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## Associations between adolescent religiousness and psychological functioning: A longitudinal investigation of positive, negative, and social outcomes

Lee Matthew Huuskes

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## **School of Psychology**

**Associations between adolescent religiousness and psychological functioning: A longitudinal investigation of positive, negative, and social outcomes.**

**Lee Matthew Huuskes**

**This thesis is presented as part of the requirement for the  
Award of Doctor of Philosophy  
at the  
University of Wollongong**

**December, 2015**

## **ABSTRACT**

This thesis presents three empirical studies examining the relations between religious sentiment and psychological outcomes over the course of adolescence. Although there are numerous theories of religious development, and many studies have found positive relations between religious sentiment and psychological outcomes, comparatively little research has focused on the adolescent years, especially longitudinally. This is surprising, given that adolescence is the period of the lifespan where the most significant changes to religious sentiment occur. The sample consisted of approximately 2000 high school students participating in the Australian Character Study (ACS) over a four-year period.

Study 1 focused on obtaining an understanding of the ways in which belief in God was related to psychological functioning at time 1 (grade 8). Three groups (mean age = 13.92 years; 946 males, 979 females) were compared according to belief in God (believer, agnostic, atheists), on positive, social, and negative outcomes, using a profile analysis. On almost all outcomes, believers were found to have improved psychological functioning compared to agnostics, who in turn, tended to outscore atheists. The profile analysis also revealed that groups had distinctive psychological profiles, with believers' profiles distinguished by elevated subjective well-being and parental support; and atheists' by low affective empathy and high antisocial behaviour. The findings of this study provided the basis for the questions explored in studies 2 and 3.

Study 2 further explored relations between belief in God and outcomes examined in study 1, by repeating analyses for the proceeding 3 years. Results indicated that the three groups' profiles remained distinctive over time, but that grade 11 profiles significantly diverged from previous years for all 3 groups. Differences

between the groups also widened by grade 11, with believers' functioning found to improve over time, and atheists having more impaired functioning over time. Unlike study 1 however, all differences between groups in grades 10 and 11 were removed after controlling for parental support. This indicates that improved functioning amongst older religious adolescents is likely related to parental support.

Study 3 adopted a growth mixture model approach to identify individual differences in trajectories of religious values from grade 8 to grade 11. Overall religiousness was found to decline, and 4 unique trajectories of religious values were identified: High (steep decline), Average, Low (average decline), and Low (stable). Relative to the Average class, increased parental support in grade 8 predicted an increased likelihood of having high religious values with a sharp decline and a reduced likelihood of being in the classes with religious values below the average: Low (average decline) and Low (stable). Members of the High and Average classes were found to be more likely to have improved well-being in grade 11. These findings are suggestive of the need to account for heterogeneity in domains of religiousness when examining religious effects.

This thesis extends previous research, being the first collection of findings examining relationships between religious sentiment and psychological outcomes in a single sample over the course of adolescence. Results suggest that belief in God is related to the highs and lows experienced by adolescents, but that the strength of relations between religious sentiment and psychological outcomes may differ between early and late adolescence. The identification of individual trajectories of religious values and how these are related to positive outcomes also demonstrates the importance of accounting for individual changes in religiousness during adolescence. Results also highlight the importance of parental support, which predicted variation in

the development of religious values, and explained the improved adjustment found amongst older religious adolescents.

## **PUBLICATIONS ARISING DURING CANDIDATURE**

### **Published Manuscripts**

Huuskes, L., Heaven, P.C.L., Ciarrochi, J., Parker, P., & Caltabiano, N. (2016). Is belief in God related to differences in adolescents' psychological functioning? *Journal for the Scientific Study of Religion* 55(1), 40-53.

### **Reviewed Manuscripts**

Huuskes, L., Leeson, P., Heaven, P. C. L., & Ciarrochi, J. (Submitted). Adolescent religious values and well-being: A growth mixture modeling approach. *Child Development*.

### **Conference Presentations**

Huuskes, L., Leeson, P., Heaven, P. C. L., Ciarrochi, J., & Caltabiano, N. (2014). Are differences in religious trajectories related to psychological outcomes? Paper presented at the Australian Conference of Personality and Individual Differences, Newcastle, Australia, 28-29, December.

Huuskes, L., Ciarrochi, J., Heaven, P. C. L., & Parker, P (2013) The downsides of being a young atheist: Linking religious belief to well-being in adolescents. Invited paper presented at 'Non-Religion, Secularism and Atheism: A Social Scientific and Psychological Discussion', roundtable discussion at University of Western Sydney, 15/10.

Huuskes, L., Ciarrochi, J., Heaven, P. C. L., & Parker, P. (2012). Religion and adolescence: A profile analysis approach. Paper presented to the Australian Conference of Personality and Individual Differences, Melbourne, Australia, 1-3 December.

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# **1 Introduction and aims**

## **1.1 Introduction**

As young people move through the adolescent years they confront dramatic biological, cognitive, and social change (Lerner & Spanier, 1980). Although the majority of youth are able to navigate the difficulties of such changes (Smetana, Campione-Barr, & Metzger, 2006; Steinberg, 1999), decreased positive and increased negative affect tends to be the norm (e.g., Csikszentmihalyi & Hunter, 2003). The Australian National Mental Health Commission (NMHC) report card indicates that 25% of Australian adolescents and emerging adults have experienced difficulties with mental health (Australian Bureau of Statistics (ABS), 2007; National Mental Health Commission, 2012). Indeed, the majority of mental disorders begin during adolescence, with 75% emerging by young adulthood (Kessler et al., 2007). This has far-reaching implications, as youth who suffer from mental ill-health are more likely to engage in antisocial behaviour, have compromised health behaviours, and develop adult psychological disorders (Christie et al., 1988; Cotton, Larkin, Hoopes, Cromer, & Rosenthal, 2005). Impaired mental health also significantly contributes to early high-school withdrawal (Leach & Butterworth, 2012), and later adult unemployment (Cornaglia, Crivellaro, & McNally, 2012).

It is therefore essential to identify factors that can help to meet the unique challenges of adolescence. Further, research needs to accommodate both the prevention of negative outcomes (e.g., mental disorders, drug abuse, suicide), and identify factors contributing to positive outcomes (e.g., trait hope, subjective well-being, self-esteem). As the NMHC (2012) have suggested, an increased emphasis is needed to focus on factors that contribute to mental resilience.

Religion may be one such factor related to improved adjustment during the adolescent years (Regnerus, 2003). Research findings have indicated that religious

youth may possess unique resources related to improved physical and mental health (e.g., Cotton, Zebracki, Rosenthal, Tsevat, & Drotar, 2006; Dew et al., 2008; Yonker, Schnabelrauch, & DeHaan, 2012). As Smith (2005) suggested, “religions comprise and foster many beliefs and practices that strengthen young peoples’ ability effectively to cope with life’s problems” (p. 23). Unfortunately however, the majority of research has been conducted on adult populations, meaning that comparatively little is understood about adolescent religiousness. Likewise, it is not clear whether adult findings can be generalized to adolescents. An additional weakness has been that very few studies have adopted longitudinal approaches to understanding adolescent religiousness. The mechanisms by which religion may influence adolescent behaviours are thus not yet clear (Regnerus, 2003).

In broad terms, the influence of religious sentiment can be conceptualised as distal or proximal (Cotton et al., 2006; Pargament, Tarakeshwar, Ellison, & Wulff, 2001). Distal aspects of religion reflect individual behaviours such as church attendance or prayer. The aspects of religion related to an individual’s construction of personal religious meaning are described as proximal, and may reflect spiritual coping, or a reliance on religious attributions. For instance, religion may facilitate psychological adjustment via an attribution framework related to constructing meaning in everyday life (Blaine & Crocker, 1995). This might involve actively asking for help through prayer, or attributing the cause of random or adverse events to ‘God’s will’ (Park, 2005). In this way, religions are capable of addressing many of the unique challenges of adolescence, providing a sense of control during a characteristically unstable period by offering solutions to the ‘big’ existential questions that emerge (King & Benson, 2006).

Despite this, understanding of the relationship between religious sentiment and mental health within the adolescent developmental landscape remains relatively incomplete (Benson, Donahue, & Erickson, 1989; Bridges & Moore, 2002; Donelson, 1999; Markstrom, 1999). Indeed, despite a number of theoretical accounts of religious development (e.g., Fowler & Dell, 2006; Oser, Scarlett, & Bucher, 2006), an absence of longitudinal research means that it is very difficult to understand if, and when, religious sentiment contributes to adolescent well-being (Bridges & Moore, 2002; Cotton et al., 2006; Gorsuch, 1988; King & Roeser, 2009). It is not known, for instance, whether certain factors precede the development of religious values, or indeed, whether there are consequences associated with religious change. Likewise, few longitudinal studies have examined individual differences in religious development. Accounting for heterogeneity in religious change would lead to an increased understanding of the differential effects of developmental change, as well as an understanding of the varieties of religious change during the adolescent years.

The paucity of longitudinal studies during this period is particularly surprising because adolescence may be the period of most significance for religious development. It is ostensibly the period of the most religious variability (Gorsuch, 1988; Levenson, Aldwin, & D'Mello, 2005; Spilka, Hood, & Gorsuch, 1985); for instance, most adolescents will become less religious and more likely to convert or abandon their faith as they get older (Benson, Donahue, & Erickson, 1989; Donahue & Benson, 1995; Hardie, Pearce, & Denton, 2013). Certain developmental changes during adolescence may also lead to an increased receptivity to religious and spiritual concepts (Markstrom, 1999). The development of formal operational thinking for instance, signals a shift from the egocentrism and literal religious conceptions of

childhood to the more abstract conceptions that characterise adult religious thinking (Allport, 1950; Gorsuch, 1988).

In addition to a dearth of longitudinal research, very few studies have contrasted psychological findings between youth who believe in God and those who do not within a single cohort. Although examining relations between religious variables and psychological outcomes is useful, such findings don't necessarily indicate whether religious youth possess unique strengths not possessed by atheists or agnostics. If, as some have suggested, belief in God contributes to a unique worldview related to unique strengths, it may also be the case that irreligious youth possess unique strengths related to their own worldview. Much in the way that religious individuals rely on a meaning system, so too may atheists make meaning in a coherent, but different way. Silberman (2005) describes meaning systems as containing beliefs about oneself (e.g., "I am rational"), the way the world works (e.g., "the world is fair"), and interactions between the two (e.g., "hard work equals reward"). The possibility that atheists rely on a unique set of values means that it is important to utilise both categorical and continuous measures of religiousness. Categorical variables allow for comparisons of groups according to qualitative differences in belief, i.e., whether they believe in God, are unsure, or do not believe. This allows for clear comparison of effects according to belief, and differs from continuous measures of religiousness, which represent a continuum that could range from very weak to strong beliefs. The former can be utilised as a preliminary approach to obtain a broad understanding of differences between believers, agnostics, and atheists. It also allows for the comparison between agnostics and atheists. The latter allows for more nuance, in that it accounts for considerable variance that may occur within any of the three categories discussed.

Whilst adult atheists have been found to be law-abiding, conscientious, less prejudiced, more tolerant, and more educated than religious individuals (Beit-Hallahmi, 2007), it remains to be seen whether the same can be said for young atheists. Religions may be useful in aiding developmental transitions by providing readymade solutions to associated issues, such as questions regarding existence and identity. In contrast, the absence of a coherent framework for understanding these issues could be deleterious to young atheists or agnostics. In addition, it is likely that religious affiliated adolescents have considerably more social capital than their non-affiliated peers (King, & Furrow, 2004). It has been a fairly consistent finding that religious youth and their parents have close relations (for a review see Smith, 2003). Shared church attendance may add a spiritual component to the parent-child relationship, which could deepen the parents' sense of responsibility, and also facilitate the child's feeling of closeness (Mahoney, Pargament, Murray-Swank, & Murray-Swank, 2003). The strength of such bonds is likely to be related to a range of positive outcomes including educational attainment, reductions in delinquency, and psychological functioning (Furstenberg, Cook, Eccles, Elder, & Sameroff, 1999). In addition, religious youth are able to call upon an extended network of people of varying ages with similar beliefs during times of need (Regnerus, 2003).

It is also worth acknowledging that the majority of research has been conducted in the United States (Bridges & Moore, 2002). This is important, as the U.S. is considerably more religious than other Western nations, and those with comparably high GDP (Pew Research Center, 2007, 2015). Whilst there is certainly an ongoing decline in American religiousness, reflected by reduced confidence in the church (Saad, 2015), and an increase in religiously unaffiliated individuals (Pew Research Center, 2015), this trend seems to reflect church dissatisfaction, rather than non-belief

*per se*. Only a small proportion of the unaffiliated in the Pew study identified as atheist or agnostic. Indeed, the proportion of Americans who believe in God has been stable for over 30 years (Smith, Marsden, & Hout, 2011). Less than 10% of Americans identify as atheist, agnostic, or non-believer, compared to approximately 20-30% of Canadians, and 30-40% of Britains (Zuckerman, 2007). Even if the U.S. is getting less religious, it is still important to examine religious development in different cultures. Further, any potential upsides or downsides to religiousness may be relative to the normativity of religion within a culture. For instance, being an atheist in the U.S. may have greater negative consequences than in a country with high levels of atheism, given the high levels of mistrust and antipathy directed towards atheists in the U.S. (Gervais, 2013).

It is important to examine the psychological consequences associated with the shift away from religion in less religious countries. For example, how do irreligious young people, or those who have abandoned their faith cope with every day struggles? It is particularly useful to examine these questions amongst Australian adolescents, as Australia is representative of many Western countries in becoming less religious (ABS, 2013). Australian census data has indicated that irreligious individuals are the second largest 'affiliation' after Catholics, accounting for approximately 22% of the population (ABS, 2013). The irreligious were also the fastest growing group, increasing by 15% from 2001 to 2011. Interestingly, those who were between the ages of 15-34 at the time of the survey, appear to be driving this shift away from organisational religion in Australia. This also appears to be the case in the U.S., with Millennials found to be far less religious than previous generations were at the same age (Twenge, Exline, Grubbs, Sastry, & Campbell, 2015). Unlike the broader society however, Millennials in this study were both less likely to believe in God, and to be

religiously affiliated (Twenge et al., 2015). Aside from examining religious development and associated outcomes, there is a need to gain an understanding of the religious experiences of younger generations who appear to be driving a broad societal shift away from organised religion.

## **1.2 Aims**

This thesis sought to address a number of gaps in knowledge by examining religious change and associated outcomes in a single sample of Australian adolescents over a four-year period. In doing so, these findings will provide a broad empirical understanding of the varieties of religious experience and associated outcomes during the adolescent years. The following aims were addressed.

1. Conduct a close examination of the relationships between belief in God and a broad range of psychological outcomes at baseline (study 1). This study will address the following questions:
  - a. Do believers, agnostics, and atheists differ in psychological functioning, measured in terms of positive and negative outcomes, and social support?
  - b. How similar are the psychological profiles of adolescent believers, agnostics, and atheists? In other words, are the profiles parallel? Or is belief in God uniquely related to the highs and lows experienced by adolescents?
  - c. Does parental support influence the relationship between belief in God and psychological functioning?
  - d. Does gender influence the relationship between belief in God and psychological functioning?

2. Based on the findings of study 1, examine how the relationships between belief in God and psychological outcomes differ over time. Study 2 will examine the following questions:
  - a. Are differences found between groups at baseline maintained over the course of adolescence?
  - b. Does belief in God become more relevant to psychological functioning over time? In other words, are the differences between groups wider in late adolescence?
  - c. Do the profiles of believers, agnostics, and atheists become more similar over time?
  - d. How do the profiles of each group change over time?
  - e. Is parental support more, or less influential to the relationship between belief in God and psychological outcomes in later adolescence?
3. Identify individual differences in the development of religious values (study 3).
4. Examine predictors of individual differences in the development of religious values (study 3).
5. Examine whether differences in the development of religious values predict later psychological outcomes (study 3).

## **2 Empirical Study 1**

### **Is belief in God related to differences in adolescents' psychological functioning?**

Manuscript accepted by the Journal for the Scientific Study of Religion in January 2015, and published in 2016.

Huuskens, L. M., Heaven, P.C.L., Ciarrochi, J., Parker, P., & Caltabiano, N. (2016). Is belief in God related to differences in adolescents' psychological functioning? *Journal for the Scientific Study of Religion*, 55(1), 40-53.

## **2.1 Introduction**

Although numerous studies have now found that domains of religious sentiment correlate with favorable psychological outcomes during adolescence (Yonker, Schnabelrauch, & DeHaan, 2012), little research has systematically contrasted those who believe in God with those who do not, using both positive and negative indices. Indeed, most studies have examined facets of religiousness such as church attendance and religious importance and have not normally contrasted religious and non-religious youth. Consequently, it is not clear whether youth who believe in God possess unique resources related to improved psychological adjustment, compared with agnostics and atheists. This study therefore aims to provide some much needed empirical evidence on the differences in psychological functioning that may exist between those youth who believe in God and those who identify as agnostics and atheists.

### **2.1.1 Theories of religious influence**

Why would belief in God translate into psychological well-being? Religious youth are often discussed as having comparatively more resources that are favourable to adjustment (Wagener et al., 2003). For instance, religions provide a framework for understanding both existential concerns and the vicissitudes of daily life (e.g., Blaine & Crocker, 1995). Thus believers may conceptualise personal adversity as being part of ‘God’s plan’, and place faith in God to provide direction to meet future challenges. Indeed, at least one study has found that religious youth actively ask God for help in times of need (Dubow et al., 2000). As such, typical adolescent challenges such as increased cognisance of human mortality and changes in social networks are framed in such a way that makes them appear stable (Spilka, Shaver, & Kirkpatrick, 1985).

In addition, this framework may be uniquely beneficial to adolescents in aiding identity development, perhaps the most important developmental process of

adolescence (Erikson, 1968). Religions may be advantageous during the “identity confusions” (Erikson, 1968, p. 12) of adolescence by providing answers to major life dilemmas (King & Benson, 2006), and supporting the search for meaning (Hill et al., 2000). Indeed, the experience of unconditional love from God may also be related to enhanced self-worth and self-esteem (Blaine & Crocker, 1995). Those who believe in God may feel more secure in exploring their identity, and thus be more likely to commit to an identity compared to those without such a world view.

### 2.1.2 The effects of religious sentiment

#### 2.1.2.1 *Negative outcomes*

Some evidence suggests that religious sentiment may be related to a reduction in both internalising (e.g., negative affect) and externalising problems (e.g., suicide, risk behaviour) (Donahue & Benson, 1995; Gartner, Larson, & Allen, 1991). Religious participation during adolescence has been linked to reduced depressive symptoms (Schapman & Inderbitzen-Nolan, 2002) and risk of suicide (Stack & Wasserman, 1992). Others have shown that positive religious social experiences were more influential on psychological functioning than religious participation *per se*, with negative religious experiences contributing to increased negative affect (Pearce, Little, & Perez, 2003).

Religious sentiment also appears to buffer against externalising problems, such as risky behaviours and delinquency (Baier & Wright, 2001; Regnerus & Uecker, 2006). Studies have found that religious youth are relatively less likely to perform violent or delinquent behaviours (Donahue & Benson, 1995; Regnerus, 2003), and more likely to disapprove of delinquency (Johnson et al., 2001). Private religious practice has also been found to predict a decrease in delinquency (Pearce et al., 2003). One explanation for this finding could be that most religions provide guidelines on

underage drinking and conduct (Regnerus & Uecker, 2006). Others have attributed findings to the expectations of one's (religious) community or network, as opposed to religious teachings themselves (Stark, Kent, & Doyle, 1982).

Establishing the direction of these relationships has proven difficult. One study found that intrinsic religiousness - faith motivated by genuine internal devotion (Allport & Ross, 1967) - predicted a decrease in depressive symptoms after four months, but the relationship was not bidirectional (Pössel et al., 2011). In contrast, Horowitz and Gerber (2003) found bidirectional relations between depression and church attendance over time. Thus, while religion may provide a source of meaning for some, mental ill-health could be influential on people's decision to become less religious. It is possible that, if adolescents engage in behaviours incongruous with the values of their community (i.e., delinquency, drinking), they might become less religious to reduce the cognitive dissonance (Yonker, Schnabelrauch, & DeHaan, 2012).

#### *2.1.2.2 Positive outcomes*

Explanations of the relationships between positive outcomes and religious sentiment tend to focus on benefits associated with belonging to a religious community. For instance, one study found that church attendance promoted self-esteem by providing avenues for positive social comparisons and reflected appraisals (Thompson, Thomas, & Head, 2012). Although a recent meta-analysis found only a small relationship between religion and self-esteem (Yonker, Schnabelrauch, & DeHaan, 2012), communication with God, and a subjective experience of love from God may be more likely to influence self-esteem (Blaine & Crocker, 1995; Maton, 1989). Ellison (1993) found that private devotional practice fostered self-esteem,

suggesting that personal communion with God was associated with feelings of being part of a ‘unique plan’, and being cared for.

Religious sentiment may also influence the development of trait hope, which reflects the extent that individuals feel their goals are attainable (Heaven & Ciarrochi, 2007). Trait hope is a major influence on well-being (Snyder et al., 1997), related to both psychological and academic development (Ciarrochi, Heaven, & Davies, 2007). Ciarrochi and Heaven (2012) found that intrinsic religious values during adolescence predicted increased hope, but not self-esteem. These findings are consistent with suggestions that religion provides guidance on personal strivings, and how to reach one’s goals (Emmons, 2005).

While there appear to be many positive outcomes associated with religious sentiment, its relationship with prosocial behaviour and moral development remains equivocal (Francis & Pearson, 1987). A number of studies have found positive correlations with religiousness and altruism, but this tends to reflect aspects of religious behaviour rather the influence of religious teachings (e.g., Donahue & Benson, 1995). For instance, findings of increased altruism in religious adolescents may reflect expectations of pro-sociality from the broader religious community, as opposed to an intrinsic, religiously-motivated desire to help others. Youniss, McLellan, and Yates (1999) for instance, found that youth with intrinsic religiousness were more likely to volunteer, but in religious environments only. Others have suggested that religion fosters *existing* altruistic impulses, rather than making people more altruistic (Batson, 1983). In addition, because religious variables are consistently correlated with prejudice (Bloom, 2012), the impact of religious teachings on altruism remains equivocal.

### 2.1.3 The present study

The aim of this study was to ascertain the extent to which youth who identified as believers, agnostics, or atheists differed in their profiles of psychological adjustment. Specifically, we employed a profile analysis approach to address two central research questions. The first was whether belief in God was related to a wide range of individual differences in social and emotional functioning. This includes positive indices, such as subjective well-being, self-esteem, trait hope, and empathy; and negative indices, including mental health, and aggressive/rule-breaking behaviour. To our knowledge, no other studies have directly contrasted believers, agnostics, and atheists, although findings generally indicate that belief in God is related to well-being and improved coping (Yonker et al., 2012). Thus, we expected adolescents who believe in God to report improved psychological functioning across all variables. Findings on adult non-belief and mental health are scarce and mixed (e.g., Ventis, 1995; Wulff, 1997), thus we were uncertain of the extent to which agnostics would systematically differ from atheists on all measures.

The second question pertains to whether the groups' profiles of psychological adjustment were parallel. In other words, do believers experience differing highs and lows to agnostics and atheists? If it is simply the case that believers are better off, then overall mean scores would be higher, and the rank order of variables would be the same for all groups. A finding of non-parallel profiles, however, will indicate which characteristics are more pertinent for a particular group. For instance, because religion is a meaning system capable of shaping one's experience and worldview (Silberman, 2005) one might expect to find profile differences relating to subjective well-being, or self-esteem. As such, we expected to find non-parallel profiles.

Measures of parental, peer, and teacher support were included to examine the extent to which between-group differences can be attributable to improved social resources, as opposed to benefits related to belief itself. Few studies have examined the influence of social environments on religious development (Regnerus, Smith, & Smith, 2004). Religious parents have been found to be more involved with (Smith, 2003) and closer to their offspring (King & Furrow, 2004). Conversely, Kim-Spoon, Longo and McCullough (2012a) found that youth who were less religious than their parents had increased internalising and externalising symptoms. This is important, as parent-offspring attachment is related to improved internalising and externalising symptoms (Fanti et al., 2008). In accord with these findings, it was expected that believers would display overall higher levels of social support. However, we expected religion to still explain significant variance in social and emotional functioning, even when controlling for social support.

## **2.2 Method**

### **2.2.1 Sample and procedure**

Participants were drawn from an on-going longitudinal study of youth (ACS; Australian Character Study), attending seventeen Catholic high schools located in two dioceses in the states of New South Wales (NSW) and Queensland (QLD), Australia. Catholic schools represent 20 percent of all schools (Australian Bureau of Statistics; ABS, 2012), and are funded primarily by federal and state government grants (70 percent), and tuition fees (20-30 percent) (Harrington, 2013).

The sample closely resembled Australian averages on key demographics such as parental occupation, the number of intact families in the study, and language other than English spoken in the home (ABS, 2011). Participants were mostly Catholic (70 percent), with other denominations representing less than 6 percent of the sample. The

remainder indicated either 'no religion', or 'other'. For further demographic information, see Marshall et al. (2015).

Recent census data indicated that Australians are moving away from organised religion. From 2001 to 2011, those who chose the 'no religion' option grew by 7 percent to 22 percent, the second largest affiliation after Catholicism (25 percent) (ABS, 2013). Of this group, 2 percent reported identification with secular groups such as atheists and humanists. Australian males were slightly less religious, although below the age of 20 no gender difference was found. In addition, only 15 percent of men and 18 percent of women reported actively participating in religious activity. It is important to acknowledge that the shift away from religion has been driven by young people (15 – 34), the cohort with the largest proportional increase of non-belief.

Data used for the present analyses were obtained in 2010, when students were in Grade 8. A total of 1925 students (Mean age = 13.92 years, SD = 0.35; 946 males, 979 females) completed relevant measures. Participants who believed in God accounted for 46 percent of the sample, followed by agnostics (42 percent), and atheists (12 percent). The number of males and females within each category was comparable: for example, believers (males, 15.1 percent; females 9.3 percent), agnostics (males, 40.4 percent; females, 44.1 percent), atheists (males, 44.4 percent; females, 46.6 percent). Consent was obtained from parents and schools, and students were asked to complete a questionnaire on issues salient to young people, during regular school hours. After anonymously completing questionnaires, students were thanked and debriefed.

### 2.2.2 Measures

The questionnaire contained the following measures germane to the present study. Alpha coefficients were acceptable and ranged between .74 and .94.

*Belief in God.* Participants were asked to indicate which of the following statements best reflected their beliefs about God: 1 (*I do not believe there is a God*), 2 (*I am not sure if God exists or not*), 3 (*I firmly believe in the existence of God*).

*Subjective well-being* (Keyes, 2006). The 12-item SWB scale reflects participants' satisfaction with life, psychological functioning, and social functioning. Together this indicates the presence (flourishing) or absence (languishing) of mental health. Participants rated, on a 6-point scale, how frequently in the past month they experienced three indicators of emotional well-being, four indicators of psychological well-being, and five indicators of social well-being.

*Self-esteem* (Rosenberg, 1979). Rosenberg's 10-item self-esteem scale is widely used to obtain general views of self-worth. Participants rated statements pertaining to the self on a 6-point scale.

*Trait hope* (Snyder, Rand, & Sigmon, 2002). The Children's Trait Hope Scale was utilized to assess participants' hope, a 6-item scale that reflects agency (3 items) and pathways (3 items).

*Basic Empathy Scale* (Jolliffe & Farrington, 2006). This 20-item scale assesses affective (experiencing another's emotions) and cognitive (understanding another's emotions) empathy. Participants rated a 6-point scale whether items apply to them.

*Social Support Scale* (Malecki & Elliott, 1999). This 21-item scale indicates parent (SsPar), teacher (SsTea), and friend (SsFri) support. For instance, on a 6-point scale participants indicated if parents "Give me good advice" or "Praise me when I do a good job".

*Mental Health* (Goldberg & Hillier, 1979). The GHQ-12 is a screening test for psychiatric illness. Participants responded to a range of questions on a scale of 1 (*Better than usual*) to 4 (*Much less than usual*). For example, items included "Been

feeling unhappy and depressed”, and “Been losing confidence in yourself”. Items on this scale were reverse-scored.

*Aggressive/Rule-Breaking Behaviour* (Achenbach, 1991): This questionnaire consists of 31 questions from the Youth Self-Report for Ages 11-18 (YSR 11-18) of the ASEBA School-Age Forms and Profiles. These questions cover the aggression and rule-breaking sub-scales of the YSR 11-18. Example items include “I tease others a lot” (aggression), and “I hang around with kids who get in trouble” (rule-breaking). Participants indicated one of three possible responses to each question: 0 (*not true*), 1 (*somewhat or sometimes true*), 2 (*very true or often true*). After reverse-scoring items, responses to each sub-scale were summed and an overall mean was calculated.

### 2.2.3 Plan of analyses

We utilised a profile analysis approach to compare three groups of participants: those who do not believe in God (Atheist), those who are unsure if they believe in God (Agnostic), and those who do believe in God (Believer). The profile analysis involved three main steps. After standardising scores to make scales comparable, we examined the interaction between ‘well-being’, which is the average of our ten dependent variables, and ‘belief’. This is the equivalent of the test of interaction in repeated-measures ANOVA, and allowed us to examine whether the segments between variables are identical for each group (Tabachnick & Fidell, 2013). If the groups were found to be parallel, the ‘flatness’ of profiles was then tested. Second, the between-groups or ‘levels’ test was performed to systematically assess whether one group scored higher than the others. If the levels test was found to be significant, parameter estimates were calculated to plot dependent variable means for our three groups.

To ensure robustness of findings, a number of possible covariates were included in our model, including school, gender, as well as parents' marital and employment status. Last, we performed one-way ANCOVAs with parental support as a covariate to partial out the effects of participants' parents from the analysis.

## **2.3 Results**

### **2.3.1 Parallelism**

Wilks' criterion indicates whether group profiles had distinct shapes, reflected in differences in the rank order of variables. The overall profile was found to deviate significantly from parallelism,  $F = 3.96 (18, 2788)$ ,  $p < .001$ , partial  $\eta^2 = .025$ . Believers had higher subjective well-being than self-esteem, with the inverse pattern seen in agnostics and atheists. Atheists also scored lower on affective empathy relative to cognitive empathy. All groups reported having the most support from teachers, although believers had more support from parents than friends. Last, atheists had lower aggression and rule-breaking scores than GHQ, with the inverse found for believers. No significant difference was found between the two variables for agnostics.

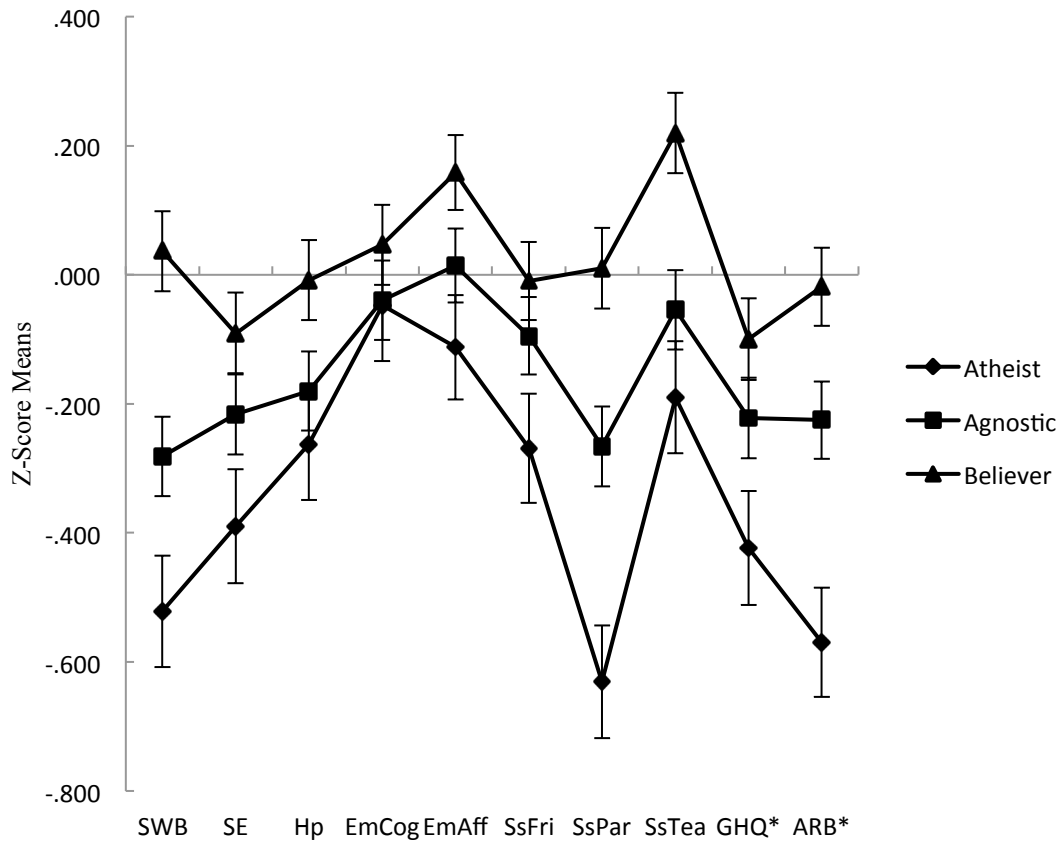


Figure 2.1 Profiles for atheists, agnostics, and believers

Profiles for atheists, agnostics, and believers. Scores were standardised for all measures. SWB (subjective well-being), SE (self-esteem), Hp (hope), EmCog (cognitive empathy), EmAff (affective empathy), SsFri (friend support), SsPar (parental support), SsTea (teacher support), GHQ (general health questionnaire), ARB (aggressive and rule-breaking behaviour).

\*Reverse-scored items

### 2.3.2 Level differences in psychological functioning

A MANOVA was conducted to assess effects of belief on psychological functioning and was found to be significant  $F(2, 1404) = 32.72, p < .001$ , partial  $\eta^2 = .045$ . Table 1 shows the multivariate effects of belief for our outcome variables. Only cognitive empathy (EmCog) was found not to differ between the three belief categories. Parameter estimates were calculated to examine the extent of group differences. Table 2 shows that believers scored significantly higher than atheists on all measures of psychological functioning excluding cognitive empathy. Finally, analyses were repeated to examine differences between agnostics and atheists, which was found to be significant  $F(1, 739) = 14.78, p < .001$ , partial  $\eta^2 = .02$ . Agnostics scored higher than atheists on SWB ( $\beta = -.241, p < .01$ ), Se ( $\beta = -.176, p < .05$ ), SsPar ( $\beta = -.379, p < .001$ ), GHQ ( $\beta = -.207, p < .05$ ), and ARB ( $\beta = -.449, p < .001$ ).

Table 2.1 Between groups variance for atheists, agnostics, and believers

Source	Dependent Variable	SS	df	Mean Square	F	$\eta^2$
Belief in God	Subjective Well-Being	47.78	2	23.888	29.90***	0.037
	Self Esteem	0.98	2	0.489	7.57***	0.01
	Hope	18.83	2	9.413	11.96***	0.015
	Cognitive Empathy	1.18	2	0.592	2.27	0.003
	Affective Empathy	4.48	2	2.238	6.86***	0.009
	Friend Support	11.86	2	5.931	6.26**	0.008
	Parental Support	83.17	2	41.582	34.53***	0.043
	Teacher Support	46.48	2	23.239	17.35***	0.022
	GHQ	4.10	2	2.05	8.034***	0.01
	Aggressive/Rule-Breaking Behaviour	4.10	2	2.05	26.13***	0.033

\* $p \leq .05$

\*\* $p \leq .01$

\*\*\* $p \leq .001$

Table 2.2 Between groups contrasts and parameter estimates

Dependent variable and group	$\beta$	$SE$	$t$	Partial $\eta^2$
Subjective Well-being				
Atheist	-0.55	0.086	-6.53***	0.029
Agnostic	-0.32	0.056	-5.72***	0.023
Self-esteem				
Atheist	-0.30	0.087	-3.42***	0.008
Agnostic	-0.13	0.057	-2.20*	0.003
Hope				
Atheist	-0.25	0.085	-2.98**	0.006
Agnostic	-0.17	0.055	-3.10**	0.007
Cognitive Empathy				
Atheist	-0.09	0.086	-1.10	0.001
Agnostic	-0.09	0.056	-1.55	0.002
Affective Empathy				
Atheist	-0.27	0.08	-3.38***	0.008
Agnostic	-0.14	0.052	-2.76**	0.005
Friend Support				
Atheist	-0.26	0.084	-3.11**	0.007
Agnostic	-0.09	0.054	-1.57	0.002
Parental Support				
Atheist	-0.64	0.086	-7.45***	0.038
Agnostic	-0.28	0.056	-4.93***	0.017
Teacher Support				
Atheist	-0.41	0.086	-4.78***	0.016
Agnostic	-0.27	0.056	-4.92***	0.017
Mental Health				
Atheist	-0.32	0.087	-3.72***	0.01
Agnostic	-0.12	0.057	-2.16*	0.003
Aggressive/Rule-breaking Behaviour				
Atheist	-0.55	0.084	-6.60***	0.03
Agnostic	-0.21	0.054	-3.80***	0.01

*Note.* Estimates are in comparison with believers.

\* $p \leq .05$

\*\* $p \leq .01$

\*\*\* $p \leq .001$

### 2.3.3 Gender differences

Of the covariates tested, only gender accounted for more variance than belief,  $F = 37.019 (9, 1396), p < .001$ , partial  $\eta^2 = .193$ . To test its effect on the profiles, we examined a three-way interaction between belief, well-being, and gender, which was found to be significant  $F = 1.736 (18, 2788), p < .05$ , partial  $\eta^2 = .011$ . Inspection of parameter estimates revealed three differences between male and female atheists. Atheist males reported higher levels of subjective well-being ( $\beta = .354, p < .05$ ), hope ( $\beta = .590, p < .001$ ), and parental support ( $\beta = .339, p < .05$ ), indicating that female atheists may be more likely to struggle, at least in some areas of functioning.

### 2.3.4 Control for parental support

We next examined the extent that parental support could explain the link between belief and social and emotional well-being. We utilized ANCOVAs to control for parental support on all outcome variables. While parental support did not significantly interact with belief category for any of our dependent variables, it was related to a significant and sizable effect on social and emotional well-being (see Table 3). After partialling out the effects of parental support, belief no longer predicted variance in self-esteem, cognitive empathy, and GHQ. Thus, for these variables effects appear to be attributable to parenting rather than belief *per se*. Effects were maintained for subjective well-being, hope, affective empathy, and aggressive behaviour. Parental support accounted for unique variance in all dependent variables with the exception of affective empathy.

Table 2.3 One-way ANCOVA with parenting as a covariate

DV	Source	F	Partial $\eta^2$
Subjective Well-being	Belief	9.94***	.10
	Parenting	638.77***	.249
Self-esteem	Belief	0.08	.16
	Parenting	358.71***	.00
Hope	Belief	3.38	.003
	Parenting	390.04***	.167
Cognitive Empathy	Belief	1.65	.002
	Parenting	38.37***	.019
Affective Empathy	Belief	13.29***	.014
	Parenting	0.74	.000
Friend Support	Belief	3.542*	.004
	Parenting	209.137***	.097
Teacher Support	Belief	11.43***	.012
	Parenting	270.40***	.122
Mental Health	Belief	0.25	.000
	Parenting	294.04***	.150
Aggressive/ Rule-Breaking Behaviour	Belief	18.07***	.018
	Parenting	252.26***	.116

Note. Df = (2,1).

\* $p \leq .05$

\*\*\* $p \leq .001$

## 2.4 Discussion

While it is well known that religious sentiment is related to positive social and emotional functioning, very few studies have contrasted a single cohort of adolescent believers, agnostics, and atheists according to levels of social and emotional functioning. Consequently, the role of belief in God in relation to psychological health

remains poorly understood, especially during the adolescent years. There is good reason, however, to expect that those who believe in God possess unique advantages related to their belief. Believers may be more likely to find meaning in uncertainty via religious teachings (King & Roeser, 2009), or actively search for religious meaning (Pargament, 2007).

The present research contributes to previous findings, indicating that believing in God is positively related to a number of domains of psychological functioning. Although we expected to find elevated scores for believers, we were surprised to find that for a number of variables, scores declined sequentially from believers to agnostics to atheists. In addition, our results suggest that even those who are unsure of God's existence may be better able to cope with the challenges of adolescence, compared to those who do not believe.

Profile differences also indicated that belief in God was related to different psychological 'highs and lows'. A number of these differences are in line with suggestions that religions provide a unique psychological meaning system that encourages the conceptualisation of adverse events as being part of God's plan (Blaine & Crocker, 1995). For instance, the shape (rank order) of the first two variables seen in Figure 1 shows that those who believe in God had higher subjective well-being than self-esteem, with the inverse seen in agnostics and atheists. This indicates that subjective well-being is more pertinent to believers than the other two groups, and thus they may be more likely to flourish and less likely to experience mental health issues relative to the other two groups. Because subjective well-being reflects feelings of satisfaction about one's life, this difference may also reflect believers' improved ability at meaning making. The stability associated with religious attributions may also account for believers' elevated levels of hope, which reflects

resilience and the extent to which youth feel their goals are attainable (Cheavens, 2000).

Although our results appear to be suggestive of benefits related to belief in God, does it follow that not believing in God contributes to non-believers' generally low well-being scores? It is possible that atheists and agnostics find the world less predictable because they do not have a meaning system; and indeed atheists' low mental health scores (GHQ) are suggestive of an increased risk of mental illness. Similarly, atheists and agnostics may be less likely to internalise religious teachings on behaviour, which could account for our finding of elevated levels of aggressive behaviour (Regnerus & Uecker, 2006). However, it is difficult to comment on these hypotheses given the cross-sectional nature of our data. Likewise, it is possible that a non-normative view - such as atheism in a Catholic school environment - can lead to feelings of isolation and rejection. This could be more influential for agnostics' and atheists' generally low scores, than disbelief *per se*. Further, our finding that disbelievers had reduced teacher support is aligned with this interpretation. Results need to be replicated in a secular environment to test the generalizability of our findings.

Similarly, it is difficult to interpret findings without considering the role of parenting. While believers reported similar levels of support from friends and parents, agnostics and atheists had relatively lower levels of parental support. In addition, once parenting was included as a covariate, between-groups differences in self-esteem and mental health (GHQ) were eliminated. These findings are in accord with research suggesting that religious youth have happier domestic lives and more supportive parents (King & Furrow, 2004; Smith, 2003). However, even after controlling for parental support, belief was related to well-being, hope, affective empathy, and

aggressive behaviour, suggesting that belief in god may add something over and above parental support. Future longitudinal research is needed to examine how parental support predicts the development of belief in god, and how parenting and belief, in turn, predicts the development of social and emotional well-being.

Theories of gender differences in religion could also account for our observed differences in subjective well-being and parental support for male and female atheists. Miller and Hoffmann (1995) have argued that because males are more comfortable with risk, they are not likely to feel distressed in forgoing the supernatural rewards of religion. Sociological accounts on the other hand, propose that females are socialised into developing behaviours amenable to religiousness, such as submissiveness (Collett & Lizardo, 2009). We were unable to determine the extent to which these processes account for our findings; however male atheists could be relatively more comfortable in the absence of a meaning system, or having values that deviate from the norm.

Alternatively, it is worth considering the ‘maleness’ of atheism. The relevance of this becomes apparent when considering the recent controversy regarding sexism within the atheist movement (see Stinson, Goodman, Bermingham, & Ali, 2013). Although atheists endorse egalitarian values including women’s rights (Zuckerman, 2009), the majority are male (Hunsberger & Altemeyer, 2006), and some have accused the movement of being a ‘boy’s club’ (McCreight, 2012). Extended discussion of these issues is obviously beyond the scope of this study; however, we would suggest that feelings of isolation amongst irreligious youth could be more pronounced for females. This may not necessarily be the case for our sample, as males and females reported similar levels of non-belief (males, 55.6 percent; females, 53.4 percent), comparable with national averages for those under the age of 20 (ABS,

2013). We do think however, that future research should account for gender differences in when examining psychological outcomes in irreligious youth.

We also found evidence that affective empathy contributed to the distinctiveness of atheists' profiles. Atheists had lower affective empathy relative to cognitive empathy, with the inverse seen in agnostics and believers. Thus, while capable of understanding others' emotions, atheists may have difficulty experiencing others' emotions. These results accord with suggestions that atheists are more intellectually focused, while believers are more emotional (Hunsberger & Altemeyer, 2006). Indeed atheists have been found to experience positive and negative emotions less intensely, and to have less vivid emotional memories than believers (Burris & Petrican, 2011). It has also been suggested that the atheist orientation arises out of a tendency towards deliberate mental effort (Barrett, 2004).

Differences in empathy could have important implications for variables such as aggressive behaviour, as low affective empathy has been found to predict higher levels of aggression and bullying (Jolliffe & Farrington, 2006). Further, aggressive behaviour not only contributed to the uniqueness of the atheist profile (see Fig. 1), but atheists also had higher aggressive behaviour than agnostics and believers. While the extent to which affective empathy and aggressive behaviour are implicated is unclear, it might be fruitful for future research to examine these relationships more closely.

Believing in God in a predominately religious environment could be an advantage for identity development, as it provides a secure environment to explore one's identity, and an ideological framework to guide the process. Atheists and agnostics on the other hand may find the search for identity more difficult. According to Marcia's (1980) model, 'moratoriums' or those who have not committed to an identity, may express what they do not want to be by acting out. In accordance with

this model, atheists and agnostics were not only found to be more aggressive than believers, but both also had less peer support. These findings do not necessarily imply that believers had committed to an identity, nor would we expect them to at this age, but rather it could explain our finding that irreligious youth were more likely to act out. For instance, they may feel pressure to act in a manner incongruous with their self-concept. Future research should also address whether lower empathy contributes to atheists' reduced peer support, or whether they have difficulty empathizing because they have fewer friends, and are thus less experienced at empathetic behaviour.

It is also worth considering whether disbelievers may have become so in response to negative emotions or behaviours. Being educated in a Catholic environment, youth may find that their behaviours are incongruent with values taught at school, and reduce their religiousness to resolve the dissonance (Yonker, Schnabelrauch, & DeHaan, 2012). The direction of longitudinal findings suggests otherwise (Ciarrochi & Heaven, 2012; Heaven & Ciarrochi, 2007; Pössel et al., 2011), but further research is needed if we are to understand the relations between adolescent religious sentiment and psychological adjustment.

#### 2.4.1 Limitations and conclusion

It is possible that agnostics and atheists feel less supported by their parents because of their belief. We were unable to test for congruency in parent-child religious sentiment, but given that our participants attended Catholic schools, it is reasonable to assume that a substantial proportion of students had parents who self-identified as Catholics. At least one study has shown that congruency in religious belief between parent and child influences the quality of the relationship (Kim, Longo, & McCullough, 2012a).

In addition, parent-adolescent attachment has also been found to be more influential for psychological adjustment than shared religious beliefs (Kim-Spoon, Longo, & McCullough, 2012b). Similarly, the differences we found between groups on peer and teacher support could be attributed to how much beliefs deviate from the norm, rather than the content of the belief *per se*. It would be useful to examine more closely the extent to which non-religious students feel ostracised in the home and school environment. We also did not specifically ask whether participants identified as atheists. It is possible that those who do not believe in God but do not identify as atheists differ from those who consider themselves to be atheists.

The results of this study demonstrate that belief in God is related to significant differences in the lives of adolescents. Our findings indicate that youth who believe in God may be more likely to cope, while those who were unsure or did not believe, may struggle. The shape of profiles provided an insight into key differences in psychological functioning between these groups. Importantly, our findings raise a number of important questions. First, it is apparent that many of the between-group differences could be attributable to social support, especially from friends and parents. Fortunately, we are able to track our respondents over time, thus future research will investigate the developmental implications of these findings. Closer examination of the relationship between parental support and belief in God is of particular interest.

Second, more research is needed to understand the experience of non-religious youth attending secular schools. Because the non-believers in our sample attended Catholic schools, we assumed that their beliefs were incongruent with those expressed at home. It is reasonable to expect youth whose worldview differs from the environmental norm to be less likely to flourish. It would be interesting to ascertain whether our findings are replicated in a secular environment.

### **3 Empirical Study 2**

#### **A four-year examination of psychological functioning amongst adolescent believers, agnostics, and atheists**

Unsubmitted manuscript

Huuskens, L., Ciarrochi, J., Parker, P., Leeson, P., & Heaven, P.C.L. *A four-year examination of psychological functioning amongst adolescent believers, agnostics, and atheists*. Manuscript in preparation.

### **3.1 Introduction**

How similar are the psychological lives of adolescents who believe in God and those who do not? Are there certain attributes that distinguish the psychological lives of religious and irreligious youth? Although research has consistently demonstrated that various domains of religious sentiment correlate with positive psychological outcomes (for reviews see Regnerus, 2003; Wong, Rew, & Slaikeu, 2010; Yonker et al., 2012), it isn't clear whether religious youth are simply more psychologically healthy, or if they see the world in a fundamentally different way. This makes it difficult to explain why religious sentiment tends to correlate with positive outcomes during the adolescent years.

Youth who believe in God may indeed possess unique psychological strengths, because religions provide individuals with a framework for making meaning in everyday life. For instance, individuals might feel protected by God, or that the world is fundamentally just (Silberman, 2005). Unlike other meaning systems however, religion also provides answers to 'ultimate concerns' such as existential issues or one's place in the world (Emmons, 1999). Imbuing events with spiritual meaning, religion and spirituality can therefore provide "high-level meaning to human life" (Baumeister, 1991, p. 205). In contrast, atheists have been found to process information in a manner that is less emotional and more intellectual (Hunsberger & Altemeyer, 2006), and may thus interpret events quite differently to believers. Understanding how religious and irreligious youth differ is therefore of interest to researchers, as it provides an insight into the mechanisms by which aspects of religious sentiment contribute to psychological functioning during the adolescent years.

### 3.1.1 Age differences in religious belief

The purpose of the present study was to perform a longitudinal follow-up to an earlier cross-sectional study, which found that adolescent believers, agnostics, and atheists had distinctive psychological profiles (Huuskes, Ciarrochi, Heaven, Parker, & Caltabiano, 2016). In other words, belief in God was related to significantly different psychological highs and lows across a range of positive and negative variables. For instance, the believers' profile differed from the other two with uniquely high subjective well-being. In contrast, the atheists' profile had uniquely low affective empathy (although they were not low in cognitive empathy) and higher levels of aggressive/antisocial behaviour. It was thus concluded, that while adolescents who believe in God may possess unique psychological strengths, so too might young atheists struggle in key areas.

The present paper extends the time 1 study for the proceeding 3 years (grades 9 to 11), in order to examine changes in the psychological profiles of atheists, agnostics, and believers. There are good reasons why developmental differences in religious sentiment could be reflected in profile differences. Children are introduced to religion by family and so, to a certain extent, younger adolescents' (12-14 years) religious values probably reflect those of their parents or the broader religious community, and may not necessarily be as deeply-held as in later adolescence. This isn't to say that the beliefs of young adolescents aren't deeply held, but rather that the development of reasoning skills associated with self-reflection during adolescence may precipitate the questioning of previously accepted values (King & Benson, 2006). The increased ability to comprehend religious concepts might mean that young people more deeply evaluate the values in the home, which could contribute to an independent value system with a greater attachment (Fowler & Dell, 2006). As such, those who retain

their belief at the end of high school could have stronger internalised religious beliefs, which could be related to positive psychological outcomes.

### 3.1.2 Adolescent religious development

Two main questions were examined with the initial profile analysis, conducted when participants were in their second year of high school, grade 8 (Mean age = 13.92 years) (Huuskes et al., 2016). The first was whether atheists, agnostics, and believers had different scores on positive, negative, and social outcomes. On all but one of these variables, believers outscored agnostics, who in turn outscored atheists. To a certain extent, this was to be expected, as findings have tended to indicate that domains of religious sentiment are related to aspects of adjustment such as reductions in negative outcomes (e.g., risk behaviour and depression) and improved positive outcomes (e.g., well-being and self-esteem) (Yonker et al., 2012).

The second question focused on the similarity of similarity of the groups' profiles. We were interested in determining whether the three groups continued to experience different highs and lows over time. The believers' profile for instance, differed from the other two groups with higher subjective well-being, at time 1. The Atheist profile on the other hand differed from the other two groups with lower affective empathy and higher aggressive/antisocial behaviour (Huuskes et al., 2016). Thus, belief in God may not just be related to improved outcomes, but also quite different psychological experiences.

It is important to understand how the belief profiles identified at time 1 changed over time, because adolescence is such a crucial period for the development of religious sentiment (King & Boyatzis, 2004; Oser et al., 2006). The development of abstract thinking means that adolescents become more contemplative of the sorts of 'big' questions that religions address (Markstrom, 1999), driven by the "intense

ideological hunger” characteristic of the period (King & Boyatzis, 2004, p.2). As Allport (1950) noted, this leads to a shift in the expression of religiousness, with the egocentric religion of childhood giving way to a more mature and abstract expression. In this way, religions could help to facilitate a key developmental process, as adolescents grapple with questions pertaining to purpose and one’s place in the world.

Despite the salience of adolescence for the development of religious sentiment, many contemporary scholars have noted the lack of empirical research devoted to the period (Bridges & Moore, 2002). In addition, although domains of religious sentiment have consistently been shown to correlate with reduced negative affect, and improved positive affect (e.g., Yonker et al., 2012), few have contrasted youth according to belief in God. This is an important distinction to make, as it can provide some indication of how belief contributes to psychological functioning. It has been argued that religion provides an enhanced sense of control over the vicissitudes of everyday life (Emmons, Barrett, & Schnitker, 2008) and a framework for dealing with grief and loss (Banziger, van Uden, & Janssen, 2006; Kay, Gaucher, Callan, Napier, & Laurin, 2008; Pargament, 1999; Park, 2005). By engendering meaning from hardship, religion may facilitate successful adjustment to adversity throughout the lifespan (Spilka et al., 1985).

Certainly, results are suggestive of benefits related to religious sentiment (Batson & Ventis, 1982; Comstock & Partridge, 1972; Gorsuch, 1988; Hill & Pargament, 2003; Koenig, 2010). Religious adolescents have been found to have reduced depression (Pössel et al., 2011), increased hope (Miller & Kelley, 2005), and may be more likely to avoid risky behaviours including unprotected sex and drug use (Blyth & Leffert, 1995; Mcnamara, Burns, Johnson, & Mccorkle, 2010; Smith & Faris, 2002). Religious teenagers may also more likely to engage in altruistic

behaviours relative to their non-religious counterparts (Youniss, McLellan, & Yates, 1999). Heaven and Ciarrochi (2007) described religious teenagers as “better equipped to meet life’s experiences and challenges” (p. 691) when compared with non-religious youth.

Whilst the study of religion and spirituality in adolescents has to an extent been marginalised, even less is known about irreligious adolescents. This is problematic for a few reasons. First, the absence of research that contrasts psychological outcomes between religious and irreligious youth makes it difficult to understand the potential benefits associated with religiousness. It is also important to understand irreligious youth as a potentially unique subset of individuals, as non-believers are growing in number, especially in affluent western nations such as Australia (Zuckerman, 2007). According to Australian census data, the second highest religious affiliation is ‘no affiliation’ at 22% (Australian Bureau of Statistics (ABS), 2013), and it has been estimated that 25% of Australians do not believe in God (Norris & Inglehart, 2004). The shift towards irreligion in Australia also appears to be driven by young people (15 – 34). In addition, although females have traditionally been more religious than males, and males out-number females amongst identified atheists; no gender differences in irreligion were found for those under 20 (ABS, 2013). Thus, along with a general reduction in Australian religiousness, changes in gender norms could be indicative of a generational shift in terms of religious expression.

Consistent with findings in regards to religion and mental health, tentative links between atheists and psychological ill-health in adults have been found (Kristeva, 1991; Wulff, 1997). However, being unaffiliated has also been identified with being law abiding, conscientious, less prejudiced, more tolerant, and more

educated (Beit-Hallahmi, 2007). Whether the same can be said for young atheists remains to be seen. Although religion may provide unique benefits for young people such as enhancing one's sense of meaning in the world; non-belief, although not doctrinal, may be related to strengths not tapped into by religions. Ventis (1995) postulated whether embracing reality and relying more on oneself than supernatural agents might be related to self-efficacy, greater acceptance of events outside of one's control, and open-mindedness. Where atheists may struggle however, is in the absence of a framework for making meaning in life, or dealing with the aforementioned 'ultimate issues' (Ventis, 1995). Indeed, it is likely that such existential concerns are of particular relevance to adolescents. Results from time 1 indicated that atheists had low subjective well-being (Huuskens et al., 2016), a variable that reflects (among other things), the extent to which individuals find meaning in life. It is worth examining however, whether the low scores of atheists and agnostics found at time 1 are maintained over time. Although the atheists in our sample had lower scores on most variables in comparison to both believers and agnostics, it may not necessarily be the case over time. As adolescents get older, it may be the case that the certainty of atheism is more advantageous to psychological functioning than being unsure of God's existence. In much the way that believers are able to find more meaning in everyday events, the agnostics' worldview could be characterised by more uncertainty in comparison to that of atheists.

Atheists and agnostics also had considerably lower levels of parental support than believers at time 1. Parenting is a key variable in understanding the relations between religious sentiment and outcomes, capable as it is of influencing both religious values and psychological outcomes. The decisions made by adolescents to either endorse or abandon religion – are made in relation to the religious values of

their parents, and thus changes in religious values are likely to be influential in the lives of adolescents. Attending church with one's parents has also been found to influence psychological well-being (Petts, 2009), which could be related to shared beliefs adding spiritual significance to parent-child relations (Mahoney et al., 2003). This shared spirituality may also mean that religious parents feel more responsible (Ellison, Henderson, Glenn, & Harkrider, 2011), and indeed, religious parents have been found to be more authoritative (Heaven, Ciarrochi, & Leeson, 2010) (Heaven, Ciarrochi, & Leeson, 2010), and more supportive (Smith, 2003). Further, our earlier study found that differences between groups for self-esteem and mental health were partialled out after controlling for parental support.

### 3.1.3 The present research

The purpose of the present study was to closely examine differences in psychological functioning between adolescent believers, agnostics, and atheists. As discussed, it was previously found that the three groups experienced different highs and lows across positive (subjective well-being, self-esteem, hope, and empathy), social (peer, parent, and teacher support), and negative outcomes (mental health and aggressive/rule-breaking behaviour) (Huuskes et al., 2016). The same study also found that believers outscored the other two groups on most of these outcome variables. Interestingly, agnostics also tended to outscore atheists.

We were interested in examining whether the three groups' profiles became more similar over time. The novelty of this research meant that we were unable to make predictions in regards to the specific ways in which each group's profile would change, however, the groups' profiles were expected to remain non-parallel over time. The similarity of each group's individual profile was also compared with that of proceeding years. For example, how similar are believers at time 2 compared to time

1? As adolescent religious development can be expected to reflect a deeper comprehension of religious issues, it was expected that this would be reflected in changes to individual profiles.

Between-groups differences in psychological adjustment were also examined for each subsequent year after grade 8. When participants were in early adolescence, cognitive empathy was the only variable on which scores for the three groups did not differ. Agnostics outscored atheists on subjective well-being, self-esteem, parental support, mental health, and aggressive/rule-breaking behaviour. Given that these findings were in line with the general direction of findings on religion and psychological outcomes (e.g., Yonker et al., 2012), it was expected that these between-groups differences would be maintained over time.

Last, those who believed in God at time 1 reported having significantly more parental support than the other two groups. Parental support was also found to be a key covariate, accounting for differences between groups in self-esteem and mental health. Existing findings support the expectation that differences in parental support found at time 1 would at least be maintained over time. Believers are, therefore, expected to continue reporting more parental support than the other two groups over time. We have no reason to expect, however, that the influence of parental support as a covariate will increase. As King and Benson (2006) suggested, religious beliefs in later adolescence should transcend earlier beliefs, and become more strongly internalised. If this is the case, the influence of religious belief on differences in psychological variables should remain independent. It is not, therefore, expected that parental support will explain differences between groups on outcome variables.

## 3.2 Method

### 3.2.1 Sample and procedure

Our sample was drawn from an ongoing longitudinal study designed to assess psychological outcomes in Australian adolescents. Participants attended Catholic high schools in a diverse range of socioeconomic areas in the states of New South Wales and Queensland, Australia, with the occupations of participants' parents resembling the distribution of professions at a national level (Australian Bureau of Statistics (ABS), 2010). Our sample represented a diversity of ethnic backgrounds with the majority being Caucasian Australian (62%), European (14.3%), Aboriginal and Torres Strait islander (5.2%). The remainder of ethnic groups represented were generally less than 2% each.

Although 70.6% of our total sample was Catholic at time 1 (70.6%), this declined to 58.2% by time 4. Given the general decline in religiousness common during adolescence, it is likely that the decline in our sample reflects a general disengagement with religion. The number of participants with valid scores was: boys<sub>g8</sub> = 979, boys<sub>g9</sub> = 1006, boys<sub>g10</sub> = 940, boys<sub>g11</sub> = 768, girls<sub>g8</sub> = 1004, girls<sub>g9</sub> = 986, girls<sub>g10</sub> = 928, girls<sub>g11</sub> = 844. The mean age at time 1 (2010) was 13.92 (SD = 0.35), after which participants were surveyed yearly for the next 4 years. The survey booklets completed by participants contained a range of questionnaires relating to 'youth issues', not all of which were germane to the present study. Students were thanked and de-briefed upon completion.

### 3.2.2 Measures

As in study 1, participants completed a range of measures reflecting positive (subjective well-being, self-esteem, hope, and empathy), social (peer, parental, and

teacher support), and negative (mental health, aggressive/rule-breaking behaviour) outcomes.

*Belief in God.* Participants indicated which of three statements best described their belief in God: “I do not believe there is a God”, “I am not sure if God exists or not”, and “I firmly believe in the existence of God”.

*Subjective well-being* (Keyes, 2006). This widely used 12-item measure was included as a measure of global well-being, and assesses psychological, emotional, and social well-being. Participants indicated on a scale ranging from 1 (*Never*) to 6 (*Every day*) responses to items such as, in the past month “How often did you feel people are basically good?” or “How often did you feel good at managing the responsibilities of your daily life?” Scores indicate whether students are flourishing or languishing. This scale has been demonstrated to have good validity (Keyes, 2006), and alpha coefficients from time 1 to time 4 were as follows:  $t_1 = .91$ ,  $t_2 = .93$ ,  $t_3 = .92$ ,  $t_4 = .92$ .

*Self-esteem* (Rosenberg, 1979). This 12-item scale is among the most commonly used measures of self-esteem and provides a unidimensional measure of self-worth. It possesses both strong internal consistency and validity (Baumeister, Campbell, Krueger, & Vohs, 2003). Participants provided a yes or no response to a series of statements such as “I think that I am a failure” or “I feel that I have a number of good qualities”. Alpha coefficients indicated good reliability over the four years of this study:  $t_1 = .85$ ,  $t_2 = .84$ ,  $t_3 = .88$ ,  $t_4 = .88$ .

*Trait hope* (Snyder, Sigmon, & Feldman, 2002). The reliable, 6-item Children’s Trait Hope Scale assesses the ability to consider routes to one’s goals (pathways) and the motivation to work towards these goals (agency). Participants indicated on a scale of 1 (*None of the time*) to 6 (*All of the time*) how often a range of statements applied to

them. Sample items include “There are lots of ways around any problem” (pathways), “I energetically pursue my goals” (agency). The Children’s Trait Hope Scale has previously been found to have good concurrent validity (Snyder, Sigmon, & Feldman, 2002), and had consistently high alpha coefficients over the course of this study:  $t_1 = .87$ ,  $t_2 = .87$ ,  $t_3 = .90$ ,  $t_4 = .91$ .

*Basic Empathy Scale* (Jolliffe & Farrington, 2006). Cognitive and affective subscales of the 20-item basic empathy scale were examined. Participants indicated on a 6-point scale whether they agreed with a range of statements, from 1 (*Strongly disagree*) to 5 (*Strongly agree*). Sample items include “Other people’s feelings don’t bother me at all”, and “I can usually work out when other people are cheerful.” The scale has been demonstrated to have good reliability as well as structural and construct validity (Jolliffe & Farrington, 2006). Both cognitive and affective subscales had acceptable alpha coefficients over the course of the study: cognitive empathy  $t_1 = .74$ ,  $t_2 = .77$ ,  $t_3 = .77$ ,  $t_4 = .80$ ; affective empathy  $t_1 = .78$ ,  $t_2 = .79$ ,  $t_3 = .81$ ,  $t_4 = .82$ .

*Social Support Scale* (Malecki & Elliott, 1999). We assessed the perceived level of support from peers, parents, and teachers using Malecki and Elliott’s 21-point Student Social Support Scale (SSSS). The scale has demonstrated content validity, as well as high reliability and moderate stability (Malecki & Elliott, 1999). Responses are provided on a 6-point Likert scale from 1 (*Never*) to 6 (*Always*). Sample items include: My close friend(s)... “Gives me good advice”, and “Understands my feelings”. All three subscales had alpha coefficients  $>.93$  from time 1 to time 4.

*Mental health* (Goldberg & Hillier, 1979). Mental health was assessed using the General Health Questionnaire, a widely used and valid 12-item mental health screening test (Goldberg & Hillier, 1979). Participants were asked to indicate the state

of their mental health in recent weeks on a scale of 1 (*Better than usual*) to 4 (*Much less than usual*). Sample items include “Been able to concentrate on whatever you’re doing?” and “Felt that you are playing a useful part in things”. The alpha coefficients of the General Health Questionnaire over the course of this study were:  $t_1 = .89$ ,  $t_2 = .89$ ,  $t_3 = .90$ ,  $t_4 = .91$ .

*Aggressive/Rule-Breaking Behaviour* (Achenbach, 1991). Responses to the aggression (16-items) and rule-breaking (15-items) subscales of the highly reliable and valid anti-social behaviour questionnaire were averaged and combined into a single measure, so as to gain an omnibus understanding of antisocial/risk behaviour. Responses were provided on a 3-point scale ranging from 0 (not true), 1 (somewhat or sometimes true), 2 (very true). Sample items include “I argue a lot” (aggression), and “I cut classes or skip school” (rule-breaking). The following measures of internal consistency were obtained:  $t_1 = .92$ ,  $t_2 = .92$ ,  $t_3 = .92$ ,  $t_4 = .91$ .

### 3.2.3 Plan of analysis

#### 3.2.3.1 *Profile differences*

Analyses were designed to examine differences in groups’ profiles, as well as differences in mean scores between groups. The first step of the profile analysis involves testing for parallelism between group profiles. Scores for all outcome variables are first standardised, so that they can be directly compared. The interaction between the average of these outcome variables and our grouping variable (belief in God) is then examined. A significant Wilks criterion indicates whether groups have similar profiles, or ‘highs and lows’ at each year. For the purposes of the present study, a repeated-measures parallelism test was performed to examine whether our finding of non-parallel profiles at time 1 was maintained over time. The repeated-measures test adds an additional variable (time), and thus examines the interaction

between the various psychological outcomes, time 1 belief (atheist, agnostic, believer), and time (wave 1 to 4). In this instance, a significant Wilks criterion indicates that groups do remain dissimilar over time.

Performing repeated measures analyses longitudinally tends to result in a significant loss of power, due to missing data. Because cases were not missing due to any systemic errors, they may be considered missing completely at random (MCAR; Enders, 2010). As such, a multiple imputation method ( $m = 5$ ) was used to perform these analyses only. It was not deemed necessary to perform additional imputations, as these may only be advantageous in situations with exceptionally high rates of missing information (Little & Rubin, 2002).

After first establishing whether the groups remained dissimilar, two further questions concerning profile differences were explored. First, to examine the highs and lows experienced by each group, the tests of parallelism were performed for each grade. Following this, each group's profile was compared with that of proceeding years. This indicates, for instance, whether atheists' profiles at time 1 were similar to time 2, and so on. If profiles are dissimilar, we are able to identify the points of divergence within each profile.

#### *Levels differences*

The next step was to examine levels differences between groups. For instance, on which variables does one group outscore another? The size of levels differences between believers and atheists at each year were also compared. This enabled us to examine whether religious effects strengthen over time. Differences between genders were also examined. Last, parental support was included as a covariate in a one-way ANCOVA to examine the amount of variance uniquely explained by religious belief or parenting.

### 3.3 Results

#### 3.3.1 Longitudinal profile change

To test whether profiles became more or less similar over time, a three-way interaction between outcome variables (i.e., subjective well-being, self-esteem, etc.), belief (time 1 belief in god), and time (wave 1 to 4) was examined. Including belief as a time-invariant covariate indicates whether group membership at time 1 is related to profile differences in subsequent years. A significant pooled Wilks criterion indicated that the three groups remained non-parallel over time,  $F(54, 5556) = 2.71, p < .001$ . The differences in profiles between groups were not, therefore, identical in each grade.

Separate tests of parallelism were performed to closely examine how these changes were manifest in each grade. Wilks' criterion indicated that the profiles of each group deviated significantly from parallelism from grades 9 to 11 (Fig.1): grade 9,  $F = 3.08(18, 3638), p < .001$ , partial  $\eta^2 = .015$ ; grade 10,  $F = 6.01(18, 3508), p < .001$ , partial  $\eta^2 = .030$ ; and grade 11,  $F = 3.92(18, 3048), p < .001$ , partial  $\eta^2 = .023$ .

To identify where the profiles diverged, each group's profile from grade 8 to 11 was overlaid into a single figure, along with a global profile for each group representing the average of all four waves (Fig.2). This allowed us to identify where each group's profile diverged at each year. In other words, how similar were atheists in grade 8 to atheists in grade 11? Fig.2 demonstrates that the profiles of each group were similar from grade 8 to 10, however all three groups diverged at grade 11 in two key ways.

All three groups had higher hope than self-esteem from grade 8 to 10, but in grade 11 the inverse was seen (i.e., higher self-esteem than hope), with the effect most pronounced in believers. This is attributable to elevated self-esteem for all groups in

grade 11 rather than reduced hope, as Fig. 2 demonstrates that mean hope was stable for all three groups during the four years of the present study. From grades 8 to 10 all three groups also experienced higher cognitive empathy than hope, with the inverse seen in grade 11 (i.e., higher hope than cognitive empathy). In this instance, all three groups experienced a significant drop in cognitive empathy in comparison to previous years.

These were the only profile differences common to all three groups; however, a number of additional differences were found for believers in grade 11. From grades 8 to 10, believers had higher affective empathy than peer support, but the inverse pattern was found in grade 11. This was due to a drop in affective empathy in grade 11, rather than an increase in peer support. As illustrated in Fig. 2, all three groups experienced a major reduction in affective empathy (as well as cognitive empathy) in grade 11. Believers also experienced improved mental health scores (GHQ) in grade 11 (see Fig. 2).

Because of the pronounced differences between grade 11 profiles and those in grades 8 to 10, we tested whether effects could be explained by selection bias, as the overall sample size decreased by around 14%, from 1868 (grade 10) to 1612 (grade 11). It is conceivable that the general drop in scores found in grade 11 could be explained by students with high scores leaving after grade 10. We therefore tested for systematic differences between those who participated in grades 10 and 11, and those who participated in grade 10 only. Results of *t*-tests indicated that those who participated in grade 10 but not grade 11 had lower scores on all variables with the exception of peer support,  $t(1990) = -.21, p = .834$ , and parental support,  $t(2002) = -1.48, p = .14$ . Additional *t*-tests also indicated that grade 11 scores were lower than in grade 10, with the exception of teacher support, cognitive and affective empathy. We

were therefore satisfied to conclude that the grade 11 sample did not systematically differ from previous years.

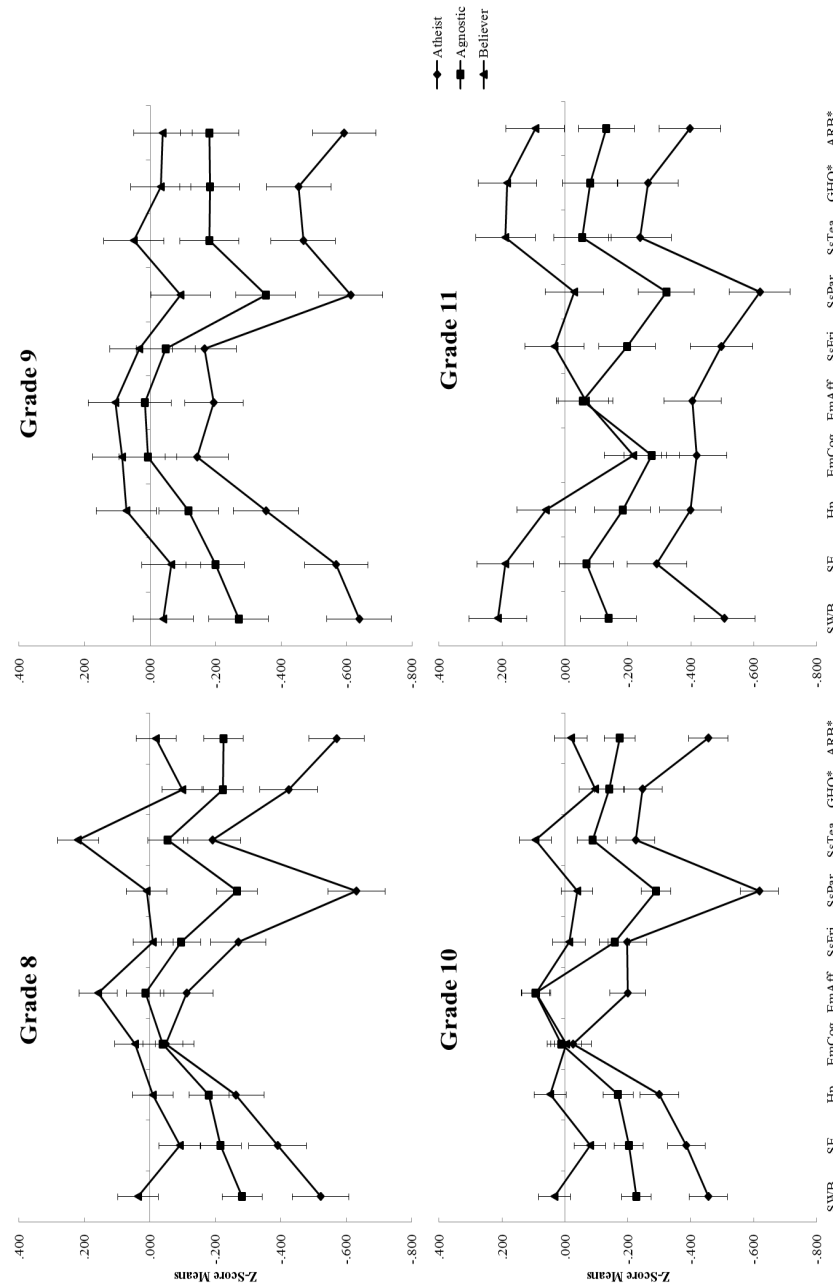


Figure 3.1 Profiles for atheists, agnostics, and believers, from grades 8 to 11.

All scores standardised. SWB (subjective well-being), SE (self-esteem),

Hp (hope), EmCog (cognitive empathy), EmAff (affective empathy),

SsFri (friend support), SsPar (parental support), SsTea (teacher support),

GHQ\* (general health questionnaire),

ARB\* (aggressive and rule-breaking behaviour).

\*Reverse-scored items

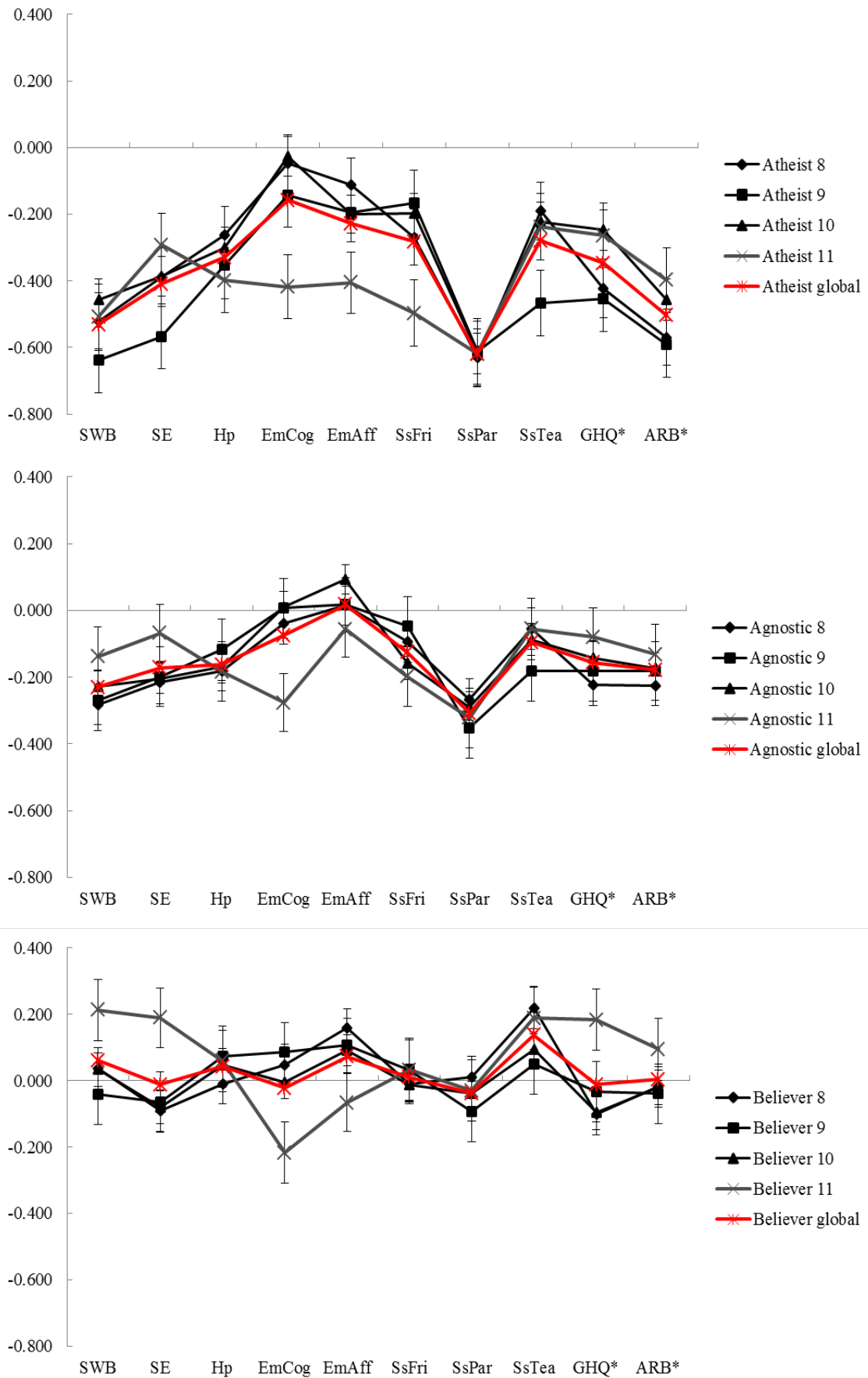


Figure 3.2 Profiles from grades 8 to 11 organised by group. Each group's global profile represents the average profile of all four waves. Abbreviations can be found under Figure 3.1.

### 3.3.2 Level differences in psychological functioning

A MANOVA was conducted for each wave to compare levels differences between groups. Multivariate tests revealed significant differences between groups at each wave, with the largest effects found in grade 11: grade 9,  $F(2, 1827) = 56.23, p < .001$ , partial  $\eta^2 = .058$ ; grade 10,  $F(2, 1762) = 32.67, p < .001$ , partial  $\eta^2 = .036$ ; grade 11,  $F(2, 1532) = 68.56, p < .001$ , partial  $\eta^2 = .082$ .

Parameter estimates were calculated to examine the extent of differences between groups, and the three groups differed on most variables over time with a few exceptions. Differences in cognitive empathy were found only between groups in grade 9 (partial  $\eta^2 = .011, p < .001$ ) and 11 (partial  $\eta^2 = .010, p < .001$ ), however inspection of parameter estimates revealed that for the most part, believers did not outscore agnostics on these variables. The multivariate test for depression in grade 10 was also not significant (partial  $\eta^2 = .001, ns$ ), with estimates revealing that believers only marginally outsourced atheists. Significant differences were found between groups on all other variables from grade 8 to 11.

The biggest levels differences in the first three years of the study were for subjective well-being (grade 8, partial  $\eta^2 = .037$ ; grade 9,  $\eta^2 = .046$ ; grade 10,  $\eta^2 = .036, ps < .001$ ), parental support (grade 8, partial  $\eta^2 = .043$ ; grade 9,  $\eta^2 = .041$ ; grade 10,  $\eta^2 = .048, ps < .001$ ), and aggressive/rule-breaking behaviour (grade 8, partial  $\eta^2 = .033$ , grade 9,  $\eta^2 = .040$ ; grade 10,  $\eta^2 = .029, ps < .001$ ). For all of these variables, believers outsourced agnostics, who outsourced atheists.

As with the profile differences however, the patterns of between-groups differences diverged in grade 11 from those found in previous years. Effect sizes for differences in subjective well-being (partial  $\eta^2 = .066, p < .001$ ) and parental support remained the strongest (partial  $\eta^2 = .059, p < .001$ ), however differences between

groups in peer support widened in grade 11 ( $\eta^2 = .035, p < .001$ ), with the difference between atheists and agnostics becoming more pronounced. Overall, between-groups differences were most pronounced between groups in grade 11.

Agnostics outscored atheists on most variables from grades 8 to 10, with the exception of peer support (not significant in grades 8, 9 and 10), cognitive empathy, and depression (grade 10 only). The biggest differences were found in grade 11, with agnostics outscoring atheists on all variables. Effect sizes were most pronounced for subjective well-being ( $\beta = -.38, p < .001, \eta^2 = .03$ ), affective empathy ( $\beta = -.35, p < .001, \eta^2 = .03$ ), peer support ( $\beta = -.31, p < .001, \eta^2 = .018$ ), and parental support ( $\beta = -.30, p < .001, \eta^2 = .018$ ).

### 3.3.3 Age effects in levels differences

To examine whether the observed effects were related to grade, contrasts between believers and atheists were calculated for all four waves. Figure 3 shows atheists' scores plotted against those of believers. Differences between atheists and believers were greater in grade 11 than grade 8 for subjective well-being, self-esteem, peer support, parental support, and teacher support. The only variable that atheists were worse off in grade 8 than grade 11 was mental health (ghq).

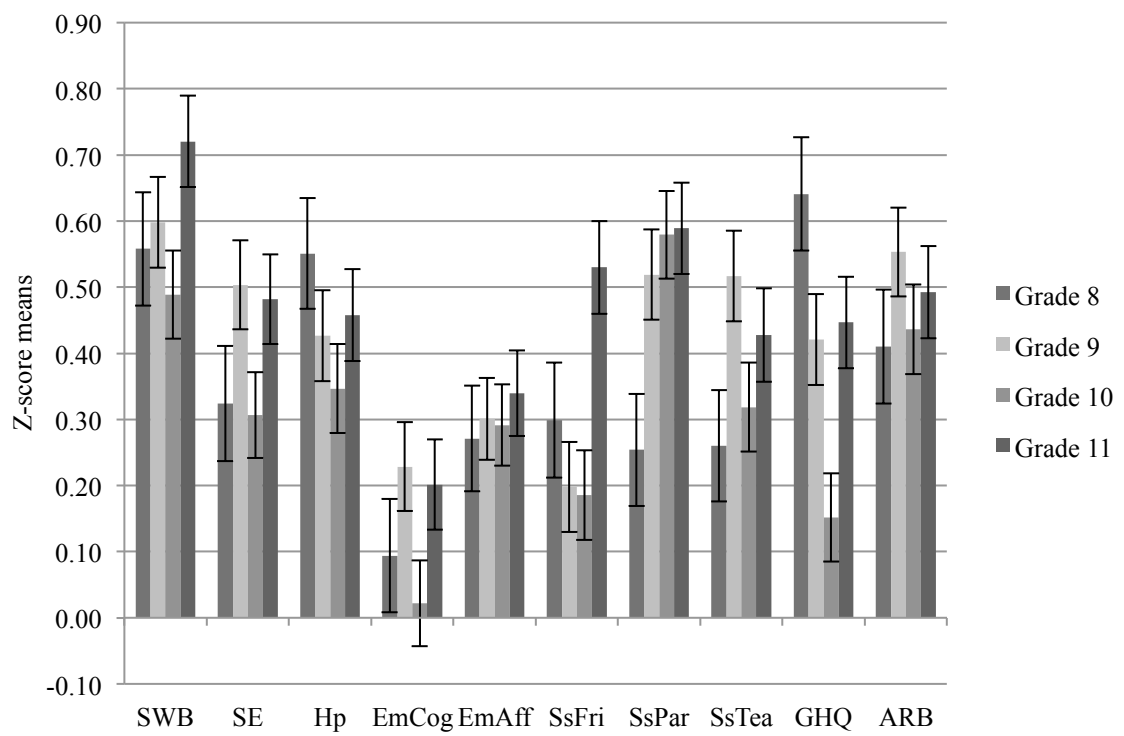


Figure 3.3 Estimates of the standardised differences between atheists and believers from grades 8 to 11.

Abbreviations can be found under Figure 3.1.

Table 3.1 Between groups contrasts and parameter estimates for grade 9

Dependent variable and group	$\beta$ (SE)	$t$	Partial $\eta^2$
Subjective Well-Being			
Atheist	-0.60 (.07)	-8.73***	0.04
Agnostic	-0.23 (.05)	-4.63***	0.012
Self-Esteem			
Atheist	-0.50 (.07)	-7.49***	0.03
Agnostic	-0.13 (.05)	-2.77**	0.004
Hope			
Atheist	-0.43 (.07)	-6.21***	0.021
Agnostic	-0.19 (.05)	-3.82***	0.008
Cognitive Empathy			
Atheist	-0.23 (.07)	-3.41***	0.006
Agnostic	-0.08 (.05)	-1.63	0.001
Affective Empathy			
Atheist	-0.30 (.06)	-4.86***	0.013
Agnostic	-0.09 (.04)	-1.98*	0.002
Friend Support			
Atheist	-0.20 (.07)	-2.91**	0.005
Agnostic	-0.08 (.05)	-1.62	0.001
Parental Support			
Atheist	-0.52 (.07)	-7.60***	0.031
Agnostic	-0.26 (.05)	-5.23***	0.015
Teacher Support			
Atheist	-0.52 (.07)	-7.54***	0.03
Agnostic	-0.23 (.05)	-4.64***	0.012
Mental Health			
Atheist	-0.42 (.07)	-6.14***	0.02
Agnostic	-0.15 (.05)	-3.00**	0.005
Aggressive/Rule-Breaking Behaviour			
Atheist	-0.55 (.07)	-8.26***	0.036
Agnostic	-0.14 (.05)	-2.94**	0.005

*Note.* Estimates are in comparison with believers.  
Abbreviations can be found under Figure 1.

\* $p \leq .05$

\*\* $p \leq .01$

\*\*\* $p \leq .001$

Table 3.2 Between groups contrasts and parameter estimates for grade 10

Dependent variable and group	$\beta$ (SE)	$t$	Partial $\eta^2$
Subjective Well-Being			
Atheist	-0.49 (.07)	-7.34***	0.03
Agnostic	-0.26 (.05)	-5.06***	0.014
Self-Esteem			
Atheist	-0.31 (.06)	-4.72***	0.012
Agnostic	-0.12 (.05)	-2.46*	0.003
Hope			
Atheist	-0.35 (.07)	-5.12***	0.015
Agnostic	-0.22 (.05)	-4.12***	0.01
Cognitive Empathy			
Atheist	-0.02 (.06)	-0.33	0
Agnostic	0.01 (.05)	0.30	0
Affective Empathy			
Atheist	-0.29 (.06)	-4.73***	0.013
Agnostic	0.00 (.05)	0.03	0
Friend Support			
Atheist	-0.19 (.07)	-2.73**	0.004
Agnostic	-0.14 (.05)	-2.76**	0.004
Parental Support			
Atheist	-0.58 (.07)	-8.73***	0.041
Agnostic	-0.25 (.05)	-4.89***	0.013
Teacher Support			
Atheist	-0.32 (.07)	-4.74***	0.013
Agnostic	-0.18 (.05)	-3.50***	0.007
Mental Health			
Atheist	-0.15 (.07)	-2.27*	0.003
Agnostic	-0.05 (.05)	-0.9	0
Aggressive/Rule-Breaking Behaviour			
Atheist	-0.44 (.07)	-6.40***	0.023
Agnostic	-0.15 (.05)	-2.94**	0.005

*Note.* Estimates are in comparison with believers. Abbreviations can be found under Figure 1.

\* $p \leq .05$

\*\* $p \leq .01$

\*\*\* $p \leq .001$

Table 3.3 Between groups contrasts and parameter estimates for grade 11

Dependent variable and group	$\beta$ (SE)	$t$	Partial $\eta^2$
Subjective Well-Being			
Atheist	-0.72 (.07)	-10.45***	0.067
Agnostic	-0.35 (.06)	-6.38***	0.026
Self-Esteem			
Atheist	-0.48 (.07)	-7.10***	0.032
Agnostic	-0.26 (.05)	-4.76***	0.015
Hope			
Atheist	-0.46 (.07)	-6.58***	0.027
Agnostic	-0.24 (.06)	-4.37***	0.012
Cognitive Empathy			
Atheist	-0.20 (.07)	-2.94**	0.006
Agnostic	-0.06 (.05)	-1.09	0.001
Affective Empathy			
Atheist	-0.34 (.06)	-5.23***	0.018
Agnostic	0.01 (.05)	0.19	0
Friend Support			
Atheist	-0.53 (.07)	-7.54***	0.036
Agnostic	-0.23 (.06)	-4.11***	0.011
Parental Support			
Atheist	-0.59 (.07)	-8.51***	0.045
Agnostic	-0.29 (.06)	-5.27***	0.018
Teacher Support			
Atheist	-0.43 (.07)	-6.03***	0.023
Agnostic	-0.24 (.06)	-4.33***	0.012
Mental Health			
Atheist	-0.45 (.07)	-6.46***	0.027
Agnostic	-0.26 (.06)	-4.77***	0.015
Aggressive/Rule-Breaking Behaviour			
Atheist	-0.49 (.07)	-7.07***	0.032
Agnostic	-0.23 (.06)	-4.07***	0.011

*Note.* Estimates are in comparison with believers.

Abbreviations can be found under Figure 1.

\* $p \leq .05$

\*\* $p \leq .01$

\*\*\* $p \leq .001$

### 3.3.4 Gender differences

Our finding of a three way interaction between well-being, religion, and gender in grade 8 was only repeated in grade 11,  $F = 1.79$  (18, 3044),  $p < .05$ , partial  $\eta^2 = .01$ . Male atheists outscored females in positive variables: subjective well-being ( $\beta = .31$ ,  $p < .05$ ,  $\eta^2 = .003$ ) and hope ( $\beta = .33$ ,  $p < .05$ ,  $\eta^2 = .004$ ). In grade 8, atheist males outscored females on subjective well-being ( $\beta = .35$ ,  $p < .05$ ), hope ( $\beta = .59$ ,  $p < .001$ ), and parental support ( $\beta = .34$ ,  $p < .05$ ).

### 3.3.5 Control for parental support

At time 1, no differences were found between groups for self-esteem, cognitive empathy, and mental health, after controlling for parental support. The effects of parenting were found to strengthen over time. In grade 9, no differences were found for self-esteem, affective empathy, peer and teacher support, after controlling for parental support. All between-group differences in grades 10 and 11 were partialled out, with the exception of affective empathy in grade 11. In these years, differences between groups could therefore not be attributed to religious belief alone. Affective empathy was the only variable not found to have any variance predicted by parental support from grades 8 to 11.

## 3.4 Discussion

It has been a consistent finding that domains of religious sentiment are related to favourable psychological outcomes such as improved well-being and reductions in negative outcomes during adolescence (e.g., Yonker et al., 2012). Despite the relative consistency in findings, few have compared groups of adolescents according to belief using multiple indices of psychological adjustment. Even fewer have been able to examine such relations within a single cohort over time. The present study aimed to

gain a broad understanding of how belief in God is related to psychological functioning during the adolescent years. Specifically, we examined whether believers, agnostics, and atheists were distinguished by positive and negative indices of psychological functioning, and whether belief in God was related to advantages across adolescence. To some extent, findings were in line with expectations, with groups found to experience different highs and lows over the course of adolescence. The pattern of differences between groups found in study 1 (grade 8) was also maintained over time, with believers generally found to display improved functioning compared to agnostics, who also tended to outscore atheists. However, the finding that parental support accounted for all differences between groups in the later years of the study (grades 10 and 11), indicated that any advantages related to religious belief may be better explained by factors relating to parenting, at least in late adolescence.

#### 3.4.1 Profile change and continuity

Although the groups' profiles were not found to become more similar, changes in each individual group's profile were found, especially from grade 10 to 11. For instance, the grade 11 profile of each group was distinguished from previous years with elevated self-esteem and reduced cognitive empathy. These divergences could reflect a number of factors. First, much like the change from primary to high school, grade 11 may be considered a transition year, as it marks the beginning of the final two years of secondary education in Australia (Petersen, Kennedy, & Sullivan, 1991). Although students tend to experience reduced emotional variability in late adolescence (Larson, Moneta, Richards, & Wilson, 2002), they also encounter increased stress and responsibility as they begin preparing for academic assessments determining university admission. Students may also see themselves as being in academic competition with their peers. In this context, one would expect students to

become more self-focused, which could account for the increase in self-esteem and decreased cognitive empathy found in all three profiles in grade 11.

We were surprised to find that although believers tended to outscore atheists on affective empathy – though generally not cognitive empathy - for the most part, believers were not more empathetic than agnostics. This has important implications, as the experience of empathy is fundamental to altruistic behaviour (Batson, Lishner, & Stocks, 2015; Sahdra, Ciarrochi, Parker, Marshall, & Heaven, 2015). Although it has been suggested that religious teachings facilitate the innate human impulse toward altruism (Batson, 1983), there is considerable evidence to the contrary (e.g., Bloom, 2012). Religious adolescents have been found to be more likely to volunteer, but only in religious contexts, and thus may not be acting on an intrinsic motivation to help (Youniss et al., 1999). Duriez (2004) found that the processing of religious content (literal vs. symbolic) correlated with empathy, but being religious did not. There is also a long line of research linking religious behaviour to in-group altruism and out-group prejudice (Batson, Floyd, Meyer, & Winner, 1999). It thus appears unlikely that aspects of religion facilitate pro-social or altruistic behaviour, at least during adolescence.

### 3.4.2 The importance of belief during difficult periods

It is possible that any benefits relating to belief are more salient in times of increased adversity, such as in transition periods. The grade 11 profiles revealed a widening of the gap between believers and both other groups on positive (subjective well-being, self-esteem, hope) and negative variables (depression, aggressive/rule-breaking behaviour). Not only were the believers' scores at their highest in grade 11, but the gaps between believers and atheists were generally largest in grade 11 (Fig.3). These differences are in accord with suggestions that religious individuals respond to

adversity by leaning more heavily on their faith. Diener, Tay, and Myers (2011) found greater religiousness and stronger religious effects in less prosperous nations compared to wealthier nations. A longitudinal study also found that older adolescents with increasing levels of religious coping were more likely to associate with socially deviant peers and to have later externalising problems (e.g., delinquent behaviour, aggression, and anti-social behaviour) (Eisenberg et al., 2011). The bigger differences found between atheists and believers in grade 11 compared to grade 8 (Fig.3) are certainly in line with these findings, but need to be interpreted within the context of differences in parental support.

Although parental support accounted for differences between groups on self-esteem and mental health at time 1, it was not expected that this would be the case in the following years. Believers were expected to continue to display high levels of parental support over time, but also transcend the influence of their parents in developing their own religious identity. This formed the basis of our expectation that the effects of parental support would not account for between-groups differences in later years. However, all multivariate effects (excepting affective empathy) were excluded in grades 10 and 11 after controlling for parental support. Why would parental support account for differences between groups? Believers' consistently high parental support is not surprising, given that the general consensus in research is that religious youth have good relations with their parents (Smith, 2003). Research has found strong resemblances between parent and child religious values (Beit-Hallahmi & Argyle, 1997), and increases in religiousness amongst adolescents from religious families (McCullough, Enders, Brion, & Jain, 2005; Petts, 2009). Shared religious experiences between parents and their children may enhance the bond by adding a spiritual dimension (Mahoney et al., 2003). Conversely, dissonance in parent-child

religiousness may be related to impaired relationship quality (Stokes & Regnerus, 2009). Participants in this study who were less religious than their parents also reported feeling less supported (Stokes & Regnerus, 2009). With such consistently high levels of parental support, one would naturally expect believers to have improved functioning (Fanti et al., 2008).

Although it now seems unlikely that belief on its own directly confers psychological advantages – at least in this age group - it is worth considering the possibility that believers' profiles reflect their religious beliefs. The assumed closeness of parent-child relations amongst religious youth may result in stronger inter-generational transmission of values (Kim-Spoon, et al., 2012b). Thus, believers are still likely to be relying on religious attributions. Tests of profile similarity indicated that atheists, agnostics, and believers did not become more similar over time. Further, believers' profiles consistently deviated were distinguished from the other two groups over four years with elevated subjective well-being, which reflects a long-term assessment of happiness and meaning in life. This is in accord with suggestions that religions provide a spiritual and social context to explore one's identity, and encourage individuals to search for meaning in life via relationships with God (Emmons, 2005; Silberman, 2005). In belonging to a community of like-minded believers of varying ages, religions may shape one's worldview and connect individuals to a broader set of values (Roehlkepartain, Benson, King, & Wagener, 2006). Although parental support accounted for all differences in later years, believers' elevated subjective well-being was consistently high over the four years of this study and might reflect such a process. Believers' may be encouraged by their parents, either explicitly or through behavioural modelling, to rely on religious attributions that could enhance one's sense of certainty and meaning in life. Indeed,

Silberman (2005) argued that goal-setting is intrinsically tied to most religions, as they encourage “the ultimate motivation of connecting or adhering to the sacred” (p. 646). The elevated hope found amongst believers from grades 8 to 11 adds further weight to this interpretation. Believers may have higher hope because they are able to find meaning in adverse events.

It may also be the case that belief in God is a proxy for the benevolence and love of one’s parents. Rizzuto (1979) suggested that parent-child relations influence the way in which individuals construct images of God. The God concepts adopted by young people may reflect socialisation, or the projection of the personal images of parents onto God. A number of studies have found that children with loving parents perceive a personal God or loving God, and those with more strict or authoritarian parents view God as being more punitive (Dickie et al., 1997; Hertel & Donahue, 1995; Potvin, Hoge, and Nelsen, 1976).

Whilst there is some evidence to suggest that young people are attracted to God to compensate for insecure attachment (Dickie et al., 1997; Johnson & Eastburg, 1992), this seems unlikely, as a number of studies have also found evidence of poor attachment and distant relations between atheists and apostates (Caplovitz & Sherrow, 1977; Hunsberger & Brown, 1984; Kirkpatrick, 2005). Although the present study did not examine attachment or parental religiousness *per se*, the consistent differences found in parental support between groups are in line with previous findings. This being said, it is important to emphasise that parent-child beliefs are not necessarily entirely correspondent, as children develop beliefs via their own intuitions in both religious and non-religious families (Pendleton, Cavalli, Pargament, & Nasr, 2002). The differences in parental support found over time, are at least suggestive that the beliefs of all three groups could be influenced by parent relations. Future research

within this sample will examine more closely the predictive effects of parental support on religious development during adolescence.

### 3.4.3 Gender differences

In grade 8 we found that male atheists had higher subjective well-being, hope, and increased parental support. With the exception of parental support, this finding was only repeated in grade 11. To some extent, this is to be expected, as the impulsive behaviour common to teenage boys may not lend itself to religious behaviour. Conversely, others have suggested that females are socialised to be more compliant (Collett & Lizardo, 2009), a trait congruent with the authoritativeness of religiousness. Boys may therefore be a better 'fit' for atheism, and feel more comfortable in expressing their disbelief. Female atheists on the other hand may experience some feelings of dissonance with their environment, which could account for their low scores. Because differences were only found in early and late periods of schooling, it may also be the case that the vulnerability of being a female atheist is most keenly felt in times of greater stress, such as in transition periods.

### 3.4.4 Limitations and conclusion

It is worth acknowledging that religiousness is not a unidimensional construct (Cotton, McGrady, & Rosenthal, 2010), and that any results may only be applicable to the domain of religiousness examined. The dimension of religiousness utilised in the present study - belief in God - is perhaps more likely to be related to meaning making and positive outcomes, than a distal measure of religiousness (i.e., church attendance), because it reflects an internal commitment to God. It may be the case that many of those with a sincere belief in God spend little time attending church, at least outside of

school. It would be useful to examine combinations of variables such as belief and prayer frequency and how they collectively relate to psychological adjustment.

An additional drawback to the use of a categorical measure of religious belief is that it may obscure variance in religious belief within each category. A categorical measure of religious belief is particularly useful because it allows for the direct contrast of effects between groups. In addition to including atheists, the inclusion of those who are unsure of their belief, allows for an additional degree in the contrast of effects. However, categorical measures of religiousness may obscure the variance in religiousness captured by continuous measures. The nature of religious beliefs within each category cannot be assumed to be homogeneous, thus it would be interesting to examine differences in religiousness within categories (e.g., a continuous measure of the strength of religious convictions), and whether these translate into differences in psychological outcomes. Similarly, this study could not accommodate questions regarding transitions between groups; however we would naturally expect participants' beliefs to shift. Although each group's profile was quite stable, it would be interesting to examine whether there are systematic differences in well-being between those who were believers at time 1 but did not believe in God at time 4.

The differences found between groups in grade 8 indicate that believers had a more stable foundation in early adolescence. This is important, as early adjustment is likely to predict improved adjustment in later adolescence. Although the present study was focused on different questions, it would be useful to examine relations between belief and psychological outcomes using a longitudinal design such as a cross-lagged panel model, as it would allow for the examination of relative change, that is, whether believers' improvements in psychological functioning occur irrespective of earlier scores on outcome variables. Similarly, our findings do not imply causation. It might

be the case that individuals with improved well-being are simply more attracted to religion, or vice versa.

The present study has a number of important implications. We have found evidence indicating that belief in God may be an important influence on adolescent adjustment, particularly in times of greater stress, but only in combination with parental support. Future research should examine these relations more closely to evaluate the impact of congruence in parent-child belief. Further, belief may be more influential on positive functioning than on reducing negative outcomes. This reinforces suggestions that religion may facilitate meaning making, and a positive outlook.

## **4 Empirical Study 3**

### **Adolescent religious values and well-being: A growth mixture modelling approach**

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Huuskes, L., Leeson, P., Heaven, P. C. L., & Ciarrochi, J. (Submitted). Adolescent religious values and well-being: A growth mixture modeling approach. *Child Development*.

#### **4.1 Introduction**

What is the psychological impact of changes to religious sentiment during the adolescent years? Although Allport (1950) claimed more than 60 years ago that personality and religious sentiment are inextricably bound together, there has been a dearth of research into religious development during the adolescent years. This is surprising, as adolescence has long been considered a sensitive period for religious development (Good & Willoughby, 2008; Kim-Spoon et al., 2012b), characterised by significant personal change (Levenson et al., 2005; Spilka, Hood, Hunsberger, & Gorsuch, 2003). Further, domains of religious sentiment have been reliably correlated with indicators of psychological functioning (Huuskes et al., 2016; Yonker, Schnabelrauch, & DeHaan, 2012), and religion is regarded by many as a meaning system capable of shaping adolescent behaviour, values, and identity (Emmons, 2005; Park, 2005; Silberman, 2003, 2005).

Unfortunately, a dearth of longitudinal findings has meant that the implications of changes to adolescent religious sentiment remain unclear (King & Boyatzis, 2004). There has also been a tendency in previous research to focus on the impact of religious sentiment on negative functioning such as depression (Dew et al., 2008; Wright, Frost, & Wisecarver, 1993), premature sexual behaviour (Lefkowitz, Gillen, Shearer, & Boone, 2004; Rostosky, Wilcox, Wright, & Randall, 2004), and substance use (White et al., 2006), and so relatively little is understood about the ways in which religion can contribute to positive functioning (Furrow, King, & White, 2004). The present study utilised a growth mixture modelling approach to examine individual trajectories in the development of religious values, and the implications of these changes on domains of well-being from early to late adolescence. This approach is useful because it identifies clusters of similar individuals according to how their

religious values change. Because religious sentiment is generally related to positive outcomes, it might be the case that increasing trajectories of religiousness during adolescence are related to improved well-being. In contrast, those youth whose religiousness wanes across adolescence could find it increasingly difficult to adjust to the changes of the period.

#### 4.1.1 Religion and adolescence

Religious development during adolescence has been described as a normative task, as certain developmental characteristics increase receptivity to religious and spiritual concepts (Markstrom, 1999; Oser, Scarlett, & Bucher, 2006). Certainly, religious behaviours such as church attendance or prayer tend to decline during adolescence, whereas subjective religious sentiment (e.g., spirituality, internal commitment to God) remains stable (King, Elder, & Whitbeck, 1997; Sallquist et al., 2010; Smith, Faris, Denton, & Regnerus, 2003). This variability could be related to cognitive developments, such as abstract reasoning and increased introspection, which are likely to precipitate the questioning of values held during early adolescence (King & Benson, 2006). Likewise, the increased autonomy of adolescence may mean that youth choose to spend more time with friends than at church. The values of older adolescents may therefore be more carefully considered and personally meaningful, reflecting a formal decision following a period of searching (Wagener et al., 2003; Wong, Rew, & Slaikeu, 2006). Alternatively, because adolescence is also a time of questioning one's identity, youth may either transcend their childhood religious identity into something deeper and more personal, or abandon it entirely.

It is important to examine the consequences of these changes, because although the so-called 'storm and stress' of adolescence may not be the norm for most adolescents (Lerner & Galambos, 1998), many struggle to adjust to the significant

cognitive, social, and physical changes of the period (Adkins, Wang, Dupre, Van den Oord, & Elder., 2009; Smetana, Campione-Barr, & Metzger, 2006). It has been suggested that religious youth are better able to adapt to these changes because they have access to relatively more resources that can buffer against risk factors (Donahue & Benson, 1995). Research has indicated that religious youth are less susceptible to common risk factors like drug use (White et al., 2006), social deviance (Walker, Ainette, Wills, & Mendoza, 2007), suicide (Gartner, Larson, & Allen, 1991), and premature sexual activity (Wilcox, Rostosky, Randall, & Wright, 2001). Domains of religious sentiment also tend to be inversely related to the development of mood and anxiety disorders (Hackney & Sanders, 2003; Koenig, 2008; Yonker et al., 2012).

#### 4.1.2 Longitudinal findings

A dearth of longitudinal studies of adolescents has meant that it is not clear whether religiousness actually contributes to positive development, is a mere correlate of positive development, or is the consequence of positive development. Domains of religiousness have been found to predict reductions of risky behaviours such as substance abuse and conduct problems over time (Kim-Spoon, Farley, Holmes, Longo, & McCullough, 2014; Pearce, Jones, Schwab-Stone, & Ruchkin, 2003). Kim-Spoon et al. (2014) also found that the longitudinal influence of religiousness on substance abuse was moderated by a sense of being monitored by God and one's parents. Pössel et al. (2011) found that higher intrinsic, but not extrinsic religiousness predicted reduced depressive symptoms in a group of grade 9 adolescents after four months. Likewise, amongst Indonesian youth, a combined measure of spirituality and religiousness predicted reduced loneliness and improved socially appropriate behaviour during mid-adolescence after one year (Sallquist et al., 2010). Examining bidirectional relations, Ciarrochi and Heaven (2012) found that religious values

predicted improved levels of hope, but not self-esteem, after controlling for personality factors. Religious values have also been found to predict increased agreeableness, and decreased psychoticism after two years, controlling for initial levels of both personality factors (Huuskes, Ciarrochi, & Heaven, 2013). In some circumstances therefore, religious values may account for some of the variance in positive outcomes over time.

Conversely, there is also evidence to suggest that religion may be related to adverse outcomes. Increased service attendance has been found to predict later anxiety, controlling for earlier anxiety; a relationship moderated by feelings of guilt (Peterman, LaBelle, & Steinberg, 2014). Because church attendance generally declines during adolescence (e.g., King et al., 1997; Smith et al., 2003), some of those who maintain religious behaviours might do so out of a sense of obligation. Alternatively, service attendance could be a coping strategy for some youth (Dubow, Pargament, Boxer, & Tarakeshwar, 2000). Goeke-morey et al. (2014) found that whilst increased internalising problems (e.g., psychological distress) predicted a weakening relationship with God in a 2-wave study of adolescents, participants whose mothers relied on active religious coping had reduced depression and anxiety. These youth may therefore have learned to use religion to cope via behavioural modelling from their mothers. Rejecting the values of one's parents could harm parent-child relations, which is a major influence on affect (Fanti, Henrich, Brookmeyer, & Kuperminc, 2008). Indeed parent-child religiousness has been found to be related to a range of positive outcomes (e.g., Pearce & Axinn, 1998; Stokes & Regnerus, 2009), whereas discrepancies in religiousness have been linked to internalising and externalising symptoms (Kim-Spoon et al., 2012). Irreligious youth who attend

Catholic schools have also been found to report considerably reduced parental support than those who believe in God (Huuskes et al., 2016).

Although there is some longitudinal evidence linking domains of religious sentiment to favourable outcomes, few studies have taken into account individual differences in patterns of religious development. It is important to examine individual-level change, as approaches that only examine relationships among variables (e.g., correlating mean religiousness with mental health), may obscure considerable variation in religiousness. Person-centred approaches allow for the identification of clusters of similar individuals within a sample. By not specifying groups *a priori* one can more accurately represent individual differences on variables. The application of such methods longitudinally is especially useful, as it allows for the identification of distinct trajectories of development.

Smith and Snell (2009) identified six trajectories of religious change from early to late adolescence, using a measure that combined frequency of prayer, church attendance, and faith importance. Only a small number of participants (3.6 percent) became more religious, with the majority either declining or remaining stable. Although the authors were not able to examine factors that influence these developmental trajectories, high levels of religiousness and religious stability were related to higher levels of parental religiousness and positive experiences with adults belonging to the congregation. Unfortunately, the authors did not examine whether differences in religious trajectories were related to psychological outcomes.

Although not examining religiousness *per se*, Eisenberg et al. (2011) identified four trajectories of religious coping from mid-adolescence (16-17) to early adulthood (22-23): decreasing, increasing, low-stable, and high-stable, and found that these predicted differences in externalising problems (e.g., antisocial behaviour,

delinquency, violent activities). Compared to the high-stable group, males with decreasing religious coping had higher externalising problems at age 18-19. Interestingly, those with increasing coping were more likely to have externalising problems than any of the other groups and had stronger concurrent associations with ‘deviant peers’. One interpretation of this finding is that the ‘increasing’ group turned to religion in early adulthood as a way of dealing with the stress associated with externalising problems. This outcome appears likely, given that the study was conducted in Italy, a country with reasonably high religiousness by European standards (Zuckerman, 2007). Using religion to actively cope with adversity is probably a normative and culturally-appropriate response to stress in countries that are more religious. It may also be more stressful to reject religion in such countries. Alternatively, it is worth considering whether youth with emotional or behavioural problems could be less attracted to religion in the first place. At least one study has found that depression predicted reduced religious attendance, although not religious importance, after controlling for prior attendance (Horowitz & Garber, 2003).

#### 4.1.3 The present research

In sum, although findings are largely suggestive of benefits associated with religious sentiment, there remains a need to examine individual differences in patterns of religious development (Regnerus, 2003). This would provide a more accurate understanding of the varieties of adolescent religious development, as well as how religious sentiment can be related to psychological outcomes. Whereas previous longitudinal research has largely utilised variable-centred approaches, the present study utilised a growth mixture modelling (GMM) approach to identify individual trajectories of religious change amongst youth attending Catholic high schools over four years. This approach is useful because it allows one to identify groups of

individuals according to similar patterns of religious change. Smith and Snell (2009) for instance, identified 6 classes of individuals with unique trajectories of religious development. Because of the exploratory nature of these analyses, we were unable to make specific predictions in regards to the number of classes; however, in accord with previous research we expected to find multiple trajectories as well as a general decline in religious values (Heaven & Ciarrochi, 2007).

We were then interested to examine whether the probability of class membership was influenced by time 1 covariates, gender and parental support. It was expected that females would be over-represented in classes with stronger or increasing religious values, as females have traditionally been more religious than males (Collett & Lizardo 2009; Miller & Hoffmann, 1995; Spilka et al., 2003). Conversely, surveys have indicated that atheists tend to be male (Beit-Hallahmi, 2007; Hunsberger & Altemeyer, 2006), although it is not clear whether these effects hold across culture and different age groups. Although there was no way of examining congruence in parent-child beliefs, we were interested in the extent to which parent-child relations predicted individual differences in religious change. A previous cross-sectional study with the same group of participants found that agnostics and atheists reported considerably less parental support than believers (Huuskes et al., 2016), in line with previous findings (Beit-Hallahmi, 2007). Research has indicated that closer and more supportive parent-child relationships are related to stability in religiousness (Ozorak, 1989), increased socialisation (King & Furrow, 2004), and similarity in religious beliefs (Hoge, Petrillo, & Smith, 1982). Improved relationships probably reduce the likelihood of rebellion against the religious values of the family (Wilson & Sherkat, 1994). We were thus interested in whether parental support predicted trajectories of religious development. Based on our earlier findings (Huuskes et al.,

2016), it was expected that increased parental support would predict an increased likelihood of having high religious values, and a reduced likelihood of low religious values.

The last step examined whether trajectories of change predicted psychological outcomes at time 4. We were primarily interested in indicators of well-being, as research has tended to focus on ways in which religious sentiment is related to reduction in risk (Furrow et al., 2004). As a meaning system capable of shaping one's fundamental outlook on life, religion may do more than reduce one's susceptibility to risk factors and actually contribute to a positive and optimistic outlook on life.

For the purposes of this study, we examined how change in religious values predicted later psychological well-being, self-esteem, and hope. These variables were chosen because they represent a constellation of factors related to successful adolescent adjustment. Keyes' (2006) measure of psychological well-being for instance, reflects the extent to which individuals feel as though their lives have meaning. This is pertinent, as one of the unique ways that subjective religiousness may influence psychological functioning is by enhancing one's sense of meaning (Silberman, 2005). Trait hope on the other hand, reflects the amount of effort that an individual directs towards achieving their goals (agency), and planning directed towards these goals (pathways) (Snyder et al., 1991). Religious youth may be expected to have higher levels of hope, as religions facilitate goal setting by encouraging youth to connect with the sacred (Emmons, 2005). Self-esteem is pertinent to studies on adolescence as it can contribute to subjective well-being (DeNeve & Cooper, 1998) and may aid successful adjustment (e.g., Dumont & Provost, 1999). Although findings on religiousness and self-esteem are equivocal, feelings of unconditional love from God may be related to enhanced self-esteem

(Hood, Hill, & Spilka, 2009). While self-esteem and hope have been found to correlate with domains of religiousness, few have examined these relationships longitudinally. Ciarrochi and Heaven (2012) found longitudinal relations between religious values and hope, but not for self-esteem. In accord with the general pattern of previous findings however, we expected to find that classes with elevated religious values would have improved outcomes across all variables.

## **4.2 Method**

### **4.2.1 Participants**

The sample consisted of participants in an ongoing study of youth (ACS; Australian Character Study) that began in 2010 when students were halfway through their second year of high school (grade 8), and was repeated at approximately the same time each year. The majority of participants were born in 1996, and as such, may be considered as belonging to the post-Millennials generation (Mitchell, 2002). The present study examines the first four waves of ACS data, taken when participants were aged 13-14 years (males = 1030, females = 1040), 14-15 years (males = 1058, females = 1023), 15-16 years (males = 1021, females = 1002), and 16-17 years (males = 832, females = 903). It is worth noting that attrition from wave 3 to wave 4 (15%) may be due to students leaving school to seek vocation based training. Full information likelihood estimation (FIML) was employed to handle missing values, which is a more efficient and less biased method in comparison to pairwise deletion and imputation-based methods (Enders & Bandalos, 2001).

The cohort attended 17 Catholic schools from a diverse range of socioeconomic backgrounds within two Catholic dioceses in New South Wales and Queensland, Australia. Schools were approached to participate after the relevant Catholic education offices granted permission. Students were instructed to complete survey

booklets that contained multiple questionnaires related to ‘youth issues’. Following completion, students were thanked and de-briefed. At least one of the co-authors was present for data collection.

At time 1, the occupations of parents of our participants mostly resembled the total number of employed persons nationally: professional/technical/managerial (21.6%; national 36.7%), trades (9.7%; national 15.2%), labourer/transport/production (10.1%; national 17.4%), community service (6.75%; national 8.9%), sales/clerical (10.5%; national 21.6%) (Australian Bureau of Statistics (ABS), 2010b).

The number of participants with married parents declined from 74% at time 1 to 72.5% at time 4. These figures resembled the national average of intact families at the time of the first study (73%) (ABS, 2010a). The number of participants whose biological parents were either divorced (11-13%) or separated (8-10%) also remained steady over time.

At time 1, the majority of participants were Caucasian Australian (62%), followed by those of European (14.3%), Aboriginal and Torres Strait Island (5.2%), and New Zealand (2%) descent. The remainder represented a diverse range of ethnicities of generally less than 1% (Indian, Vietnamese, Chinese, African, Korean, American, Pakistani, Japanese, and Indonesian). Whilst the majority of students reported Catholicism as their religious faith at time 1 70.6%, this number declined to 58.2% by the fourth wave.

Examining religious development amongst youth attending Catholic schools is appropriate, because one may not find representative trajectories of religious values in state schools. Although students are not required to be Catholic to attend Catholic schools, they are more likely to represent typical religious adolescents than those who attend secular schools. Indeed, one may not find an appropriate range in religious

values by examining a cohort from a secular school, and might thus misrepresent the range of adolescent religious development. It is worth mentioning, however, that the beliefs of highly religious adolescents who attend state schools may qualitatively differ from those who attend Catholic schools, as there are likely to be different expectations regarding religiousness. For instance, youth attending Catholic schools may experience more pressure to be religious than those at state schools.

It is also especially valuable to examine these research questions in a country such as Australia. As in many affluent Western nations, religion in Australia is on the decline, especially amongst young people (ABS, 2013). In this way, it may be said that religious expression in Australia parallels a broader global trend. Unfortunately, the majority of religious research has been conducted within the United States, a relatively religious country in comparison to other Western nations (Gallup & Lindsay, 1999; Inglehart, 2010; Norris & Inglehart, 2004). Indeed, atheists have been found to be the least trusted minority group in the United States (Edgell, Gerteis, & Hartmann, 2006). In examining an Australian sample, the present research addresses a crucial deficiency in the current understanding of religious development, and may be of particular relevance to countries outside of the U.S.

#### 4.2.2 Materials

Students were provided with a booklet containing the following measures. None of the measures contained reverse-scored items. In all cases, items were summed and averaged to compute a mean score.

*Religious values* (Braithwaite & Law, 1985). This three-item scale measures intrinsic religious values and has been adapted for Australian respondents. Previous studies have found that it predicted longitudinal changes in trait hope (Ciarrochi & Heaven, 2012), as well as increased agreeableness and decreased psychoticism

(Huuskes et al., 2013). Participants were asked to indicate the extent to which three principles guided their lives on a 7-point Likert scale, with responses ranging from 1 (*I reject this as a guiding principle*) to 7 (*I accept this as of the greatest importance*). Principles included “Being saved from your sins and at peace with God”, “Being at one with the universe”, and “Following your religious faith conscientiously”.

*Parental support* (Malecki & Elliott, 1999). The 21-item Student Social Support Scale (SSSS) measures the extent to which participants feel supported by parents, peers, and teachers. For the parental support subscale used in the present analysis, participants rated on a scale of 1 (never) to 6 (always), whether items such as parents “Give me good advice”, or “Listen to me when I’m mad” apply to them. Malecki and Elliott (1999) found the scale to be a valid measure of support. Internal consistency was acceptable from waves 1 to 4 with all alpha coefficients  $>.93$ .

*Subjective well-being* (Keyes, 2006). Participants completed the 4-items of the psychological well-being subscale, which measures an individual’s degree of psychological functioning. Participants rated on a 6-point scale from 1 (never) to 6 (every day) how often a range of experiences applied to them. For instance, “How often did you feel that you had experiences that challenged you to grow or become a better person?” The scale has previously been shown to have good validity (Keyes, 2006), and alpha coefficients in the present sample exceeded .90 from time 1 to time 4.

*Self-esteem scale* (Rosenberg, 1979). This widely-used 12-item scale measures global feelings of self-worth and displays strong validity and reliability (Baumeister et al., 2003). Participants are asked to respond (yes/no) to positive and negative statements pertaining to self-worth such as “I feel pretty positive about myself” and “Sometimes I feel worthless”. The negative statements were reversed before

calculating averages. Alpha coefficients for the present sample were:  $t_1 = .85$ ,  $t_2 = .84$ ,  $t_3 = .88$ ,  $t_4 = .88$ .

*Trait hope* (Snyder et al., 1991; Snyder, Sigmon, & Feldman, 2002).

Participants completed the agency (4-items) and pathways (4-items) subscales from the Adult Hope Scale. Sample items include “I energetically pursue my goals” (agency), and “There are lots of ways around any problem” (pathways). This scale has previously been found to be a reliable and valid measure of trait hope (Snyder, Sigmon, & Feldman, 2002). Alpha coefficients in the present study were:  $t_1 = .87$ ,  $t_2 = .87$ ,  $t_3 = .90$ ,  $t_4 = .91$ .

#### 4.2.3 Statistical analysis

Growth mixture modelling (GMM) was performed using Mplus version 7.11 (Muthén & Muthén, 2011) to identify unique trajectories of religious values from time 1 (grade 8) to time 4 (grade 11). Researchers have long relied upon conventional growth modelling techniques such as univariate latent growth curve modelling. However, such methods do not account for potential variance in developmental trajectories, and assume that a single trajectory adequately accounts for change (Jung & Wickrama, 2008). In contrast, GMM clusters individuals with similar trajectories or patterns of change into latent trajectory classes, allowing for within-class variance, and for the unique influence of covariates on each class. As an exploratory technique, GMM is described as a person-centred approach, in that it identifies similar groups of individuals, and thus circumvents issues relating to specification of groups *a priori* (Muthén & Muthén, 2000). This is in contrast to variable-centred approaches, which focus on relations between variables (i.e., structural equation modelling, bivariate correlations).

The first step of GMM is to test for homogeneity in the development of religious values, and identify the optimal number of classes using latent class growth analysis (LCGA); that is, without covariates (unconditional analyses) and with variance and covariance estimates for each class fixed to zero. This is less computationally burdensome than a full GMM and allows for clearer identification of classes (Jung & Wickrama, 2008). Because we have four waves of data, a quadratic growth factor can also be added to examine non-linear change.

The bootstrap likelihood ratio test (BLRT), Bayesian information criterion (BIC), and sample-size adjusted BIC (ABIC) have been identified as the best indicators of fit (Nylund et al., 2007). The BLRT provides a  $p$  value that indicates whether a model has improved fit over a model with 1 less class. Tests are usually repeated with one additional class until the  $p$  value reaches non-significance. Lower values for the BIC and ABIC also indicate improved fit. Classification probabilities for each class are also provided, with values closer to one indicating better class specification. Nagin (2005) has recommended not using values of less than .7 (70%). The entropy measure ranges from 0 to 1 and provides a summary of classification probabilities.

After identifying the appropriate number of classes, the LCGA is repeated with time 1 covariates (conditional analyses), as it is assumed that these may affect final fit of the model (Muthén, 2004). The final step involves running a full GMM, allowing for within-class variance, and including significant covariates (e.g., time 1 parental support) and distal outcome variables (e.g., time 4 psychological well-being). Multinomial logistic regression is used to examine whether covariates predict membership of classes. To examine whether classes predict variance in continuous and/or categorical outcome variables, these are regressed onto the latent class

variable. It is also common for a continuous variable to be treated as a categorical variable. For instance, Wang and Wang (2012) used cutoffs on the Beck Depression Inventory to create a dichotomous variable, with scores above 20 indicating depression (group 1), and scores below 20 indicating no depression (group 2).

Because none of the distal outcome variables in the present study had specified cut-offs, quartiles were used to categorise variables. We therefore examined whether trajectories of religious values were related to scoring in the top or bottom 25% of each outcome variable in grade 11. Although we were also able to compare the mean scores of distal outcome variables between groups, the categorical outcome is useful, as it provides information in regards to the probability of whether trajectories predict high well-being.

### **4.3 Results**

#### **4.3.1 Preliminary analyses**

Religious values at each wave were significantly correlated over time, with  $r$ s ranging from .61 to .77, all  $p$ s less than .001. A repeated measures ANOVA indicated that average religious values declined over four waves,  $F(3, 890) = 50.60, p < .001$ , partial  $\eta^2 = .15$ : time 1 (mean = 4.55, SD = 1.77), time 2 (mean = 4.31, SD = 1.81), time 3 (mean = 4.09, SD = 1.93), time 4 (mean = 3.97, SD = 1.94). Females were only found to be more religious than males at time 1,  $F = 6.14 (1, 1952), p < .05$ , and time 2,  $F = 4.39 (1, 2002), p < .05$ .

#### **4.3.2 Latent class growth analysis**

We first compared model-fit values for models without covariates (unconditional models) to identify the appropriate number of classes (Table 1). The bootstrap likelihood ratio test (BLRT) for the 2-class model was found to be

significant, indicating heterogeneity in the development of religious values. Fit statistics improved with each additional class up until the 5-class model. However, because the additional class identified in this model was small (e.g.,  $n = 69$ ,  $<3\%$ ), we repeated analyses with covariates (conditional models). Muthén (2004) has suggested that exclusion of covariates and distal outcomes may lead to model misspecification. The 4-class conditional model was deemed appropriate after including parental support and sex as time-invariant covariates, as the additional class identified by the 5-class model had a probability of less than 70%, the cut-off recommended by Nagin (2005). Fit statistics for the 4-class conditional model demonstrated improved fit over the unconditional model (BIC = 21362.94; ABIC = 21254.92; entropy = .77).

Table 4.1 Model fit statistics for trajectories of religious values

No. Classes	BIC	ABIC	Entropy	BLRT $p$ -value
1	27207.6	27166.3	-	
2	27058.7	27004.6	0.584	<.0001
3	26920.9	26863.7	0.701	<.0001
4	26850.8	26780.9	0.651	<.0001
5	26766.5	26683.9	0.676	<.0001

*Note.* BIC, Bayesian information criterion; ABIC, sample-size adjusted Bayesian information criterion; BLRT, bootstrap likelihood ratio test.

#### 4.3.3 Growth mixture model results

The four trajectories from the final model are presented in Figure 1. Class 1 ( $n = 464$ , 23.2%) was found to have a linear decline in religious values from time 1 to time 4 at ( $\beta = -.64$ ,  $p < .01$ ). Because the religious values of this class were below the mean at each time point, and the rate of change was similar to that of the Average class (see class 2) it was labelled Low (average decline). Class 2 ( $n = 633$ , 31.6%) accounted for the highest proportion of the sample, and was labelled Average based on a trajectory that closely resembled the decline in religious values identified in the single-class

model ( $\beta = -.57, p < .05$ ). Class 3 ( $n = 624, 31\%$ ) had the highest religious values overall and the steepest decline of the 4 groups ( $\beta = -1.07, p < .001$ ). A slight quadratic effect ( $\beta = .20, p < .05$ ) indicated that most of this change occurred between wave 1 and 2. This class was labelled High (steep decline) based on these characteristics. Finally, class 4 was the smallest ( $n = 279, 14\%$ ) and had the lowest religious values overall. Religious values of members of this class did not change over four waves ( $\beta = .10, ns$ ). As such, this trajectory was labelled Low (stable).

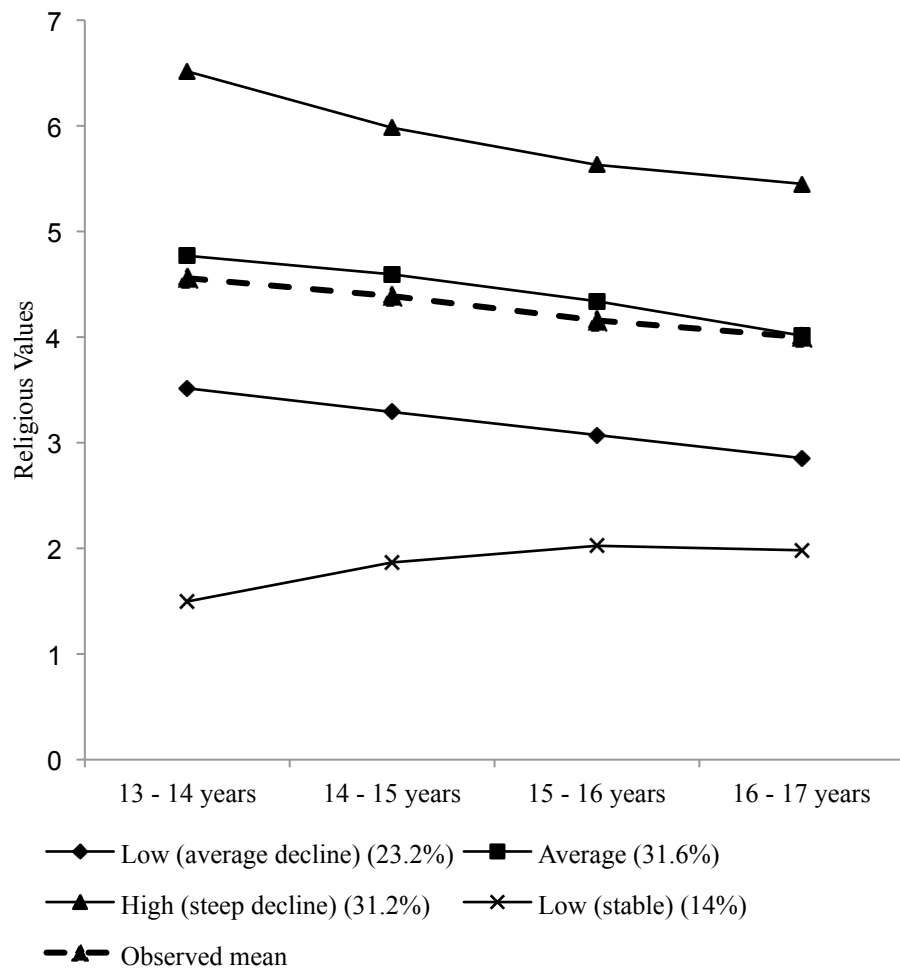


Figure 4.1 Mean religious values for the overall sample, and individual trajectories of religious values from 13-14 years to 16-17 years.

#### 4.3.4 Effect of covariates on latent class membership

Associations between covariates and trajectories are shown in Table 2. The Average class was the largest and therefore made the reference class. This means that the logits of the effects of covariates on class membership for the other classes are calculated in reference to this class. Increased parental support was found to predict a reduced likelihood of being in the Low (stable) and Low (average decline) classes relative to the Average class. Increased parental support was related to an increased likelihood of being in the High (steep decline) class compared to the Average class. In comparison to members in the Average class, those in the Low (average decline) and High (steep decline) classes were also more likely to be females than males. In comparison to those in the Low (average decline) class, those in the Low (stable) class were less likely to be females than males.

Table 4.2 Logistic regression coefficients and odds ratios (OR) for the effect of parental support and sex on class membership

Class	<u>Parenting</u>		<u>Sex</u>	
	Estimate	OR	Estimate	OR
Low (stable)	-.36***	.70	-.31	.73
Low (average decline)	-.18**	.84	.61**	1.84
Average <sup>a</sup>	-	-	-	-
High (steep decline)	.27***	1.31	.35*	1.41

\* $p < .05$

\*\* $p < .01$

\*\*\* $p < .001$

<sup>a</sup>Reference class

#### 4.3.5 Effect of class membership on distal outcomes

The final models with both time 1 covariates and distal outcomes had improved fit over unconditional models (hope, ABIC = 22230.58, BIC = 22408.50, ent = .78, BLRT  $p < .001$ ; psychological well-being, ABIC 21747.83, BIC = 21925.75, ent = .78, BLRT  $p < .001$ ; self-esteem, ABIC = 22205.04, BIC = 22382.95, Ent = .79 BLRT  $p < .001$ ).

Estimates of relations between latent class membership and status of distal outcome variables, controlling for the effect of time 1 covariates, are presented in Table 3. A dichotomous categorical variable was created out of each distal outcome variable, so that we could examine whether class membership predicted the likelihood of scoring in the top quartile for each variable at time 4.

Regression of categorical distal outcome variables onto the latent class variable revealed that those in the High (steep decline) class were most likely to score in the top quartile of all outcome variables, followed by those in the Average class. Those in the Low (stable) class were more likely to be in the top quartile on all outcome variables than those in the Low (average decline) class. Odds ratios for the likelihood of each class scoring in the top quartile relative to other classes are presented in Table 4.

Table 4.3 Likelihood of scoring in the top quartile of distal outcome variables

Latent class	Outcome Variable	Est	Group mean	se
Low (stable)	Hope	0.60***	4.03	0.09
	PWB	0.35***	4.06	0.11
	SE	0.62***	0.62	0.03
Low (average decline)	Hope	0.51***	3.81	0.09
	PWB	0.24***	3.89	0.16
	SE	0.59***	0.58	0.03
Average	Hope	0.64***	4.14	0.07
	PWB	0.52***	4.36	0.08
	SE	0.68***	0.66	0.02
High (steep decline)	Hope	0.78***	4.34	0.05
	PWB	0.60***	4.43	0.05
	SE	0.74***	0.67	0.02

\*\*\* $p < .001$ 

Table 4.4 Odds ratios for the likelihood of a member of one class scoring in the top quartile of an outcome variable, relative to another class

Classes	High (steep decline) vs.	High (steep decline) vs.	High vs.	Average vs.	Average vs.	Low (stable) vs.
	Average	Low (stable)	Low (average decline)	Low (stable)	Low (average decline)	Low (average decline)
Hope	1.94***	2.33***	3.38***	0.83***	0.58***	0.69***
Self-esteem	1.31***	1.72***	1.49***	1.31***	1.33**	0.88**
Psychological well-being	1.43**	2.79**	4.71*	0.51*	0.30*	0.59

\* $p < .05$ \*\* $p < .01$ \*\*\* $p < .001$ 

#### 4.3.6 Levels differences on distal outcome variables

T-tests were used to compare between-group means for each distal outcome variable. For trait hope, those in the High (steep decline) class outscored those in the Average ( $t = 2.32, p < .05$ ), Low (average decline) ( $t = 6.36, p < .001$ ), and Low (stable) groups ( $t = 6.36, p < .001$ ). Members of the Average class outscored those in the Low

(average decline) class ( $t = 2.93, p < .01$ ) but not those in the Low (stable) class. No difference in trait hope was found between the Low (average decline) and Low (stable) groups.

Between-groups differences were less pronounced for self-esteem. Those in the Low (average decline) class had lower levels of self-esteem than those in the High (steep decline) class ( $t = 2.59, p < .01$ ) and the Average class ( $t = 2.31, p < .05$ ). No other differences were found for self-esteem.

Last, no differences in psychological well-being were found between the High (steep decline) and Average classes; however, members of both groups outscored the remaining two classes. Those in the High (steep decline) class outscored those in the Low (average decline) ( $t = 3.59, p < .001$ ), and the Low (stable) ( $t = 3.52, p < .01$ ) classes. Those in the Average class outscored those in the Low (average decline) ( $t = 2.90, p < .01$ ), and the Low (stable) ( $t = 2.13, p < .05$ ) classes. No difference was found between the Low (average decline) and Low (stable) class.

#### **4.4 Discussion**

The central aim of the present study was to identify individual differences in the development of adolescent religious values. Although many regard adolescence to be a salient period for the development of religious values (Good & Willoughby, 2008; Kim-Spoon et al., 2012), few have empirically examined individual differences in religious development. In addition, although the study of religious sentiment and psychological outcomes has long been of interest to researchers, few have accounted for individual variation in religious development whilst examining associated outcomes, especially during the adolescent years. It is important to examine individual differences, as variance in the religious experience of young people could have implications that are obscured by mean scores. In other words, variable-centred

approaches may not capture the full extent of variance in religiousness amongst young people.

The present study identified 4 distinct trajectories of religious development amongst Australian adolescents over a 4-year period. The trajectories of religious values identified were labelled (from low to high): Low (stable), Low (average decline), Average, and High (steep decline). Although our finding of overall decline in religious values is consistent with previous research on adolescent populations (King et al., 1997), the two other studies using person-centred approaches found more individual variation than we did, along with evidence of increasing religiousness (Eisenberg et al., 2011; Smith & Snell, 2009). What explains this difference? It may be the case that young people in these countries experience greater pressure to maintain religiousness throughout adolescence, as both studies were conducted in countries with higher levels of religious consumption than Australia (USA and Italy). Conversely, Australia is becoming increasingly irreligious, a trend driven by young people between the ages of 15 - 34 (ABS, 2012). Our failure to find clusters of individuals who became more religious could be attributable to this broader cultural trend. It would be useful for future research to examine heterogeneity in patterns of religious development, and whether varieties of change are related to the religiousness of the broader culture (Regnerus, 2003).

We also found evidence that parental support at time 1 predicted changes to religious values. In comparison to the Average class, increased parental support predicted an increased likelihood of being in the High (steep decline) class, and a decreased likelihood of being in the Low (stable) and Low (average decline) classes. Ours is the first study to account for individual differences in adolescent religious development while also examining predictors and consequences of change. This

extends the findings from our earlier cross-sectional study, which found that atheists attending Catholic schools reported considerably less parental support than those who believed in God (Huuskes et al., 2016). Religious parents have been found to have closer relationships with their children (King & Furrow, 2004), so perhaps young people from religious families are less likely to challenge the status quo. At least one study has found that the quality of the parent-child relationship is inversely related to a defiance of parent religiousness (Wilson & Sherkat, 1994). In addition, higher religious values have been found to predict increased agreeableness in later adolescence, suggesting that the religious context may reinforce certain behaviours (Huuskes et al., 2013). Because agreeableness is a personality trait that reflects compliance and respect for authority, it may be the case that religious youth are inherently less likely to report dissatisfaction with their parents.

Gender was also related to differences in class membership, with females found to have considerable variability in trajectories. Compared to the Average class, females were more likely than males to be both in the Low (average decline) class, but also High (steep decline) class. Interestingly, females were also more likely to have low, declining religious values than be in the Low (stable) class, meaning that males were more likely to be irreligious from early adolescence onwards. Although these findings are largely inconsistent with research that has found females to be more religious (Spilka et al., 2003), it is worth mentioning that our cross-sectional study found similar levels of non-belief amongst males and females at time 1 (Huuskes et al., 2016). Indeed, the Australian Bureau of Statistics reported no differences in irreligion between males and females below the age of 20 (ABS, 2013). It may thus be the case that traditional gender differences in religiousness no longer apply to current generations, at least in relatively secular cultures such as Australia. One

proposed account of gender differences in religiousness posits that females are socialised into being compliant, a trait suited to the authority of religion (Collett & Lizardo, 2009). If this is the case, perhaps the general decline in religion seen in Australia (ABS, 2012) has meant that females experience less pressure to attend church.

Although further research is needed before the locus of these gender differences is properly understood, our findings demonstrate that prior notions of females' greater propensity for religion may be unfounded. The variability in females' trajectories of religious values also highlights the value of adopting a person-centred approach. Considering the relative novelty of these methods in the study of adolescent religiousness, one wonders whether previous findings of gender differences in religiousness based on mean scores are over-simplified, or if our findings reflect a generational change in religious expression amongst adolescents.

In accord with previous findings (e.g., Yonker et al., 2012), higher religious values (those in the High and Average classes) were related to an increased likelihood of high levels of hope, self-esteem, and psychological well-being at time 4. Many youth find it difficult to adapt to the changes of adolescence, and so religion may provide a stabilising influence by orienting people towards a focus on the sacred. Indeed, it has been suggested that by encouraging spiritual goal-setting, religions provide individuals with a sense of purpose and striving (Emmons, 2005). This could account for our finding that those with increased religious values (even when declining) predicted higher levels of trait hope in comparison to those with lower religious values, as it reflects the effort and planning directed towards one's goals.

Our results do not suggest however, that stronger religious values are unequivocally favourable to psychological health. Although those in the Low (stable)

class had the lowest religious values overall, they still had a greater probability of high levels of hope, self-esteem, and psychological well-being than did members of the Low (average decline) class. Because religious sentiment has generally been found to correlate with positive outcomes (e.g., Yonker et al., 2012), one might have expected a linear relationship between religious values and psychological outcomes. In this instance, the likelihood of improved outcomes at time 4 would have declined as religious values weakened. Our findings suggested otherwise, indicating that it may be less disruptive to have consistently low religious values through adolescence, rather than having religious values that start out somewhat low and then decline. With a trajectory that began close to the Average group, and ending close to the group with the lowest religious values overall, participants in the Low (average decline) class may have experienced a major shift in the way they were able to cope with adversity. Because religion is related to how individuals see the world, this decline might represent a fundamental shift in the way that these youth construct meaning. For instance, they may have become less likely to conceptualise negative events in a constructive way (i.e., within the religious framework). In contrast, those in the Low (stable) class, had the lowest overall religious values but did not experience any change, and so may have a more stable outlook. It would be interesting to more closely assess the various attributions used by these groups to understand the validity of this interpretation.

These results also support suggestions that an intrinsic commitment to one's faith is favourable to adjustment because it is related to making meaning out of everyday events (Emmons, 2005; Park, 2005; Silberman, 2005). The two classes with higher religious values had significantly higher levels of psychological well-being at time 4 compared to those in the low religiousness classes. Amongst other

characteristics of eudaimonia, psychological well-being reflects an individual's sense of personal meaning and purpose in life (Keyes, 2006). Interestingly, although members of the High (steep decline) class were more likely than those in the Average class to score highly on all outcome variables (see Table 4), *t*-tests revealed that levels differences between these groups on outcome variables were either non-existent or small, such as for trait hope.

Overall, the differences between groups on distal outcomes suggest that higher religious values may only be beneficial beyond a certain point, which in this case was the average religiousness for the overall group. Below the group average, it appears as though stable values are preferable to declining values. Considering that members of the two classes with higher religious values also outnumbered those in the low categories (63% to 37%), it may be the case that the normativeness of higher religious values amongst this sample partly accounts for the differences between the two 'high' groups and the two 'low' groups.

#### 4.4.1 Limitations and conclusion

Although it is appropriate to examine the development of religious values amongst youth attending Catholic schools, there are some limitations in regards to the application of these findings to the wider population. Our findings do not allow us to make generalisations in regards to religious development in the wider population, and thus it would be useful to examine trajectories of religious values amongst youth attending secular schools. As discussed however, it is a particular strength of this study to examine the development of religious values amongst youth being raised in a predominately religious context.

It is also important to consider that religiousness is not a unidimensional construct, and thus our findings reflect one particular aspect of religious development.

It is useful to examine religious values because they reflect adolescents' intrinsic level of religious commitment, and may be more likely to reflect differences in psychological well-being than church attendance, especially during the adolescent years. This is because religious behaviour may be more indicative of the religious values of an adolescent's parents. It would therefore be useful to contrast our findings with individual trajectories in other domains of religiousness (e.g., church attendance, prayer frequency, quest), and examine whether they are related to psychological outcomes.

The present study utilised a sophisticated approach in examining the development of adolescent religious values. In doing so, a number of existing limitations were addressed. It is clear from our findings that more research needs to examine heterogeneity in religiousness. Examining individual differences in religious trajectories in cultures with varying levels of religiousness, using multiple measures of religious sentiment will allow for a much more detailed understanding of how religious values develop. Further, this heterogeneity will need to be examined when investigating potential religious effects. Although useful, correlational studies may not accurately capture the varieties of religious experience, and may obscure a realistic understanding of relations between religiousness and psychological outcomes. Our findings demonstrate that individual differences in religious development can have important implications for the well-being of adolescents.



## **5 Summary and Conclusions**

## **5.1 Summary**

Although religion has long been of interest to psychologists, adolescent religiousness has been relatively unexamined in comparison to research on adult populations. The importance of studying this period is evident when one considers the significance of adolescence in the development of lifelong religious values, and that religiousness may be beneficial to psychological adjustment during a tumultuous period. The primary aim of this thesis was to gain a broad understanding of adolescent religious sentiment by examining associations between belief in God and a broad range of psychological outcomes, the varieties of religious development, and whether these differences are related to psychological outcomes.

### **5.1.1 Study 1**

The primary aim of study 1 was to gain an understanding of the relationship between belief in God and psychological outcomes in early adolescence via a profile analysis. This study served as a baseline, and allowed for the examination of two main questions. The first was whether believers, agnostics and atheists showed mean differences in psychological functioning across a wide variety of indices. For instance, did youth who believe in God have improved subjective well-being in comparison to those who did not believe in God, or those who were unsure? This is a useful comparison, as there may not be a simple distinction between believers and non-believers. Although it was expected that believers would outscore agnostics and atheists, it was not clear how the latter two groups might differ from believers, or indeed from each other. Whilst no previous research at the time of writing had compared groups in such a way, it was expected that those who were unsure of God's existence might in fact have the least favourable outcomes overall, because unlike believers and atheists, they may experience more uncertainty in life. It was not

assumed that the beliefs of those who were unsure of God's existence would be deeply considered. One would assume that an agnosticism based on the unknowability of God's existence would only emerge towards later adolescence.

This study contributes to the understanding of the ways in which domains of religiousness can be related to psychological adjustment. The three groups were found to differ according to a similar pattern, with scores generally decreasing from believers to agnostics to atheists. Believers were found to outscore atheists on all variables with the exception of cognitive empathy. Although this was in line with previous research, it was surprising to find that believers outscored agnostics on all variables with the exception of cognitive empathy and peer support. Indeed, effects for all variables with the exception of self-esteem and mental health (GHQ) held after controlling for parental support. It was also surprising to find that agnostics fared better than atheists on subjective well-being, self-esteem, parental support, and anti-social behaviour.

The impact of gender on differences in outcome variables was also examined. Although it may not necessarily be the case amongst younger generations (ABS, 2013); females have consistently been found to be more religious than males (Spilka et al., 2003). It was surprising that the only gender differences found were that female atheists experienced reduced subjective well-being, and reported feeling less supported by their parents. The male atheists may be more comfortable with the 'risk' associated with their belief. In the context of this (catholic) sample, such risks may reflect fears associated with flouting the values of one's family. Female atheists may thus experience more dissonance in their beliefs than males. Further analyses controlling for parental religiousness is needed to understand the nature of these differences. The relatively minor gender differences found might also reflect the

disinterest shown towards religion amongst younger generations of Australians (ABS, 2013).

The second question concerned whether different groups (believers, agnostics, atheists) had parallel profiles. Profile differences reflect the relative highs and lows experienced by each group, and provide an indication of the ways in which belief in God contributes to psychological functioning. This is especially useful for gaining a comprehensive understanding of the sample at baseline. Participants were grouped according to belief (believer, agnostic, atheist), and contrasted according to a range of positive (subjective well-being, self-esteem, hope), social (empathy, social support), and negative (mental ill-health, antisocial/rule-breaking behaviour) outcomes. The examination of positive outcomes was a particular strength of this study, as most research to date has focused on the ways in religious sentiment buffers against negative outcomes, both internal (e.g., depression) and external (e.g., delinquency). Religious sentiment may be more strongly related to positive than negative outcomes, given the emphasis on aspects of well-being such as finding meaning and spiritual connectedness. Indeed, positive and negative affect appear to be independent to a certain extent (Watson & Clark, 1994), and so it is necessary to identify the ways in which belief in God may be related to domains of well-being.

Results of the parallelism test indicated that believers were not simply ‘better off’, as might be suggested by the levels tests. Rather, the different groups appeared to experience quite different psychological ups and downs. The believers’ profile for instance, was distinguished from the other groups with elevated subjective well-being. It is conceivable that this difference is related to an enhanced sense of meaning amongst believers. In contrast, the atheists’ profile had distinctly low affective empathy and more aggressive/rule-breaking behaviour. One could argue that the

increased likelihood of aggressive and rule-breaking behaviour amongst atheists is attributable to the lack of a clear moral framework, such as that contained within religious teachings. Conversely, the behaviour of believers may be informed by religious teachings and their commitment to God. Whilst this commitment may partially account for these differences, it is also important to consider other factors that plausibly could influence these relations. Religious youth tend to score low on personality traits related to impulsivity such as psychoticism (Huuskens et al., 2013). Indeed, individuals low on psychoticism, and high on conscientiousness and agreeableness may be attracted to religion because it allows them to express their basic tendencies (Saroglou, 2010). As such, one would expect religious youth to score low on aggressive/rule-breaking behaviour anyway.

In addition, differences between agnostics and believers on empathy variables were small or non-significant. The believers' profile was also distinguished by elevated parental support. Aside from being in accord with research that has found more harmonious family lives for religious youth (King & Furrow, 2004; Smith, 2003), parental support reliably predicts a reduced likelihood of problem behaviour (Wright & Cullen, 2001), and low empathy, is related to a reduced responsivity to parental practices (Oxford, Cavell, & Hughes, 2003). At the very least, these findings demonstrate the difficulties in understanding the mechanisms by which belief in God could explain improved behaviour. It would be useful to examine what proportion of variance in problem behaviours are explained by belief, when controlling for differences in parental support and empathy. In broad terms, the results from this study do not indicate unequivocally that adolescents who believe in God are better off. Whilst the pattern of levels differences does indicate that believers have improved functioning compared to agnostics, who tend to outscore atheists, the distinguishing

features of the groups' profiles are suggestive of the complexity in examining these questions.

### 5.1.2 Study 2

The main purpose of study 2 was to build upon the findings of study 1 by examining the relationship between belief in God and psychological outcomes in the three years following the first study. As Regnerus (2003) suggested, it is crucial to understand the ways in which religious sentiment varies across adolescence. Religious belief in early adolescence might be somewhat perfunctory, reflecting the values of parents. If this is the case then the beliefs of young adolescent are probably not as strongly internalised, and any benefits related to belief may accordingly be less pronounced. Considering the extent of psychological change occurring between grade 8 and grade 11, such as the development of abstract thinking, or the challenge to familial values when asserting one's own identity, it is likely that the nature of religious beliefs would change over time. Older adolescents are both cognitively more adept at grasping the kinds of issues covered by religion (e.g., life after death, meaning in life, etc.), and more likely to have developed a religious identity. It was expected that with a stronger internalisation of religious beliefs, older adolescents would become more receptive to any potential benefits related to religious sentiment over the course of adolescence.

The first question examined was whether profile differences were maintained over time, or if believers, agnostics, and atheists became more similar. As in study 1, the three groups continued to experience different highs and lows in psychological adjustment over time. Surprisingly, the shape of each group's profile was relatively consistent until grade 11, the last wave of the study. The grade 11 profile of all three groups differed from previous years with an increase in self-esteem, and a decrease in

cognitive empathy. It is possible that the changes in these two variables are related. Being the first of the final two years of school, grade 11 may be regarded as a transition year, one characterised by increased responsibilities and stresses. The increased self-esteem and drop in affective empathy could reflect a renewed focus on the self. One would certainly expect a reasonable degree of self-focus at this age (approximately 16 to 17 years), as students wrestle with crises of identity, and the increased academic demands of school. It is also conceivable that many students feel increased competition with their peers.

Aside from this common pattern in profile change, the believers' profile had additional distinguishing features in grade 11. Although all groups experienced a drop in cognitive empathy in grade 11 compared to previous years, the believers' profile was also characterised by a drop in affective empathy over this same period. Only amongst believers however, were both empathy variables found to drop in grade 11. The relevance of this finding becomes apparent when one considers that empathy is a fundamental component of altruism. Whilst relations between religiousness and favourable psychological outcomes for the individual have been reasonably consistent (Yonker, Schnabelrauch, & DeHaan, 2012), whether religion fosters altruism, and relatedly, discourages destructive behaviour remains equivocal (Levenson, Aldwin, & D'Mello, 2005). In addition, a key issue raised in study 1 was whether atheists' increased levels of aggression and rule-breaking could be attributed to the absence of a guiding moral framework. By the same token, it was put forth that believers may be better behaved in comparison, because their behaviours might be guided by such a framework. In light of the distinguishing features of the believers' grade 11 profiles it at least appears unlikely that belief may not foster empathic concern with others, though it is difficult to argue definitively.

It is worth considering the implications of these findings on the association between religion and prejudice. Both veteran and contemporary scholars have discussed the paradox of prejudice amongst religious individuals (e.g., Adorno, Frenkel-Brunswick, Levinson, & Sanford, 1950; Allport, 1950; Bloom, 2012). Being a member of a religious in-group may be related to increased out-group prejudice, especially considering that religions tend to make distinctions between members of a denomination and those who do not belong (Burris & Jackson, 2000; Jackson & Hunsberger, 1999). Although prejudicial views were not assessed in the present study, it may be that a lack of empathy fosters prejudicial attitudes (Stephan & Finlay, 1999). It would be interesting to examine whether relations between self-esteem and empathy differ in religious and non-religious adolescents. It would also be useful to examine whether these factors predict the development of later prejudice.

The second major aim of study 2 was to examine whether believers continued to display improved psychological adjustment in comparison to agnostics and atheists. The differences found in study 1 were maintained over time, with believers found to have improved functioning in comparison to agnostics who tended to outscore atheists. Further, differences between believers and atheists were generally larger in grade 11 than grade 8. The variables found to have larger effects in grade 11 also tended to be the positive variables. The pattern of these findings, as well as the generally elevated scores of positive outcomes, suggest that religion may be more influential on well-being than risk avoidance. Once again, this is in line with a meaning systems approach. Religious youth may simply have a greater propensity for positive thinking, which could be influenced by religious attributions, support from the wider religious network, or the buffering effects of prayer.

It was hypothesised that believers could become more receptive to any benefits associated with religious sentiment as they get older, because earlier beliefs are not likely to be as deeply internalised. If the positive effects associated with religious sentiment are related to the ways in which individuals construct meaning, a deeper comprehension of religious concepts may translate into greater benefits. Similarly, the absence of a coherent framework to make sense of the world amongst atheists could partially explain their generally low scores. Results provided tentative support for this hypothesis. The differences between believers and atheists were larger for subjective well-being, self-esteem, peer support, parental support, and teacher support in grade 11. That these differences were mostly for positive outcomes indicates that the influence of belief may be more related to enhanced positive outcomes, than a reduction in negative outcomes. Indeed, differences between groups for mental health were greater in grade 8 than grade 11. It may also be the case that the increased adversity experienced in grade 11 means that believers are more likely to turn to their faith for support. There have been some suggestions that adverse conditions increased the likelihood of active religious coping, especially in countries with more difficult living conditions (Diener, Tay, & Myers, 2011). The extent to which this accounts for the stronger effects found in later adolescence is largely speculative, and would need to be examined more closely. It would be useful to explore more closely the nature of these findings, for instance by comparing the reliance on religious coping between early and late adolescence.

Although the differences between groups were consistent over time, the influence of parental support was found to become more important. That is, parental support accounted for all differences between groups in grades 10 and 11. Based on the elevated parental support found at in study 1, and the consistent finding that

religious youth tend to have close relations with their families (Smith, 2003), it was expected that believers would continue to report high levels of parental support over time. It was not expected however, that parental support would account for all differences between groups. This finding does not necessarily negate suggestions that belief in God can be an important factor in psychological health. On the contrary, close parent-child relations may mean that young people are more likely to rely on religious attributions. Although the study was not able to account for parental religiousness, it is plausible that participants' parents were more religious than average, given that they sent their children to Catholic schools. If this is the case, it may be that shared beliefs enhance the bond between parent and child, adding a spiritual dimension to the relationship (Mahoney et al., 2013). Conversely, the irreligious participants in the sample may have more difficult relations with their parents, because of the incongruence in beliefs. This however cannot be assumed, and it may be the case that irreligious parents send their children to Catholic schools with the belief that they will receive a better education. Catholic education in Australia is partially private. In addition, there is evidence to suggest that one's conception of God is related to the way one sees one's parents (Dickie et al., 1997; Hertel & Donahue, 1995; Potvin, Hoge, & Nelsen, 1976). It may be that belief in God and positive relations with one's parents facilitate improved functioning.

Although parental support accounted for all differences between groups in the last two years of the study, this does not preclude the possibility that believers relied on religious meaning, and that this accounted for the uniqueness of their profiles. It was hypothesised that a reliance on religious attributions may explain the uniqueness of believers' profiles, particularly given the uniquely high levels of subjective well-being found. Indeed, the believers' profiles had uniquely high subjective well-being

from time 1 to 4. Congruence in parent-child religious beliefs may mean that religious adolescents are more likely to rely on religious meaning.

### 5.1.3 Study 3

Study 3 adopted an innovative longitudinal approach to the study of adolescent religious sentiment. The primary aim was to identify individual differences in the trajectories of religious values through the use of growth mixture modelling. A number of theoretical approaches have assumed that religious development occurs in universal, discrete stages (e.g., Fowler, 1981; Oser & Gmünder, 1991). In addition, most longitudinal work is based upon methods such as correlation and regression, which rely on mean scores. Both theory and research therefore, assume a degree of homogeneity in religious development. The advantage of the growth mixture approach however, is that it identifies differing patterns of development within the data; for instance, there may be clusters of individuals who have a similar level of religiousness at time 1, who then decrease at a similar rate. In contrast, there may be a cluster of individuals who maintain a high level of religiousness over four years.

In identifying unique trajectories, this study has been able to examine considerable variance in religious values. By accounting for variance in religious change, one can more accurately investigate factors that influence development, and associated consequences. This study, therefore, included gender and parental support as time 1 covariates, to examine whether these factors predict individual differences in religious development. The impact of these trajectories on psychological outcomes in late adolescence was also examined.

The four trajectories of religious values identified over the four waves were Low (average decline) ( $n = 464$ , 23.2%), Average ( $n = 633$ , 31.6%), High (steep decline) ( $n = 624$ , 31%), and Low (stable) ( $n = 279$ , 14%). As with existing research

(e.g., King et al., 1997) mean religious values for the sample were found to decline from time 1 (mean = 4.55, SD = 1.77) to time 4 (mean = 3.97, SD = 1.94), however, the diversity of trajectories highlights the importance of utilising a person-centred approach where possible. Variable centred approaches to understanding religiousness may not accurately reflect the diversity of religious belief. Other studies have adopted person-centred approaches, and have found evidence of increasing religiousness (Eisenberg et al., 2011; Smith & Snell, 2009), however both of these were conducted in countries more religious than Australia (Italy and USA respectively). The failure to find evidence of increasing religious values may be related to the generally low religious values amongst Australians (ABS, 2013). Further, it appears as though young Australians are driving the move away from religion. In such a culture, it is perhaps unsurprising to not find evidence of increasing religious values.

This study identified parental support and gender as predictors of religious trajectories. Relative to the Average class, increased parental support predicted an increased likelihood of being in the High (steep decline) class, and decreased likelihood of being in the two classes with low religious values. This finding is in line with studies 1 and 2, which found consistently low ratings of parental support amongst those who believe in God. It may be the case that early parental support is related to the development of one's religious values. This is in line with the consistently high parental support found in study 2. Positive relations with one's parents are likely to be related to a favourable view of God. Further research with the same sample will examine this further, by examining whether the parents of believers, agnostics, and atheists differ in parenting style. Although the present research has found consistent differences in parental support, it may also be the case that the parents of participants differ in terms of authoritarianism. In the same way that belief

in God may be a proxy for the support of one's parents, so too may antipathy or indifference towards God reflect similar feelings for one's parents, or indeed authority figures in general. This could also explain why both atheists and agnostics reported feeling less supported by teachers, than did believers.

Although females have traditionally been thought to be more inclined towards religiousness than males, differences in trajectories revealed a more complex picture. Relative to the Average class, females were more likely than males to be in the class with highest religious values, but also in the class with low, declining religious values. There are multiple explanations of gender differences in religiousness, with some suggesting that females are socialised into being more submissive, an attitude that may provide a suitable foundation for the development of religious values (Collett & Lizardo, 2009). Males also tend to be more impulsive, and may be more comfortable in the uncertainty associated with non-belief. This could explain why males were more likely to be in the class with low religious values from grade 8. Females may feel more pressure towards religion than males.

Similarly, this could also explain why those in the Low (stable) class fared better in terms of psychological outcomes than did those in the Low (declining) class. With members of the latter class more likely to be female, they may also struggle more with the decline of their faith. Indeed, it could also account for the finding of lower subjective well-being and hope amongst atheist females found in studies 1 and 2. If this decline is also dissonant with the views of the family, it could also explain why female atheists reported feeling less supported by their parents in grade 8.

Certainly the stability of belief is an important factor, considering that those in the Low (stable) class tended to have a higher likelihood of being in the top quartile of distal outcome variables, than those in the Low (decline) class. Certainly those in the

highest class were most likely to have improved scores on all distal outcomes (hope, psychological well-being, and self-esteem) at time 4, but findings suggest that the trajectory is an important factor. Anything above the average religiousness of the group only appears to be related to slight advantages. However, those with low religious values may fare better if their values are low from early adolescence, rather than declining. The loss of faith experienced by those in the Low (average decline) group may be quite distressing, due to both the shift in worldview, and the distance from a fundamental set of values.

## **5.2 Limitations and suggestions for future research**

This thesis extends previous work by highlighting the ways in which belief in God is related to differences in patterns of psychological adjustment. In addition, it was clear that the relations between religiousness and psychological adjustment are likely to differ across adolescence. Further, in identifying the importance of parental support, as well as multiple trajectories of religious development, it is apparent that relations between religious variables and psychological outcomes are complex and require further investigation. There are of course, general limitations to this research. Studies 1 and 2 provided a broad overview of differences in adjustment associated with differences in belief, but it is important to acknowledge that both studies were cross-sectional and therefore unable to establish causation. It is possible that young people with stronger mental health are attracted to religion. This seems plausible given that the believers in the sample had other strengths associated with improved functioning, such as increased parental support at all four waves. The strength of these studies however, is that they identify broad differences that future research can more closely examine.

None of the studies contained within this thesis indicated unequivocally that belief in God was related to improved psychological functioning. Results need to be interpreted with a number of caveats. Despite expectations, parenting became more important in later years, and with the exception of affective empathy, all between-groups differences in grades 10 and 11 were accounted for by parental support. This does not necessarily imply that religion is not an important factor in the psychology of some adolescents, but rather that certain aspects of religiousness may not be as independently influential as parental support. It was thus a limitation of this thesis, to have not have included further measures of religiousness. It would be useful for instance, to examine the extent to which members of different classes in study 3 utilised religious coping. On a similar note, it should be stressed that although the measure of religious values used in study 3 has been used in multiple studies outside of the present research (Ciarrochi & Heaven, 2012; Heaven & Ciarrochi, 2007; Huuskes et al., 2013), the items are reasonably broad. Future studies could attempt to replicate the findings of study 3, by utilising a similar methodology but with different measures of religiousness.

Although religious belief was used as a categorical variable, it was not clear whether participants who did not believe in God, or were unsure of God's existence, actually identified as either atheists or agnostics. Study 3 attempted to circumvent this problem by accounting for individual differences in the development of religious values, but there may be differences in the ways in which individuals identify as areligious. It would therefore be useful to more closely examine the nature of irreligion amongst young people in order to see whether stronger identification with atheism predicts differences in psychological outcomes. It may be the case for instance that those who strongly identify with atheism as an ideology have a more

stable meaning system. This is at least plausible, given that those with low but stable religious values in study 3 were more likely to have improved outcomes at time 4 than those with low and declining religious values.

### **5.3 Conclusions**

This thesis addressed a number of limitations in the understanding of adolescent religious development and associated outcomes. Results indicated that belief in God during adolescence is related to differences across a broad range of variables including positive, social, and negative outcomes. Further, belief was found to be related to quite different highs and lows across these variables. This is an important finding, demonstrating that youth who believe in God may possess unique strengths, so too may those who don't believe in God struggle in key areas. To a certain extent however, these differences are likely attributable to parental support. Why atheists feel less supported by their parents than do believers, is not yet clear, however it may be related to differences in the beliefs of parents and their children. This has broad implications for understanding the potential struggles experienced by some during adolescence. Results indicated that aspects of religious sentiment may be associated with improved psychological functioning during the adolescent years, but not without caveats. Parental support was found to be an important variable in explaining religious effects, especially in late adolescence. The finding of multiple trajectories of religious values is important, because they demonstrate the complexity and variability in religious experience amongst young people. Further, it was clear from these results that changes in religious values can have implications on later well-being. In depicting the varieties of religiousness and religious change, these findings elucidate a central component of adolescent development and the complexity of its relationship with psychological functioning.



## 6 References

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