists) indicating high nonbelief certainty. The belief in a higher being or spiritual power (alternative spiritualists) certainly implies higher belief certainty than not knowing what to believe, yet we cannot conclude whether this group reaches similarly high levels of belief certainty as those who believe in a personal God; thus, we treat this group exploratively.

The variables *gender*, *employment status* (with the dummy variables employed, unemployed, and not in the labor force), *marital status* (with the dummy variables married, in a relationship, divorced/separated/widowed, and single), *educational level* (measured as years of education), *equivalized income* (i.e., the household's total income from all sources divided by the weighted number of people living in the household, Eurostat, 2018), *age*, *age squared* and *living in former East vs. West Germany* were controlled for because they are known to substantially influence life satisfaction (Frey & Stutzer, 2002). The variable age was transformed to z-scores for the analyses, and the variable age squared was computed with the z-scores of the age variable because age has been shown to be curvilinearly related to subjective well-being (Frey & Stutzer, 2002).

4.2.3 Missing values

Cases with missing values for the dependent variables nihilism and life satisfaction, the independent variable (non)belief, or the control variable gender were excluded from the dataset. Missing values for the control variables employment status and marital status were replaced with the mode for these variables. In the case of missing values for the control variables educational level, equivalized income, and age, the mean was inserted.

Participants who indicated belonging to a religion other than Christianity were excluded from the sample because there were too few

cases per group and thus a lack of variation in sociodemographic characteristics, which makes it difficult to interpret and generalize the results for these religious groups living in Germany (e.g., only 2.7% of the sample indicated being Muslim). Thus, the participants in this sample either indicated no religious denomination or belonged to Catholicism, Protestantism, Orthodox Christianity, or other Christian denominations. In total, the dataset used for the following analyses consisted of 3,212 participants.

4.2.4 Analytic approach

First, we tested whether the (non)belief groups and the individuals across the two levels of nihilism differed in terms of sociodemographic characteristics. Subsequently, *Hypothesis 1* was tested with a hierarchical logistic regression analysis, and afterwards, *Hypotheses 2 and 3* were examined using a hierarchical linear regression analysis. Additionally, we examined potential differences between individuals living in former East vs. West Germany.

4.3 Results

Concerning our central independent variable, the (non)belief in God, a higher being, or a spiritual power, 18.8% of the sample indicated believing in a personal God (theists), 31.2% believed in a higher being or a spiritual power (alternative spirituals), 17.0% did not know what to believe in (uncertain individuals), and 33.1% had no belief in a personal God, a higher being, or a spiritual power (atheists).

In general, our sample depicts the distribution of religious denominations in Germany: 34.2% indicated Protestantism (including protestant free churches) as their religious denomination, 28.7% Catholicism, and 2.1% other Christian denominations (including Orthodox Christianity). 35.0% of the sample did not belong to any religious denomination. Of the 65.0% of the sample that indicated belonging to a religious denomination, 27.0% believed in a personal God, 48.2% indicated attending religious services at least several times per year, and 56.4% prayed at least several times per year.

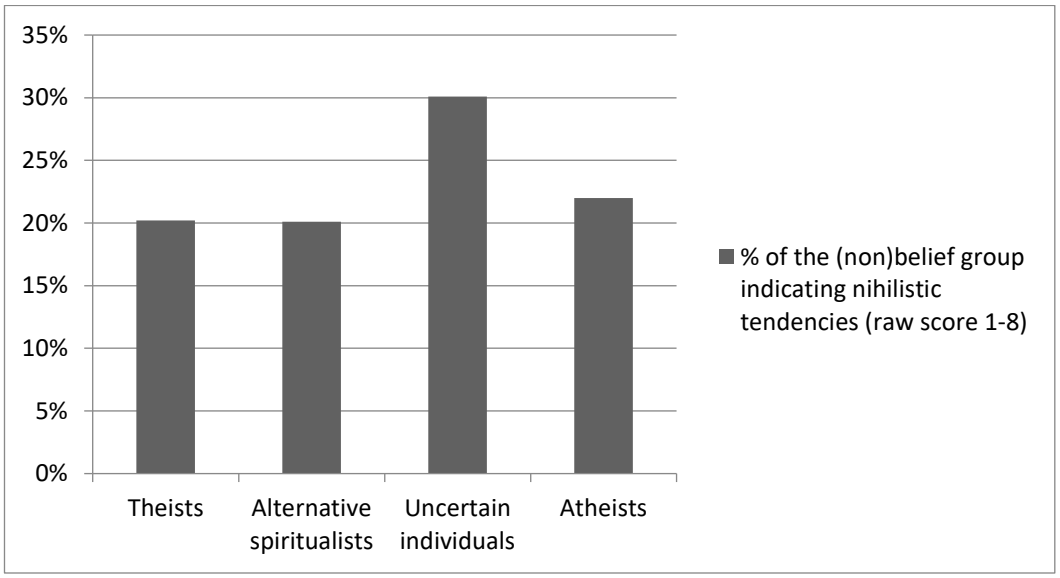
Chi-square and Kruskal-Wallis tests were conducted to examine whether the four (non)belief groups differed regarding the sociodemographic variables (Table A5 and A6 in the Appendix). The groups did not differ concerning marital status divorced/separated/widowed (p = .898). All other tests showed significant differences between the groups (p = .006 for employed, p = .003 for single, all other p < .001). Theists and alternative spiritualists were significantly more often female, not in the labor force, married, and living in former West Germany. Uncertain individuals had a lower educational level, a lower equivalized income, were more often unemployed, were in a relationship or single, lived in former East Germany and were younger. Atheists were more often male, employed or unemployed, in a relationship or single, living in former East Germany and younger.

A total of 22.4% of the sample indicated nihilistic tendencies (sum of raw values = 1 to 8), while 77.6% did not (sum of raw values = 0). Thus, this variable is characterized by a very skewed distribution. Again, Chi-square and Kruskal-Wallis tests were conducted to examine whether participants who indicated no vs. a certain level of nihilistic tendencies differed regarding the sociodemographic variables (Table A7 and A8 in the Appendix). There was no significant difference concerning the gender variable. All other tests showed significant differences between the groups (all p < .05). Participants who indicated no nihilism were slightly younger, more often employed and married or in a relationship. Participants with nihilistic tendencies were more often unemployed or not in the labor force, had a slightly lower educational level and equivalized income, were more often divorced, separated, widowed, or single, and lived more often in former West Germany.

4.3.1 Determinants of nihilism

Hypothesis 1 proposed that uncertain individuals (possibly due to their lower (non)belief certainty) indicate higher levels of nihilism than theists, while there is no significant difference between theists' and atheists' level of nihilism. Figure 4 shows the percentages of nihilistic tendencies across the four (non)belief groups.

Figure 4: Percentages of nihilistic tendencies across the (non)belief groups



To examine whether the (non)belief groups differed significantly in their level of nihilism, we performed a hierarchical logistic regression analysis (Table 2). Without the control variables (Model 1), theists differed significantly from uncertain individuals: The odds of indicating nihilistic tendencies were 1.70, 95% CI [1.30, 2.22], times higher for individuals who were uncertain what to believe in (Wald χ^2 (1) = 14.73, p < .001).

When the control variables were added to the model (Model 2), this difference persisted: The odds of uncertain individuals indicating nihilistic tendencies were 1.75, 95% CI [1.33, 2.31], times higher than the odds for theists (Wald χ^2 (1) = 15.74, p < .001). The differences between theists and alternative spiritualists and atheists were nonsignificant. Note that when using a nihilism index with three levels (raw score = 0 vs. raw score = 1-4 vs. raw score = 5-8) instead of two levels, the results were equivalent.

Table 2: Hierarchical logistic regression analysis predicting nihilistic tendencies from (non)belief

	Model 1				Model 2			
	Estimate (*SE*)	Odds Ratio	95% CI Odds Ratio		Estimate (*SE*)	Odds Ratio	95% CI Odds Ratio	
			LL	UL			LL	UL
Constant	-1.37 (0.10)***	0.25			-1.04 (0.27)***	0.36		
Gender (male)					0.004 (0.09)	1.00	0.84	1.20
Employment					-0.05 (0.12)	0.95	0.76	1.19
Unemployment					0.34 (0.20)	1.40	0.95	2.06
Married					-0.54 (0.14)***	0.58	0.44	0.77
In a relationship					-0.56 (0.15)***	0.57	0.43	0.77
Divorced/separated/widowed					-0.23 (0.18)	0.79	0.55	1.13
Educational level					0.01 (0.02)	1.01	0.98	1.04
Equivalized income					-0.0002 (0.0001)**	1.00	1.00	1.00
Age[a]					0.15 (0.06)**	1.17	1.04	1.31
Age squared[a]					0.03 (0.05)	1.03	0.94	1.13
Living in former West Germany					0.35 (0.10)**	1.41	1.16	1.72
Alternative spiritualists	-0.01 (0.13)	0.99	0.77	1.27	0.01 (0.13)	1.01	0.78	1.30
Uncertain individuals	0.53 (0.14)***	1.70	1.30	2.22	0.56 (0.14)***	1.75	1.33	2.31
Atheists	0.11 (0.13)	1.11	0.87	1.42	0.24 (0.13)	1.27	0.97	1.65
-2 Log-Likelihood		3398.61				3329.48		
Pseudo R square (Nagelkerke)		.01				.04		

Note. Reference categories: for employment status – not in the labor force; for marital status – single; for (non)belief – theists.
[a] The variable was transformed to z-scores.
*p < .05, **p < .01, ***p < .001.

Thus, these results confirm *Hypothesis 1*: Uncertain individuals were more likely to report nihilistic tendencies than theists, while there was no significant difference between theists and atheists. Thus, nonreligiosity was not generally related to higher levels of nihilism than religiosity. Instead, there seems to be a curvilinear relation between (non)belief and nihilism. This relation might be based on uncertain individuals' lower (non)belief certainty compared to theists.

4.3.2 Determinants of life satisfaction

To test whether nihilism is negatively related to life satisfaction (*Hypothesis 2*) and whether uncertain individuals are less satisfied with life than theists and atheists, while there is no difference between theists' and atheists' level of life satisfaction (*Hypothesis 3*), we performed a hierarchical linear regression analysis and examined the

relation of different kinds of (non)belief and nihilism with life satisfaction (Table 3).

Model 1 contains only the sociodemographic control variables and shows the commonly found relations of these variables and life satisfaction, except for a nonsignificant association with educational level. Being employed (compared to not being in the labor force), being married (compared to being single), living in a relationship (compared to being single), a higher equivalized income, age squared, and living in former West Germany were positively related to life satisfaction, while being male and being unemployed (compared to not being in the labor force) was negatively related to life satisfaction.

In the next step, the dummy variables for the kind of (non)belief were added to the model with theists as the reference category (Model 2). Atheists had significantly lower levels of life satisfaction than theists, b = -0.13, SE = 0.05, β = -.06, t (3197) = -2.61, p = .009. The differences between theists and the other two groups were nonsignificant. However, from a more general perspective, adding this variable did not explain a significant amount of variance in life satisfaction (11.7% explained variance in Model 2 compared to 11.5% in Model 1, F (3, 3197) = 2.37, p = .069, which can be converted into an effect size of f^2 = .002).

In Model 3, the variable for nihilistic tendencies was added to the model with only the sociodemographic control variables instead of the kind of (non)belief. Adding this variable explained a significant amount of variance in life satisfaction (13.6% explained variance in Model 3 compared to 11.5% in Model 1, F (1, 3199) = 79.90, p < .001), and nihilistic tendencies had a significant negative relationship with life satisfaction, b = -0.36, SE = 0.04, β = -.15, t (3199) = -8.94, p < .001.

Table 3: Hierarchical linear regression analysis predicting life satisfaction from nihilistic tendencies and (non)belief

	Model 1		Model 2		Model 3		Model 4	
Variable	*b* (*SE*)	β	*b* (*SE*)	β	*b* (*SE*)	β	*b* (*SE*)	β
Constant	-0.72 (0.10)	***	-0.62 (0.11)	***	-0.61 (0.10)	***	-0.52 (0.10)	***
Gender (male)	-0.10 (0.03)	-.05**	-0.09 (0.04)	-.04*	-0.10 (0.03)	-.05**	-0.09 (0.03)	-.04*
Employment	0.09 (0.05)	.05*	0.09 (0.05)	.05*	0.09 (0.04)	.04	0.09 (0.04)	.04*
Unemploy-ment	-0.77 (0.08)	-.17***	-0.76 (0.08)	-.17***	-0.74 (0.08)	-.16***	-0.74 (0.08)	-.16***
Married	0.41 (0.06)	.20***	0.40 (0.06)	.20***	0.37 (0.06)	.18***	0.37 (0.06)	.18***
In a relationship	0.17 (0.06)	.07**	0.17 (0.06)	.07**	0.13 (0.06)	.05*	0.14 (0.06)	.05*
Divorced/ separated/ widowed	-0.03 (0.08)	-.01	-0.03 (0.08)	-.01	-0.04 (0.08)	-.01	-0.04 (0.08)	-.01
Educational level	0.01 (0.01)	.03	0.01 (0.01)	.02	0.01 (0.01)	.02	0.01 (0.01)	.02
Equivalized income	0.0001 (0.00002)	.10***	0.0001 (0.00002)	.10***	0.0001 (0.00002)	.09***	0.0001 (0.00002)	.09***
Age[a]	-0.004 (0.02)	-.004	-0.01 (0.02)	-.01	0.004 (0.02)	0.004	0.004 (0.02)	.004
Age squared[a]	0.13 (0.02)	.14***	0.13 (0.02)	.14***	0.14 (0.02)	.14***	0.14 (0.02)	.14***
Living in former West Germany	0.20 (0.04)	.10***	0.18 (0.04)	.08***	0.22 (0.04)	.10***	0.20 (0.04)	.09***
Alternative spiritualists			-0.10 (0.05)	-.04			-0.10 (0.05)	-.04*
Uncertain individuals			-0.10 (0.06)	-.04			-0.06 (0.06)	-.02
Atheists			-0.13 (0.05)	-.06**			-0.12 (0.05)	-.06*
Nihilism (1-8)					-0.36 (0.04)	-.15***	-0.36 (0.04)	-.15***
R^{2b}	.12		.12		.14		.14	

Note. Reference categories: for employment status – not in the labor force; for marital status – single; for (non)belief – theists; for nihilism – no nihilism (0).
[a] The variable was transformed to z-scores.
[b] F for change in R^2: from an empty model to Model 1 = 37.76***; from Model 1 to Model 2 = 2.37; from Model 1 to Model 3 = 79.90***; from Model 2 to Model 4 = 79.10***.
*p < .05, **p < .01, ***p < .001.

In Model 4, both the dummy variables for the kind of (non)belief and the variable for nihilistic tendencies were included. Atheists still had a significantly lower life satisfaction than theists, b = -0.12, SE = 0.05, β = -.06, t (3196) = -2.37, p = .018. Alternative spiritualists also had significantly lower levels of life satisfaction than theists, b = -0.10, SE = 0.05, β = -.04, t (3196) = -1.98, p = .048. There was still no significant difference in the level of life satisfaction of uncertain individuals and theists, and controlling for nihilism even reduced the difference between these groups as indicated by the beta coefficients (β = -.02 in Model 4 compared to β = -.04 in Model 2). Nihilistic tendencies,

b = -0.36, SE = 0.04, β = -.15, t (3196) = -8.89, p < .001, had a significant negative influence on individuals' life satisfaction.

Again, when using a nihilism index with three levels (raw score = 0 vs. raw score = 1-4 vs. raw score = 5-8) instead of two levels, the results were equivalent.

Thus, individuals who were uncertain what to believe in were shown in the logistic regression analysis to indicate nihilistic tendencies more often than theists and this seems to affect their life satisfaction more negatively than the other three groups' (Model 2 and Model 4). Controlling for nihilistic tendencies did not change the difference in life satisfaction between atheists and theists. Thus, nihilism did not seem to explain the difference in life satisfaction between these two groups, which was probably caused by additional yet unknown factors.

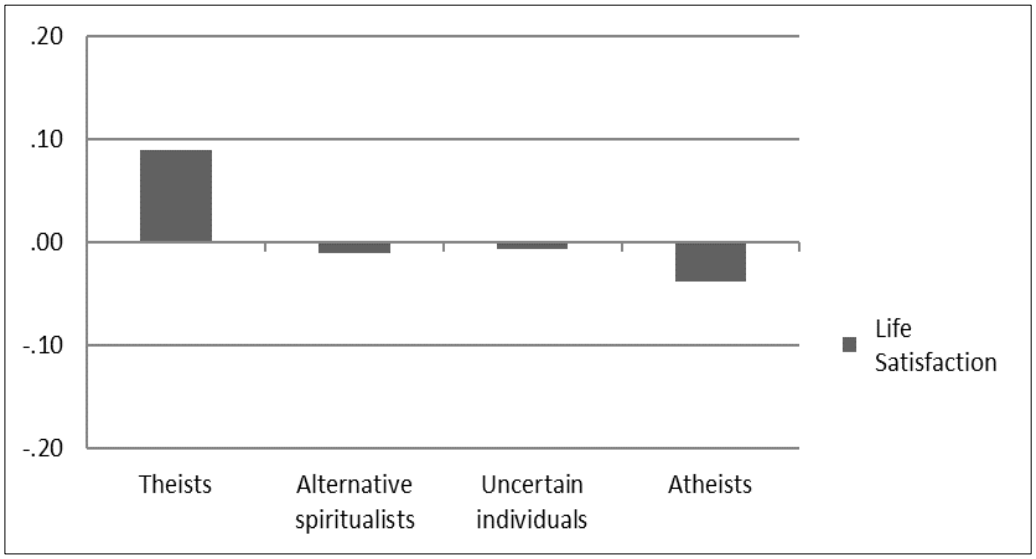
Changing the reference category to atheists in Model 4 showed no significant differences between this group and alternative spiritualists and uncertain individuals.

Thus, the results of the linear regression analyses clearly support *Hypothesis 2* and do not support *Hypothesis 3*, with theists having slightly higher levels of life satisfaction than atheists. However, this effect is quite small, with a beta coefficient of -.06. In contrast, the influence of unemployment (vs. not being in the labor market) has a beta coefficient of -.16 (in Model 4).

Figure 5 illustrates the difference in average life satisfaction between the four groups of (non)belief. We calculated the standardized residuals of life satisfaction after controlling for sociodemographic characteristics (Model 1 in Table 3) and then performed an ANOVA with the kind of (non)belief as the independent variable and the standardized residuals of life satisfaction as the dependent variable to obtain this figure. The differences in average life satisfaction between the groups might appear to be a substantial effect, but they are actually very small — the standardized residuals of life satisfaction (transformed to z-scores) are 0.09 for theists, -0.01 for alternative spiritualists, -0.01 for uncertain individuals, and -0.04 for atheists. Thus, theists indicated an average life satisfaction 0.09 standard deviations above the sample

mean, while atheists indicated an average life satisfaction 0.04 standard deviations below the sample mean.

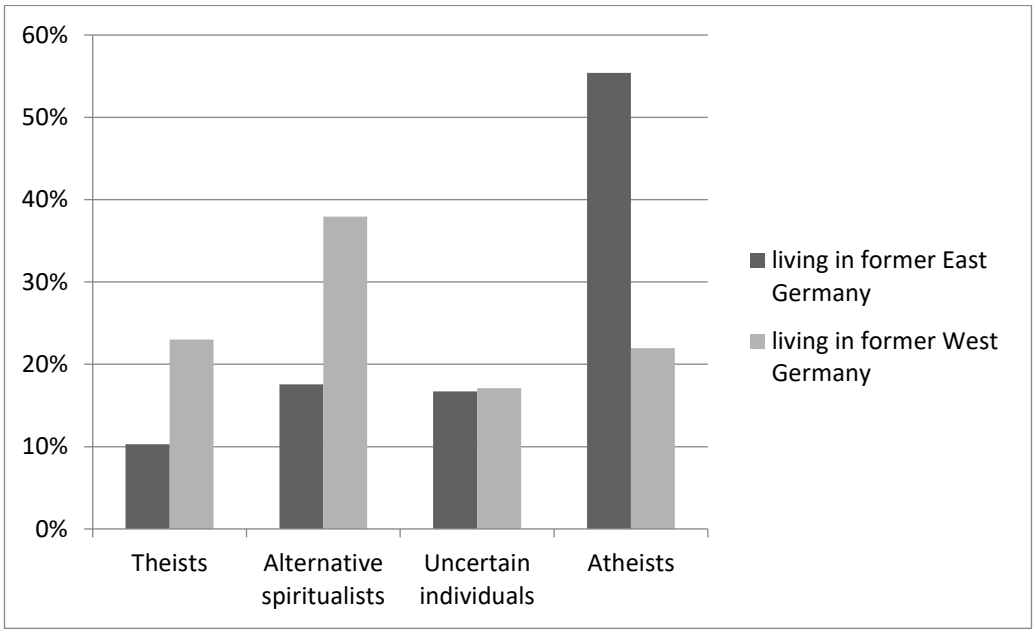
Figure 5: Differences in average life satisfaction between the four (non)belief groups



4.3.3 Testing for differences between former West and East Germany

Regarding the unusual historical development of religiosity in Germany while it was divided, we examined potential differences between individuals living in former East vs. West Germany. In our sample, 20.3% of the individuals living in former East Germany indicated nihilistic tendencies, compared to 23.5% of the individuals living in former West Germany. Figure 6 illustrates the frequencies of the four (non)belief groups in former East vs. West Germany. Consistent with the historical developments, fewer individuals living in former East Germany indicated believing in a personal God. However, there were no differences concerning the number of individuals who indicated being uncertain what to believe in. Instead, a majority of those living in former East Germany indicated that they did not believe in a personal God, a higher being, or a spiritual power.

Figure 6: Percentages of the (non)belief groups in former East vs. West Germany



We also checked for interaction effects between the kind of (non)belief a person had and whether this person lived in former West or East Germany on life satisfaction. There were no significant interaction effects and no significant changes in the explanatory power of the statistical model when these interaction terms were included. However, in the statistical models without these interaction terms, there was a general positive effect of living in former West Germany compared to living in former East Germany on life satisfaction in Model 4 (b = 0.20, SE = 0.04, β = .09, t (3196) = 5.16, p < .001). Thus, individuals living in former East Germany were less satisfied with life, but this was not based on a lower level of religious belief or a higher level of nihilism.

4.4 Discussion

To summarize the results, we found empirical evidence that supports *Hypothesis 1*: Uncertain individuals had higher odds of reporting nihilistic tendencies than theists, while there was no difference between theists and atheists. Thus, nonreligiosity was not generally related to nihilism. Instead, there seemed to be a curvilinear relation between (non)belief and nihilism, which might be based on

individuals' (non)belief certainty. We also found strong empirical support for *Hypothesis 2*: Nihilistic tendencies were negatively related to life satisfaction. Finally, our results did not support *Hypothesis 3*, which proposed that uncertain individuals (with presumably lower (non)belief certainty) report lower levels of life satisfaction than theists and atheists (who we assume to have higher (non)belief certainty), while there is no difference between theists' and atheists' level of life satisfaction. The life satisfaction of uncertain individuals was affected more negatively by nihilism compared to the other three groups, yet their level of life satisfaction did not differ significantly from that of theists and atheists. Contrary to our hypothesis, theists had slightly higher levels of life satisfaction than atheists. However, the beta values were low ($\beta = -.06$), and adding the variables for the kind of (non)belief to the regression model did not lead to a significant difference in the explained variance of life satisfaction (11.5% explained variance in Model 1 with only the sociodemographic variables vs. 11.7% when adding the kind of (non)belief in Model 2). This difference in the explained variance between the models can be converted into an effect size of $f^2 = .002$. According to Cohen (1987), an f^2 of .02 denotes a small effect size.

Thus, even in a sample from a rather secular European country, such as Germany, certain traces of the often observed linear relation between religiosity and subjective well-being could be found, but an individual's (non)belief seems to be only very weakly related to his/her subjective well-being. Instead, a person's level of nihilism seems to be a more important factor with a negative association with life satisfaction, yet it is related to belief uncertainty rather than to convinced religiosity or nonreligiosity. These results did not differ between former East and West Germany; there was only a general negative effect of living in former East Germany on life satisfaction, but this could not be explained by a higher level of nonreligiosity. Moreover, individuals living in former East Germany were not more uncertain what to believe in or more often indicated nihilistic tendencies than individuals living in former West Germany.

We did not hypothesize on the level of nihilism or life satisfaction of alternative spiritualists since we could not determine their belief certainty compared to theists. This group did not indicate nihilistic tendencies more often than theists, and there was no significant difference in life satisfaction compared to both theists and atheists. Based on these empirical results, we cannot infer the level of belief certainty of this group.

The results imply that neither a linear nor a perfectly U-shaped curvilinear relation well describes the relation of (non)belief certainty to nihilism and life satisfaction in a German sample. Instead, the findings are more complex. (Non)religious subgroups clearly differed from each other, but in diverse ways: They differed in the level of nihilism (with uncertain individuals having higher odds of having higher levels than theists), in the level of life satisfaction (with theists having slightly higher levels than atheists), and in which factors influence the level of life satisfaction (an as of yet unknown factor influenced the life satisfaction of atheists negatively).

This demonstrates the importance of determining how to define and measure (non)religiosity to capture the phenomenon adequately and go beyond a mere absence of traditional religiosity and to allow for a differentiation between (non)religious subgroups. Some operationalizations would probably consider all three groups who do not believe in a personal God to be nonreligious, while others would combine those who are uncertain what to believe and those who do not believe in a personal God, a higher being, or a spiritual power in one nonreligious group. In addition, 65% of the sample belonged to a religious denomination, but only 18.8% indicated believing in a personal God, 33% indicated attending religious services at least several times per year, and 38.9% prayed at least several times per year. These results show that a person who, e.g., indicates belonging to a denomination might not believe in a personal God or attend religious services, and thus, religious belonging is not necessarily related to religious belief and behavior. In the context of our research questions, we chose to study the effects of (non)religiosity with an indicator of

(non)religious belief rather than of (non)religious belonging or behavior because it seemed more suitable for differentiating between nonreligious and religious subgroups and prevented confounding effects of (non)religious belief with the effects of social belonging and community. Additionally, we utilized a different and partly more fine-grained measure of (non)religious belief than Pöhls et al. (2020a). Instead of simply choosing a short label for their (non)belief, the participants in this study indicated in more detail how they would describe their (non)belief content.

4.4.1 Limitations

The results of this study are based on survey data that do not allow causal interpretations. Consequently, it cannot be ruled out that other variables (partially) account for the observed effects. It is also possible that there is a different causal direction: Individuals who are more satisfied with life might tend to be more religious, or being less satisfied with life might lead to a decrease in religious faith. Additionally, we focused in this study on individuals who either belonged to one of the Christian denominations or did not indicate any religious denomination; thus, our conclusions cannot be generalized for Jewish, Muslim, Buddhist, or Hindu individuals or for those belonging to any other religious group in Germany.

When researching (non)religiosity, social desirability presents a common problem (e.g., Hadaway et al., 1998). In contrast to people in many other countries worldwide, people in Germany are free to choose any religion they prefer (or no religion); however, discrimination of certain (non)beliefs and, as a consequence, a tendency toward socially more desirable answers cannot be completely ruled out. Some religious individuals may, e.g., perceive that it is not socially desirable to report feeling a lack of meaning and purpose in life.

Galen and Kloet (2011) proposed the certainty of (non)belief in God as a measure that captures a wide range of differences between (non)religious subgroups and makes it possible to test for curvilinear effects of (non)religiosity on other variables, such as subjective well-being. As long as this variable is not included in large-scale (cross-

cultural) surveys, similar indicators of (non)belief that indirectly contain information about an individual's (non)belief certainty need to be utilized. The ALLBUS survey that we used as data source did not contain an item that directly measured (non)belief certainty, and thus, we might have not been able to detect a U-shaped curvilinear effect of (non)belief certainty because our indirect measure did not sufficiently capture (non)belief certainty. However, the kind of (non)religious belief a person has was clearly the most suitable indicator of (non)religiosity in the context of our research questions.

4.4.2 Implications and future research

Our results neither show strong evidence for a linear nor for a U-shaped curvilinear relation between (non)belief certainty and subjective well-being, as previous research from the USA has found. Thus, they demonstrate the importance of considering the cultural context and the sample when interpreting empirical results. As previously mentioned, our results also stress the importance of conceptualizing and measuring (non)religiosity adequately and of considering a differentiation between (non)religious subgroups.

For uncertain individuals, higher levels of nihilism were not related to significantly lower levels of life satisfaction compared to theists. Atheists had slightly lower levels of life satisfaction than theists, but this difference was not explained by nihilistic tendencies. Thus, future research should focus on finding factors that explain the lower levels of life satisfaction of this group.

Concerning the group of individuals who are uncertain what to believe, future research should differentiate further between individuals who are searching for answers to existential questions and for a (non)belief that matches their needs and those who are existentially indifferent, i.e., who do not perceive a need for (non)religious beliefs or meaning and purpose in life (e.g., Schlegel & Hicks, 2017; Schnell, 2010; see also Abeyta & Routledge, 2018). For this latter subgroup, indicating nihilistic tendencies may not be related to lower levels of well-being, as Steger et al. (2011) demonstrated that the association between meaning in life and life satisfaction is moderated by the search for

meaning in life. In their study, not experiencing meaning in life was more negatively related to life satisfaction when individuals reported that they were searching for meaning in life than when they were not searching for meaning in life.

Our results do show the negative effect of nihilism on life satisfaction. However, there was no evidence that only individuals who believe in a personal God experience purpose and meaning in life. Thus, finding and experiencing meaning in life might only be facilitated by, e.g., religious networks or religious dogmas, and does not seem to be created by any characteristic that is unique to religion. As the psychologist Paul Bloom explicated in his article "Religion, Morality, Evolution" (2012), "There’s nothing special about religious beliefs for these good effects or bad effects."

5 Integrative discussion and practical implications

The literature review in this dissertation identified several conceptual and methodological issues in much previous research on the relationship between (non)religiosity and life satisfaction and provided implications for reexamining this relationship with refined concepts and methods at the interface of psychology and sociology. Following several of these suggestions, we designed two empirical studies. In Chapter 3, we combined several lines of previous research that had not been tested together before and/or in intercultural research with large representative samples. The empirical results indicate that the relationship between (non)religiosity and life satisfaction varies with the country-level social norm of religiosity and the level of societal development. Additionally, weakly religious individuals were on average less satisfied with life than highly religious individuals (potentially based on a lower belief certainty), while there was no difference between highly religious and atheist or other nonreligious individuals. Also, the nonreligious subgroups differed from each other concerning which factors were related to their life satisfaction. The empirical results in Chapter 4 indicate that nonbelief is (at least in Germany) not related to nihilism. Individuals who believed in a personal God were slightly more satisfied with life than atheists, but there was no difference compared to uncertain individuals, and (non)belief and life satisfaction were only weakly related, in contrast a stronger link between nihilism and life satisfaction.

Consequently, both the theoretical review and the empirical studies provide evidence against the line of previous research that suggests a universal positive relationship between religiosity and subjective well-being. While it may be true that some types of religious individuals living under certain conditions (e.g., in a country with very religious social norms) are on average more satisfied with life than nonreligious individuals living in the same context, this cannot be generalized to religiosity being related to higher levels of life satisfaction. As soon as research considers the moderating influence of context variables,

measures (non)religiosity more adequately, in representative samples with a substantial number of nonreligious individuals that allow a differentiation between subgroups, and/or tests for nonlinear relationships, this previously often found relationship becomes weak and instable or cannot be found at all. This also speaks against religious or supernatural beliefs per se providing a unique advantage for an individual's well-being. Religiosity does not generally seem to be related to a higher life satisfaction compared to nonreligiosity and it does not seem to be beneficial for everyone. Therefore, these findings contradict the notion of nonreligiosity being related to a reduced quality of life, characterized by nihilism and a lower life satisfaction.

This establishes the need for reevaluating the conclusions from much previous research on the relationship between religiosity and life satisfaction. The conceptual and methodological issues in previous research described in Chapter 2 are probably based on a cultural bias against nonreligiosity which has not only led to an overestimation of the strength of this relationship, but also to a certain extent contributed to maintaining and even scientifically legitimizing the idea of nonreligiosity being characterized by a deficiency. Therefore, critically reexamining this previous research is not just driven by a theoretical interest in (non)religiosity and the determinants of life satisfaction, it also has practical relevance as it contributes to challenging and maybe even correcting prejudices and biases against nonreligious individuals that in turn (through discrimination by others or through self-fulfilling prophecies) might have a negative influence on nonreligious individuals' life satisfaction.

Another area of practical relevance concerns changing one's (non)religious worldview or living environment in order to enhance one's subjective well-being. Mochon et al. (2011) found that individuals with weak religious beliefs had a lower subjective well-being than nonreligious individuals and consequently wondered whether weakly religious individuals would be happier if they left their religion altogether. Hypothetically, this is an interesting question, however, empirical findings from this field of research should not be interpreted

as indicating that individuals could maximize their subjective well-being through consciously choosing a different religious or nonreligious worldview or by changing their living environment.

First of all, little is known about which personality traits, sociocultural factors, kind of upbringing or other life experiences are related to whether a person becomes religious or nonreligious, or which reasons cause individuals to give up their religion and become nonreligious, or to convert from nonreligiosity to a religion. But it is probably not only the result of an intentional process based on one worldview having certain advantages (e.g., concerning the level of life satisfaction) compared to the other. It is very unlikely that simply adapting (non)religious behaviors is associated with a higher level of well-being without the matching religious beliefs, as e.g., Speed and Fowler (2017) have demonstrated that churchgoing is negatively related to nonreligious individuals' life satisfaction. As Galen (2018) explicates, probably only a match between one's (non)religious worldview and the kind of social belonging or engagement is beneficial for one's life satisfaction.

While it may seem easier to change one's environment than one's (non)religious beliefs, in most cases, this probably still does not provide a simple solution for enhancing one's life satisfaction. For example, a nonreligious person living in a very religious rural area might experience discrimination that has a negative effect on his or her well-being, but moving to a more secular urban environment might also imply leaving family, friends, and a familiar social and cultural environment. Thus, it is impossible to anticipate in which way such changes will be either positively or negatively related to an individual's overall life satisfaction.

For some individuals, their religious or nonreligious worldview is probably not or only very weakly related to their subjective well-being, while other factors are more important. In addition, the process of engaging with and questioning one's worldview and lifestyle might already be linked to a reduced level of life satisfaction, similar to the finding by Steger et al. (2011) that for individuals who reported that

they were searching for meaning in life, not experiencing meaning in life was more negatively related to life satisfaction than for those who were not searching for meaning.

To conclude, the interdisciplinary research of this dissertation provides further empirical evidence for it being necessary to relativize the idea of a universal positive relationship between religiosity and life satisfaction as already proposed by several other researchers (e.g., Galen, 2018; Zuckerman et al., 2016). However, this dissertation went beyond previous research by combining for the first time four different lines of research into one cross-cultural empirical study and one cross-sectional empirical study with large representative samples. Additionally, the literature review in Chapter 2 establishes the need for considering the influence of country-level context variables, measuring (non)religiosity more adequately, in representative samples with a substantial number of nonreligious individuals that allow a differentiation between subgroups, and for testing for nonlinear relationships in this field of research.

Accordingly, this dissertation has practical implications for the conceptual and methodological directions of future research on this topic (see Chapter 2) and for challenging cultural bias in research on the nonreligious (which in turn might contribute to reducing discrimination of them), but it does not provide recommendations for individuals in order to increase their life satisfaction, as it shall not evaluate one (non)religious worldview as generally, i.e., across individuals and cultural contexts, advantageous compared to another.

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7 Appendix

Table A1: Descriptive overview of the countries included in the analyses

Country	*n*	%	% highly religious	% weakly religious	% indistinct non-religious	% atheists	Country's norm of religiosity	IHDI	Pre-dominant religion
Argentina	960	2.8	47.3	21.1	25.0	6.6	71.5	.680	Catholic
Australia	1,438	4.2	30.0	15.4	40.1	14.5	41.7	.864	Protestant
Belarus	1,518	4.5	40.1	22.8	32.4	4.7	62.5	.693	Orthodox
Chile	949	2.8	38.9	13.1	43.8	4.2	52.2	.652	Catholic
China	2,156	6.4	7.0	6.9	57.9	28.2	12.9	.543	No religion
Estonia	1,434	4.2	18.7	14.7	59.1	7.5	32.8	.769	No religion
Germany	1,987	5.9	28.0	14.0	42.7	15.2	50.9	.846	Catholic
Hong Kong	805	2.4	17.8	6.8	30.7	44.7	19.9	.891	Mixed
India	1,573	4.6	61.3	11.4	22.4	5.0	78.3	.435	Eastern Religion
Japan	1,954	5.8	11.7	14.1	60.9	13.3	25.4	.899	Eastern Religion
Kazakhstan	1,470	4.3	41.8	22.0	31.8	4.4	61.7	.656	Muslim
Mexico	1,964	5.8	67.9	7.7	23.2	1.2	74.7	.593	Catholic
Netherlands	1,817	5.4	24.4	21.3	43.9	10.4	45.5	.857	No religion
New Zealand	750	2.2	32.1	14.8	45.1	8.0	46.7	.908	No religion
Poland	934	2.8	79.1	9.3	7.3	4.3	88.5	.740	Catholic
Russia	2,124	6.3	37.8	23.9	31.2	7.2	61.1	.670	Orthodox
Slovenia	971	2.9	34.1	35.8	16.7	13.4	69.2	.837	Catholic
South Korea	1,134	3.3	33.8	1.9	37.1	27.2	32.8	.749	Mixed
Spain	1,132	3.3	24.3	16.9	51.9	7.0	41.0	.799	Catholic
Sweden	1,161	3.4	19.4	12.7	49.8	18.1	32.4	.851	Protestant
Taiwan	1,064	3.1	39.9	12.0	41.2	6.9	45.2	.882	Eastern Religion
Ukraine	1,493	4.4	53.0	17.4	25.4	4.2	68.3	.662	Orthodox
United States	2,180	6.4	60.8	7.9	27.1	4.2	67.9	.771	Protestant
Uruguay	911	2.7	32.2	23.2	34.9	9.8	53.8	.654	Catholic
Total	33,879	100							

Note. The variable country's norm of religiosity also indicates the percentage of individuals per country sample who identified as highly and weakly religious before the exclusion of cases based on missing data. Due to this exclusion of cases, % highly religious and % weakly religious do not add up to the country's norm of religiosity.

Table A2: Descriptive and test statistics for sociodemographic differences between the types of (non)religious self-identification – part 1

Variable	Self-identification	*n*	*M*	Mean Rank	Kruskal-Wallis test *H*	*df*	*p*
Income	Highly religious	12,397	3.53	16,540.15	57.06	3	<.001
	Weakly religious	5,089	3.72	17,363.29			
	Indistinct nonreligious	12,722	3.64	16,924.03			
	Atheist	3,671	3.80	17,758.85			
Age	Highly religious	12,397	48.54	18,048.23	300.81	3	<.001
	Weakly religious	5,089	46.80	17,119.83			
	Indistinct nonreligious	12,722	44.99	16,115.79			
	Atheist	3,671	44.44	15,804.55			

Table A3: Descriptive and test statistics for sociodemographic differences between the types of (non)religious self-identification – part 2

Variable	Self-identification	*n*	%	χ^2	*df*	*p*
Gender (male)	Highly religious	4,969	40.1	618.75	3	<.001
	Weakly religious	2,235	43.9			
	Indistinct nonreligious	6,531	51.3			
	Atheist	2,218	60.4			
Employed	Highly religious	6,676	53.9	352.42	3	<.001
	Weakly religious	3,121	61.3			
	Indistinct nonreligious	8,236	64.7			
	Atheist	2,377	64.8			
Unemployed	Highly religious	768	6.2	9.95	3	.019
	Weakly religious	270	5.3			
	Indistinct nonreligious	706	5.5			
	Atheist	188	5.1			
Not in the labor force	Highly religious	4,953	40.0	325.17	3	<.001
	Weakly religious	1,698	33.4			
	Indistinct nonreligious	3,780	29.7			
	Atheist	1,106	30.1			
Married	Highly religious	7,261	58.6	46.77	3	<.001
	Weakly religious	2,774	54.5			
	Indistinct nonreligious	6,997	55.0			
	Atheist	1,995	54.3			

(continued)

Table A3 (continued)

Variable	Self-identification	*n*	%	χ^2	*df*	*p*
Divorced/separated/ widowed	Highly religious	2,356	19.0	216.80	3	<.001
	Weakly religious	890	17.5			
	Indistinct nonreligious	1,743	13.7			
	Atheist	396	10.8			
Living together as married	Highly religious	831	6.7	76.09	3	<.001
	Weakly religious	479	9.4			
	Indistinct nonreligious	1,206	9.5			
	Atheist	342	9.3			
Single	Highly religious	1,949	15.7	244.65	3	<.001
	Weakly religious	946	18.6			
	Indistinct nonreligious	2,776	21.8			
	Atheist	938	25.6			
No formal education	Highly religious	957	7.7	215.60	3	<.001
	Weakly religious	235	4.6			
	Indistinct nonreligious	496	3.9			
	Atheist	134	3.7			
Primary education	Highly religious	3,196	25.8	82.43	3	<.001
	Weakly religious	1,249	24.5			
	Indistinct nonreligious	2,866	22.5			
	Atheist	705	19.2			
Secondary education	Highly religious	5,669	45.7	83.35	3	<.001
	Weakly religious	2,587	50.8			
	Indistinct nonreligious	6,507	51.1			
	Atheist	1,783	48.6			
Tertiary education	Highly religious	2,575	20.8	115.80	3	<.001
	Weakly religious	1,018	20.0			
	Indistinct nonreligious	2,853	22.4			
	Atheist	1,049	28.6			

Table A4: Descriptive and test statistics for differences in religiosity between the types of (non)religious self-identification

Variable	Self-identification	*n*	*M*[a]	Mean Rank[a]	%[b]	Kruskal-Wallis Test *H*	Chi-square Test χ^2	*df*	*p*
Frequency of attending religious services	Highly religious	12,316	4.54	23,680.74		11,945.16		3	<.001
	Weakly religious	5,050	2.98	16,728.39					
	Indistinct nonreligious	12,648	2.20	12,658.02					
	Atheist	3,643	1.39	8,285.68					
Frequency of praying	Highly religious	12,223	5.99	23,726.66		13,470.63		3	<.001
	Weakly religious	4,968	4.09	16,999.18					
	Indistinct nonreligious	12,374	2.68	11,910.66					
	Atheist	3,568	1.50	7,586.61					
Importance of God in own life	Highly religious	12,298	8.47	23,538.89		14,679.13		3	<.001
	Weakly religious	4,958	6.59	17,522.63					
	Indistinct nonreligious	12,100	4.41	11,846.97					
	Atheist	3,481	2.07	5,585.75					
Religious faith as an important quality in children	Highly religious	5,405			43.6		5,712.84	3	<.001
	Weakly religious	604			11.9				
	Indistinct nonreligious	1,077			8.5				
	Atheist	197			5.4				
Active member in church or religious organization	Highly religious	3,838			31.1		6,549.48	3	<.001
	Weakly religious	234			4.6				
	Indistinct nonreligious	502			4.0				
	Atheist	42			1.2				
Belief in God	Highly religious	11,980			97.4		15,280.29	3	<.001
	Weakly religious	4,515			92.2				
	Indistinct nonreligious	6,207			53.7				
	Atheist	-			-				
Indicating a religious denomination	Highly religious	11,531			93.7		11,330.60	3	<.001
	Weakly religious	3,877			77.0				
	Indistinct nonreligious	5,754			45.9				
	Atheist	402			11.1				

Note. [a] Higher values indicate higher approval of the items. [b] Indicates the percentage of individuals agreeing to the item.

Table A5: Descriptive and test statistics for sociodemographic differences between the (non)belief groups – part 1

Variable	(Non)Belief	*n*	*M*	Mean Rank	Kruskal-Wallis test *H*	*df*	*p*
Educational level (Years of education)	Theists	603	11.40	1,591.72	18.18	3	<.001
	Alternative spiritualists	1001	11.51	1,669.09			
	Uncertain individuals	545	10.74	1,470.75			
	Atheists	1063	11.22	1,625.54			
Equivalized income	Theists	603	1694.16	1,615.33	20.08	3	<.001
	Alternative spiritualists	1001	1710.39	1,695.23			
	Uncertain individuals	545	1541.66	1,479.84			
	Atheists	1063	1640.91	1,582.88			
Age	Theists	603	51.12	1,649.34	23.73	3	<.001
	Alternative spiritualists	1001	51.93	1,701.18			
	Uncertain individuals	545	47.95	1,492.20			
	Atheists	1063	49.00	1,551.64			

Table A6: Descriptive and test statistics for sociodemographic differences between the (non)belief groups – part 2

Variable	(Non)Belief	*n*	%	χ^2	*df*	*p*
Gender (male)	Theists	255	42.3	74.46	3	<.001
	Alternative spiritualists	430	43.0			
	Uncertain individuals	264	48.4			
	Atheists	635	59.7			
Employed	Theists	307	50.9	12.52	3	.006
	Alternative spiritualists	520	51.9			
	Uncertain individuals	286	52.5			
	Atheists	620	58.3			
Unemployed	Theists	21	3.5	20.38	3	<.001
	Alternative spiritualists	34	3.4			
	Uncertain individuals	38	7.0			
	Atheists	74	7.0			
Not in the labor force	Theists	275	45.6	28.23	3	<.001
	Alternative spiritualists	447	44.7			
	Uncertain individuals	221	40.6			
	Atheists	369	34.7			
Married	Theists	365	60.5	33.41	3	<.001
	Alternative spiritualists	603	60.2			
	Uncertain individuals	257	47.2			
	Atheists	563	53.0			
In a relationship	Theists	82	13.6	23.17	3	<.001
	Alternative spiritualists	164	16.4			
	Uncertain individuals	125	22.9			
	Atheists	220	20.7			
Divorced/ separated/ widowed	Theists	74	12.3	0.60	3	.898
	Alternative spiritualists	119	11.9			
	Uncertain individuals	64	11.7			
	Atheists	118	11.1			

(continued)

Table A6 (continued)

Variable	(Non)Belief	*n*	%	χ^2	*df*	*p*
Single	Theists	82	13.6	14.14	3	.003
	Alternative spiritualists	115	11.5			
	Uncertain individuals	99	18.2			
	Atheists	162	15.2			
Living in former West Germany	Theists	493	81.8	398.51	3	<.001
	Alternative spiritualists	813	81.2			
	Uncertain individuals	366	67.2			
	Atheists	470	44.2			

Table A7: Descriptive and test statistics for sociodemographic differences between individuals with different levels of nihilism – part 1

Variable	Nihilism Index	*n*	*M*	Mean Rank	Kruskal-Wallis test		
					H	*df*	*p*
Educational level (Years of education)	No nihilism (0)	2491	11.33	1,636.57	12.60	1	<.001
	Nihilism (1-8)	721	11.03	1,502.60			
Equivalized income	No nihilism (0)	2491	1,697.72	1,646.88	21.05	1	<.001
	Nihilism (1-8)	721	1,510.62	1,467.00			
Age	No nihilism (0)	2491	49.78	1,586.53	5.15	1	.023
	Nihilism (1-8)	721	51.36	1,675.49			

Table A8: Descriptive and test statistics for sociodemographic differences between individuals with different levels of nihilism – part 2

Variable	Nihilism Index	*n*	%	χ^2	*df*	*p*
Gender (male)	No nihilism (0)	1227	49.3	0.01	1	.933
	Nihilism (1-8)	357	49.5			
Employed	No nihilism (0)	1392	55.9	16.59	1	<.001
	Nihilism (1-8)	341	47.3			
Unemployed	No nihilism (0)	114	4.6	8.73	1	.004
	Nihilism (1-8)	53	7.4			
Not in the labor force	No nihilism (0)	985	39.5	7.82	1	.006
	Nihilism (1-8)	327	45.4			
Married	No nihilism (0)	1424	57.2	10.11	1	.002
	Nihilism (1-8)	364	50.5			
In a relationship	No nihilism (0)	480	19.3	5.59	1	.019
	Nihilism (1-8)	111	15.4			
Divorced/separated/ widowed	No nihilism (0)	266	10.7	10.69	1	.002
	Nihilism (1-8)	109	15.1			
Single	No nihilism (0)	321	12.9	17.10	1	<.001
	Nihilism (1-8)	137	19.0			
Living in former West Germany	No nihilism (0)	1638	65.8	4.33	1	.039
	Nihilism (1-8)	504	69.9			