

EXPLORING THE DEVELOPMENT AND PSYCHOSOCIAL CORRELATES OF
SPIRITUALITY/RELIGIOSITY ACROSS ADOLESCENCE

by

Marie Good

A thesis
Submitted in partial fulfillment
of the requirements for the degree
Doctor of Philosophy

Department of Psychology
BROCK UNIVERSITY
St Catharines, Ontario

© Marie Good, 2011

Abstract

The goal of the four studies that comprised this dissertation was to examine how spirituality/religiosity (S/R), as both an institutional and personal phenomenon, developed over time, and how its institutional (i.e., religious activity involvement) and personal (i.e., sense of connection with the sacred) components were uniquely linked with psychosocial adjustment. In Study 1, the differential longitudinal correlates of religious service attendance, as compared to involvement in other clubs, were evaluated with a sample of adolescents ($n=1050$) who completed a survey in grades 9, 11 and 12. Religious attendance and involvement in non-religious clubs were uniquely associated with positive adjustment in terms of lower substance use and better academic marks, particularly when involvement was sustained over time. In Study 2, the direction of effects was tested for the association between religious versus non-religious activities and both substance use and academic marks. Participants ($n= 3993$) were surveyed in grades 9 through 12. Higher religious attendance (but *not* non-religious club involvement) in one grade predicted lower levels of substance use in the next grade. Higher levels of non-religious club involvement (but not religious service attendance) in one grade predicted higher academic achievement in the next grade, and higher academic achievement in one grade predicted more frequent non-religious club involvement in the next grade. The results suggest that different assets may be fostered in religious as compared to non-religious activities, and, specifically, religious activity involvement may be important for the avoidance of substance use. The goal of Study 3 was to assess the unique associations between the institutional versus personal dimensions of S/R and a wide range of domains of psychosocial adjustment (namely, intrapersonal well-being, substance use, risk attitudes, parental relationship quality, academic orientation, and club involvement), and

to examine the direction of effects in these associations. Participants ($n=756$) completed a survey in grades 11 and 12. Personal and institutional dimensions of S/R were differentially associated with adjustment, but it may only be in the domain of risk-taking (i.e., risk attitudes, substance use) that S/R may predict positive adjustment over time. Finally, in Study 4, the goal was to examine how institutional and personal aspects of S/R developed within individual adolescents. Configurations of multiple dimensions of spirituality/religiosity were identified across 2 time points with an empirical classification procedure (cluster analysis), and sample- and individual-level development in these configurations were assessed. A five cluster-solution was optimal at both grades. Clusters were identified as *aspiritual/irreligious*, *disconnected wonderers*, *high institutional and personal*, *primarily personal*, and *meditators*. With the exception of the high institutional and personal cluster, the cluster structures were stable over time. There also was significant intraindividual stability in all clusters over time; however, a significant proportion of individuals classified as high institutional and personal in Grade 11 moved into the primarily personal cluster in Grade 12. This program of research represented an important step towards addressing some of the limitations within the body of literature; namely, the uniqueness of religious activity involvement as a structured club, the differential link between institutional versus personal S/R and psychosocial adjustment, the direction of effects in the associations between institutional versus personal S/R and adjustment, and the way in which different dimensions of S/R may be configured and develop within individual adolescents over time.

Acknowledgements

There are so many people who have made it possible for me to complete this work, and my words will be woefully inadequate in expressing just how thankful I am to everyone! First of all, I would like to express my deep gratitude to my advisor, Dr. Teena Willoughby. Teena, thank you for helping me to realize my potential as a researcher, and for encouraging me to develop my research expertise in spirituality and religion. Thank you for being such a kind and dedicated mentor - for sharing your knowledge, for being so generous with your time, and for encouraging me to keep going when things get tough. Thank you for teaching me about what it really means to be an excellent researcher and teacher - I have been extremely fortunate to have you as a role model. I would also like to thank my committee members, Dr. Linda Rose-Krasnor and Dr. Tanya Martini for their valuable input, encouragement, and willingness to be flexible with all my different projects! I truly appreciate their contributions to this dissertation. I am extremely grateful for the help of Dr. Michael Busseri and Dr. Jan Frijters, who provided essential assistance for many of the statistical analyses in this project.

My family and friends have been invaluable source of support during the past five years. My wonderful parents, Ann and Neil Bruton, have been my greatest cheering section. Thank you, mom and dad, for encouraging me to follow my dreams, for being there for me in good times and bad, and for helping me to keep my perspective about what is truly important in life. Thank you to my grandparents, Vince and Phyllis Massey, who have always encouraged me to succeed and inspired me to go as far as I could in my education. I would also like to thank my parents-in-law, Merle and Rene Good, for being supportive of my work, for understanding when I had to miss family events, and for

helping so much with housekeeping and gardening over the years! I am also fortunate to have so many great friends who have supported me as I completed my dissertation. In particular, my St. Catharines (Lindsay, Christina, Jamie, Sarah, Laura, and Allison) and Stratford (Krista and Hayley) ladies have made important contributions to my research by providing much-needed breaks, listening to me whine (and, more importantly, serving me wine), and being genuinely interested in what I have been doing all these years (or at least pretending to be interested!) I would also like to thank my labmates, Malinda, Chloe, Paul, Royette, Andrea, and Adrian, for making it truly enjoyable to come into the lab every day (and many nights!)

And, finally, I've saved the most important person for last. Words cannot express how grateful I am to have my husband, Dan Good, in my life. Dan, thank you for being so amazing. Thank you for all the cleaning and cooking you did when I was at school or locked away in the office, for making me countless cups of tea and coffee, for helping me to keep my perspective, and for having a belief in my abilities that borders on delusional! I know I couldn't have accomplished what I have without your support – this is for you.

Table of Contents

List of Tables.....	ix
List of Figures.....	x
Chapter 1: General Introduction.....	1
Chapter 2: Study 1: Just another club? The distinctiveness of the relation between religious service attendance and adolescent psychosocial adjustment.....	21
Chapter 3: Study 2: Evaluating the direction of effects in the relation between religious versus non-religious activities, academic success, and substance use.....	70
Chapter 4: Study 3: Institutional and personal spirituality/religiosity and psychosocial adjustment in adolescence: Within- and across-time associations.....	103
Chapter 5: Study 4: Stability and change in adolescent spirituality/religiosity: A person-centred approach.....	143
Chapter 6: General Discussion.....	176
References.....	197
Appendix A: Cohorts.....	227
Appendix B: Ethics Clearance Form.....	228
Appendix C: Consent Form.....	229
Appendix D: Measures.....	231
1. Spirituality/religiosity	231
a. Religious service attendance.....	231
b. Other religious/spiritual activities.....	231
c. Prayer.....	231
d. Meditation.....	231

e. Wondering about spiritual issues.....	231
f. Spiritual Transcendence Index.....	232
2. Clubs	232
3. Intrapersonal well-being.....	232
a. Depression.....	232
b. Social anxiety.....	233
c. Daily hassles.....	234
d. Self-esteem.....	234
e. Satisfaction with life.....	235
4. Substance use.....	235
a. Alcohol – frequency.....	235
b. Alcohol – quantity.....	235
c. Smoking.....	235
d. Marijuana	235
5. Risk attitudes.....	235
6. Parental relationship.....	236
a. Mother.....	236
b. Father.....	236
7. Parental control.....	237
8. Friendship quality.....	237
9. Academics.....	238
a. Marks.....	238
b. Importance of doing well in school.....	238

c. Educational aspirations.....	238
10. Task orientation temperament.....	238
11. Attitudinal tolerance of deviance.....	238
12. Friends' tolerance of substance use.....	239
13. Friends attitudes towards academic success.....	239

LIST OF TABLES

Table 1.1. Description of measures.....	39
Table 1.2. Results for full models.....	49
Table 1.3. Results for model with sustained religious service and clubs variables.....	59
Table 2.1. Means and standard deviations of study measures.....	85
Table 2.2. Correlations among main study measures.....	89
Table 3.1. Means and standard deviations of study measures.....	120
Table 3.2. Correlations between study measures.....	121
Table 3.3. Results from within-time regression analyses.....	128
Table 4.1. Intercorrelations, means, and standard deviations.....	156
Table 4.2. Results from estimated cluster solutions: Variance, cluster homogeneity, and replicability.....	159
Table 4.3. Cluster descriptives by grade.....	161
Table 4.4. Stability and change in cluster membership across grade.....	165

LIST OF FIGURES

Figure 1.1. Prototypical growth plot illustrating the time-varying relation between religious service attendance and intrapersonal well-being.....	51
Figure 1.2. Prototypical growth plot illustrating the time-varying relation between religious service attendance and quality of relationship with parents.....	53
Figure 2.1a Full Model with All Estimated Cross-Lagged Paths.....	91
Figure 2.1b. Significant Cross-Lagged Paths Prior to Addition of Covariates.....	91
Figure 2.1c. Significant Cross-Lagged Paths After Addition of Control Variables...	91
Figure 4.1. Unstandardized cluster centroids at grade 11 and grade 12 for the five-cluster solution.	162

Exploring the Development and Psychosocial Correlates of Spirituality/Religiosity Across Adolescence

Chapter 1: General Introduction

Overview

Although founders in the field of psychology such as William James (1902) and G. Stanley Hall (1904) regarded spirituality/religiosity (S/R) as an important domain of life that could exert a powerful influence on individuals' thoughts, attitudes, and behaviors, research on S/R was scarce throughout most of the twentieth century (Beit-Hallahmi, 1974; Roehlkepartain, Benson, King, & Wagener, 2006), particularly within the area of developmental psychology (Roehlkepartain et al., 2006). In the past 20 years, however, there has been a resurgence of interest in the psychology of religion, and the empirical study of S/R by developmental psychologists has correspondingly increased (Roehlkepartain et al., 2006). Much of this new movement of research on S/R among developmentalists has focused on adolescent populations, which is perhaps not surprising, since, from very early work (e.g., James, 1902; Starbuck, 1899), to more recent articles (e.g., Alcorta, 2006; Good & Willoughby, 2008), researchers have suggested that adolescence may be a particularly important period of the lifespan with regard to the formation of spiritual and religious beliefs and behaviors.

The recent increase in research on S/R in adolescence also may be due to the attention that the topic has received within the Positive Youth Development (PYD) theory, which has come to the foreground of developmental psychology in the past 10 years (see Lerner, Phelps, Forman, & Bowers, 2009). In this framework, where priority is placed on understanding and promoting positive developmental features, S/R has been

studied as a factor that may promote thriving among adolescents (e.g., Dowling, Gestsdottir, Anderson, von Eye, & Lerner, 2004).

It has been suggested that both the institutional- and personal-level features of S/R may confer unique benefits to adolescents that contribute to positive development (King, 2003). At the institutional level, involvement in religious organizations and activities offers assets such the presentation of a moral worldview or ideology, opportunities for the development of positive peer and intergenerational relationships, and the building of social capital (e.g., King, 2003; Smith, 2003a). At the personal level, feeling a sense of connection to the sacred or a higher power may promote positive emotions such as peace, gratitude, purpose, self-transcendence, and hope (e.g., Hart, 2006; Lambert, Finchman, Braithwaite, Graham, & Beach, 2009). Both institutional and personal forms of S/R, therefore, should be associated with more positive psychosocial adjustment. Indeed, recent research has demonstrated that there is a link between various aspects of S/R and greater intrapersonal well-being (i.e., self-esteem, life satisfaction, Kelley & Miller, 2007; Sallquist, Eisenberg, French, Purwono, & Suryanti, 2010), lower problem behaviour (e.g., substance use, delinquency, Good & Willoughby, In Press; Petts, 2009) and depression (e.g., Pearce, Little, & Perez, 2003), greater academic achievement (Glanville, Sikkink, & Hernandez, 2008; Muller & Ellison, 2001), and better interpersonal relationships (e.g., Desrosiers, Kelley, & Miller, 2010)¹.

¹ Although the perspective taken in the present dissertation is that S/R may promote positive adjustment in some areas of life, it is important to note several caveats of this assumption. First, third variable effects have seldom been studied within this body of literature. That is, the link between S/R and various indices of adjustment may be due to their common associations with other unmeasured, or third, variables. For instance, having a temperament characterized by greater self-control may be the factor that “drives” individuals to engage in more positive behaviors and to become (or remain) committed to S/R (McCullough & Willoughby, 2009; Regnerus & Smith, 2005). Second, S/R is not *exclusively* associated with *positive* adjustment. Rather, S/R has also been linked with (and thus may promote) some forms of maladjustment. For example, religiosity (in particular, religious fundamentalism) has been linked to greater

Despite the considerable progress that has been made in the past decade, there is still much that is not known about the role of S/R in the lives of adolescents. First, it is not understood if S/R in its institutional form (i.e., involvement in religious activities) is associated with unique benefits over and above what might be provided in any other structured club in which adolescents participate (e.g., community activities, school clubs). Second, the unique associations between *personal*, as compared to *institutional* forms of S/R and psychosocial adjustment are not well-understood. Third, longitudinal research on this topic is scarce, and thus little is known about the direction of effects in the association between institutional and/or personal S/R and psychosocial adjustment (i.e., whether S/R predicts subsequent positive adjustment, or, conversely, positive adjustment domains predict subsequent S/R), or the relation between sustained - as compared to sporadic - involvement in religious/spiritual activities and various domains of adjustment. Finally, related to the scarcity of longitudinal research, almost nothing is known about how the institutional and personal forms of S/R change and/or remain stable in individual adolescents over time.

The aim of the present dissertation was to address these gaps in the literature. Broadly speaking, the overarching goal was to examine how the domain of spirituality/religiosity (S/R), as both an institutional and personal phenomenon, develops (i.e., changes and/or remains stable) over time, and how its institutional and personal components are uniquely linked with psychosocial adjustment across adolescence. The

prejudice/intolerance towards groups that violate fundamentalist religious teachings (e.g., gays and lesbians; Brandt & Reyna, 2010; Hunsberger & Jackson, 2005), and greater support for religion-sanctioned violence (e.g., suicide attacks, see Ginges, Hansen, & Norenzayan, 2009). Such variables (e.g., prejudice, intolerance) were not assessed in the studies that comprise this dissertation. In a limited number of studies, S/R has been linked with lower well-being in terms of greater guilt (Albertsen, O'Connor, & Berry, 2006) and less self-esteem (Kox et al., 1991). However, there is more evidence supporting a positive relation between well-being and S/R (Koenig, McCullough, & Larson, 2001; Smith, McCullough, & Poll, 2003).

purpose of the general introduction that follows is to orient the reader to the purpose, importance, and contribution of the four studies that comprise this dissertation by providing a brief overview of the following: (a) definitional issues in the study of S/R; (b) why adolescence is a particularly important period of the lifespan in which to study S/R; (c) the importance of considering how S/R is uniquely associated with psychosocial adjustment in terms of its function as an institutional- (i.e., structured activity) and personal-level (i.e., connection with the sacred) phenomenon, and why it is critical to examine these associations over time with longitudinal data; and (d) the importance of studying how institutional and personal-level aspects of S/R change and remain stable over time within individual adolescents.

Definitional Issues

It is first necessary to address issues related to the definition(s) of spirituality/religiosity, as it is a hotly debated topic and a source of much contention amongst researchers (Zinnbauer et al., 1997). Spirituality and religiosity are often thought to be independent constructs. Spirituality is typically characterized as more private thoughts or behaviors involved in the search for the sacred or a higher power that are not necessarily associated with formal religion (i.e., prayer, meditation, spiritual beliefs), whereas religiosity is defined as behavior associated with organized religion, such as religious service attendance. Despite these differences, however, religiosity and spirituality are typically moderately to strongly correlated (e.g., Kelley & Miller, 2007; McCullough & Willoughby, 2009), and both are associated with positive adjustment (e.g., Rew & Wong, 2006). Treating spirituality and religiosity as completely separate constructs also may fail to accurately reflect how religion and spirituality are experienced

in the lives of individuals (Zinnbauer, 1997; Zinnbauer & Pargament, 2005). For instance, to characterize S/R as solely institutional is to disregard the fact that a fundamental objective of every major religious institution is to facilitate personal belief in, and experiences with, the sacred. Similarly, to define S/R as completely individual and experience-based is to ignore the fact that spiritual experiences often happen within the context of organized religion (e.g., Hill et al., 2000; Zinnbauer & Pargament, 2005).

Rather than define spirituality and religiosity as separate constructs, therefore, it may be more useful to conceptualize a single construct of spirituality/religiosity (S/R) encompassing multiple dimensions that include both institutional and non-institutional (i.e., personal) forms of connection with the sacred. From this perspective, then, S/R could be defined as *feelings and behaviors involving the search for the sacred, occurring both within and outside of institutionalized religion*. Following Cornwall, Albrecht, Cunningham, and Pitcher (1986), S/R would thus include two modes (institutional vs. personal) and two components (behavioral vs. affective) – the cross-classification of which results in four dimensions: institutional behavior (e.g., involvement in religious activities), institutional affect (e.g., feelings or attitudes about one's religious institution), personal behavior (e.g., solitary prayer or meditation), and personal affect (e.g., feelings/attitudes towards one's personal connection with the sacred/divine). Together, these four dimensions comprise a multidimensional S/R construct.

In this dissertation, the focus of studies 1 and 2 is on the institutional behavior dimension (specifically, attendance at religious services); namely, these two studies assess the ways in which this particular aspect of S/R may (or may not) be uniquely associated with positive psychosocial adjustment over and above what may be conferred

by participation in other forms of structured activities. In study 3, the dimensional focus is broadened to incorporate personal forms of S/R, in order to establish whether there are unique (and/or joint) associations between personal versus institutional S/R and various domains of psychosocial adjustment. In study four, the focus shifts from a concern with how institutional and/or personal S/R are associated with psychosocial adjustment, to a more descriptive exploration of each of the four dimensions, and how they may develop (i.e., change and/or remain stable) over time within individual adolescents.

Why Study S/R in Adolescence?

Due to many of the normative developmental changes that occur the second decade of life, adolescence may be a particularly important period of the lifespan in which to study the development of personal and institutional forms of spiritual/religious beliefs and behaviors, as well as their associations with psychosocial adjustment. It is possible that the unique social, cognitive, and neurological development that takes place during adolescence may make individuals in this stage of life particularly likely to: (a) explore religious ideals and philosophies; (b) experience a spiritual or religious conversion or commitment; and (c) be impacted by involvement in religious/spiritual groups.

Adolescence and the exploration of S/R. As individuals enter adolescence, their aptitude for abstract thought increases. The capability to think abstractly allows individuals to consider and generate hypotheses about unfamiliar (as opposed to real, familiar, or concrete) situations and ideas (e.g., Inhelder & Piaget, 1958; Overton, Ward, Noveck, Black, & O'Brien, 1987). This capacity may enable them to consider different ideas about spiritual/religious concepts, and adolescents may find themselves asking

questions about, for instance, whether a higher power exists or what happens after death. Furthermore, because adolescents are better able than children to engage in deductive reasoning (e.g., Chapell & Overton, 1998; Ward & Overton, 1990), they may have a greater capacity to test systematically their hypotheses about abstract spiritual or religious questions and to draw conclusions on the basis of what they find.

Another key cognitive capacity that emerges in adolescence is metacognitive orientation, which is the ability to reflect on and evaluate one's own ideas and the ideas presented by other people (Moshman, 1998). In a review of the research on metacognitive abilities, Byrnes (2003) states that while children tend to assume that all knowledge is certain and objective, adolescents are able to consider multiple perspectives, and to evaluate the validity of different perspectives using evidence or reasoning-based methods. Therefore, adolescents have at their disposal a strengthened cognitive ability to evaluate critically the sources from which they have received knowledge about spiritual matters. They may begin to question, for example, whether there is adequate evidence that the holy books of their religions are actually inspired by God or a higher power.

Furthermore, identity formation - which is a crucial component of intrapersonal development in adolescence (e.g., Erikson, 1968) - may also facilitate spiritual/religious exploration and commitments. Hunsberger, Pratt, and Pancer (2001), for instance, found that individuals who reported greater identity exploration also tended to report greater doubt/questioning about religious teachings, such as whether the Bible was really the "Word of God". Commitment to a set of spiritual/religious beliefs (whether they be theist, atheist, or agnostic) may be a key means of identity commitments (Kroger, 1996;

Schwartz, 2001), as adherence to a spiritual/religious belief system typically involves the adoption of a particular worldview and set of ideologies concerning work, love, life, and death. Therefore, not only might the search for the self precipitate questioning in adolescents about what they have been taught regarding S/R, but it could also facilitate the adoption of identity commitments.

Adolescence and spiritual/religious conversions and commitments. One outcome of religious and spiritual exploration during adolescence may be a conversion or commitment experience (Erikson, 1964). There is a general consensus that the average timing of religious commitment or conversion tends to be in adolescence (e.g., Donelson, 1999; Spika, Hood, Hunsberger, & Gorsuch, 2003). Recent research indicates that commitment/conversion experiences are quite common among U.S. adolescents (although comparable statistics are not available for Canadian teens). Using data from a nationally representative survey (the National Study of Youth and Religion) that employed a random digit-dial telephone survey of U.S. households, Smith (2005) reported that 55% of all adolescents reported having “made a personal commitment to live life for God.” Even when considering only those teenagers who reported they were “not religious,” 13% said they had made a personal commitment to live life for God. These statistics suggest that spiritual/religious commitment experiences happen for large numbers of teenagers today, even for those who are not affiliated with a religious group.

Zinnbauer and Pargament (1998) define conversion as a gradual or sudden process where a change involving the sacred occurs in an individual. Spiritual/religious experiences such as conversion may be associated with pleasurable psychological feelings such as joy and euphoria, as well as positive physiological and neurological

emotional states (Anastasi & Newberg; 2008; Newberg & d'Aquili, 2000; Newberg & Newberg, 2005). For instance, results from studies using positron emission tomography (PET) have implied that spiritual experiences may be correlated with distinct neural patterns, such as increased blood flow in the limbic structure (which is associated with emotion) (Persinger, 1993; 1997).

It is possible that the nature of conversion experiences may interact with the normative emotional and cognitive characteristics of adolescence in such a way that may make adolescents particularly susceptible to experiencing a spiritual commitment or conversion. Namely, adolescence is a period of heightened emotions; teenagers tend to have higher highs and lower lows than do children or adults (Dahl, 2004). Dahl stated that, while adolescents are in possession of this set of “turbo-charged emotions” (p.17), they often do not possess the cognitive maturity to fully regulate these emotions. Researchers have suggested recently that the prefrontal cortex, which controls self-regulatory capacities such as impulse control, planning, and foresight, may not be fully mature until young adulthood (Giedd, 2004; Hooper, Luciana, Conklin, & Yarger, 2004; Luciana, 2006). Galvan et al. (2006), for instance, presented data showing that areas of the brain involved in planning and control developed later than areas of the brain that are sensitive to immediate rewards. In short, there is evidence to suggest that adolescents, on average, are less skilled than adults at logically considering consequences before engaging in behavior. The choices that adolescents make, consequently, may often be guided by emotions in the moment, rather than by calculated decision-making processes (Steinberg, 2010).

One result of this interaction between high-intensity emotions and relatively immature cognitive abilities may be sensitivity to opportunities for conversion. Spika et al. (2003) stated that conversions may frequently follow a “behavior first, then belief” sequence of change. An adolescent who, in the moment, senses an intense love and affection from or “oneness” with a higher power may act on these feelings and make a religious or spiritual commitment without first considering the ramifications of such a commitment (for instance, sacrificing sleeping in on Sunday mornings to attend worship services, or giving up pork or alcohol or extramarital sex). An adult, however, may be much more likely to look past the emotion of the moment and use foresight and planning in considering the long-term implications of a commitment. Although empirical evidence for this proposition is limited, a study using data from four evangelistic crusades (Newton & Mann, 1980) found that the majority (i.e., 58-72%) of individuals who made a religious commitment at these crusades were under the age of 26. While Newton and Mann’s data did not allow them to determine the overall proportion of young people attending the crusades, Wimberley, Hood, Lipsey, Clelland, and Hay (1975) reported that youth (i.e., 19 years of age or younger) were disproportionately represented among individuals who made a commitment at a large religious crusade (i.e., 73% of individuals who made a commitment were 19 years or younger, but this cohort comprised only 31% of the attendees). These studies offer some behavioral evidence that adolescents may be more likely than adults to respond to opportunities to make a religious commitment. Due to their desire to seek out emotionally intense experiences, adolescents may also be more likely than younger or older individuals to become involved in other (i.e., non-conversion) spiritual/religious experiences (i.e., group ritual, individual prayer,

meditation) that are associated with strong feelings, such as awe, peace, tranquility, and ecstasy (Newberg & Newberg, 2005).

Adolescence and participation in spiritual/religious groups. An adolescent's spiritual/religious commitments and/or search for the sacred may be significantly enhanced and clarified by participation in a religious/spiritual group or community. When they are effective, spiritual/religious groups provide youth with unique opportunities to make sense of and "live out" their personal search for the sacred, through the development of relationships with peers and adults with whom they can engage in conversations about spiritual/religious issues (King & Furrow, 2004; Schwartz, Bukowski, & Aoki, 2006), the observation and emulation of spiritual role models (Cook, 2000; Good & Willoughby, 2007), the explicit teaching of spiritual/religious and/or moral principles (Smith, 2003a), and the provision of opportunities to engage in faith-based service projects (Youniss, McLellan, Su, & Yates, 1999). Furthermore, spiritual/religious groups may be considered optimal environments within which adolescents can look outward to discover their place in society – which, according to Erikson (1965), is a key component of successful identity formation. For instance, it has been hypothesized that involvement in religious groups may provide adolescents with a historical connection that facilitates the union of individual identity and social history (Markstrom-Adams, Hofstra, & Dougher, 1994). Individuals who hold the same spiritual/religious beliefs share a common past, present, and future, and the kinship that is experienced through such a communal vision may be an extremely positive force in the lives of adolescents searching for a meaningful identity (Youniss et al., 1999).

Finally, spiritual/religious groups may be important for providing adolescents with a sense of social affirmation of individual values/commitments, once they have been made. Erikson (1965) theorized that it is critically important for the development of a healthy identity for young people to sense a “match” between one’s chosen commitments and the important social contexts in their lives. Spiritual/religious groups provide built-in communities where adolescents (i.e., those who have chosen to follow a specific set of spiritual/religious beliefs) should feel supported in their identity commitments and values.

The functions that spiritual/religious groups offer may be particularly important during adolescence, as individuals explore identity issues related to spirituality and religion. In this sense, spiritual/religious communities could be considered optimal environments for the facilitation of identity exploration and commitments.

The Present Dissertation: Addressing Major Gaps in the Literature

Overall, adolescence may be a critically important period of the lifespan for the development of S/R and the potential for both personal and institutional forms of S/R to impact upon the lives of individuals. However, there is much that remains unknown about the role of S/R in this stage of life (e.g., King & Roeser, 2009). In the sections that follow, I present an overview of the gaps in the literature that will be addressed by the studies that comprise this dissertation. I focus on two gaps in particular, namely, the lack of knowledge about the unique associations between psychosocial adjustment and personal and institutional S/R, and the dearth of longitudinal research.

The uniqueness of the associations between psychosocial adjustment and institutional and personal S/R. Some of the most significant limitations in the current

body of literature stem from the failure of researchers to consider properly how institutional and personal S/R may be *uniquely* associated with various domains of psychosocial adjustment. That is, most studies have not examined whether the associations between both dimensions of S/R and adjustment may be explained by the variance that institutional and/or personal S/R share with other (i.e., “third”) variables and/or with each other.

A particularly notable way in which this limitation has been manifested is in the disregard of the shared variance between institutional S/R and involvement in other clubs. For the purpose of this dissertation, a “club” is considered as synonymous with “organized” or “structured” activity [i.e., a group in which youth participate that meets regularly outside of school hours (Gardner, Roth, & Brooks-Gunn, 2008)]. Like religious activities, structured non-religious activities may be considered contexts where positive adjustment may be fostered in terms of identity development, social capital, and healthy relationships with peers and adults (e.g., Larson, Hansen, & Moneta, 2006). Importantly, although adolescents who regularly attend religious services are overrepresented among individuals who are highly involved in structured, prosocial clubs (e.g., Bartko & Eccles, 2003; Youniss, Yates, & Su, 1997; Youniss, McLellan, Yates, & Su, 1999), and the correlates of religious activity involvement have been found to be very similar to the correlates of involvement in other structured clubs (e.g., Barber, Eccles, & Stone, 2001; Mahoney, 2000; Regnerus & Elder, 2003; Ryan, Rigby, & King, 1993), the unique associations between psychosocial adjustment and religious activity involvement have not been examined. Instead, faith-based activities have been: (a) studied as completely separate from other activities in the “religion” literature; or (b) subsumed under the

umbrella of “community,” “structured,” “prosocial,” or “service/civic” club categories in the “activities” literature (e.g., Darling, 2005). It is possible, therefore, that some of the studies that have examined the relation between involvement in religious activities and positive psychosocial adjustment may have been partially confounded by the failure to simultaneously include involvement in structured, prosocial clubs in their models.

The first and second studies that comprise this dissertation examine this issue by simultaneously assessing the unique associations between both variables – religious and non-religious activity involvement – and a wide range of psychosocial adjustment. By examining the differential associations of religious as compared to non-religious activities, we will be able to understand more about the *uniqueness* of institutional S/R as a context for positive adolescent development.

A second way in which knowledge is limited with regard to the unique way in which the various forms of S/R may play a role in positive adolescent development, is in the differential associations between institutional versus personal S/R and various forms of psychosocial adjustment. Although, as discussed above, institutional and personal forms of S/R are related, institutional forms of S/R may offer a number of different assets and experiences than personal forms of S/R. Namely, religious activity involvement is believed to facilitate interpersonal benefits associated with being part of a community, such as social capital, youth-adult relationships, social support and increased network closure (e.g., Barber, Eccles, & Stone, 2001; Larson, Hansen, & Moneta, 2006; Smith, 2003a), while behaviors involving a personal search for the sacred may promote more intrapersonal-level assets, such as feelings of peace, hope, wonder, gratitude, self-transcendence, and connection with a higher power (e.g., Hart, 2006; Jankowski &

Sandage, 2010; Lambert, Fincham, Braithwaite, Graham, & Beach, 2009). It may be, therefore, that institutional and personal forms of S/R are differentially associated with psychosocial adjustment. There may also be *joint effects* of these two dimensions, as the impact that a personal search for the sacred has on an individual's life may be enhanced by involvement in a religious/spiritual community (King, 2008), and vice versa. However, the unique and joint associations of the institutional and personal dimensions of S/R with multiple domains of psychosocial adjustment are not well understood.

This limitation is an important one, as statistics from nationally-representative surveys in Canada, Europe, and the U.S. indicate that for many adolescents, the search for the sacred may be pursued outside of religious organizations and traditions. Bibby (2009), for example, reported that although only 13% of Canadian high school students said that religious involvement was very important to them, over 75% reported that they often wondered about "ultimate questions" (such as what happens after death and the purpose of life), 66% believed that God or a higher power cared about them personally, and 54% believed they had "spiritual needs". Similarly, results from a study of 15 to 24 year-olds in 15 European countries (as reported in Lippman & Keith, 2006) indicated that 42.6% of participants considered themselves "non-practicing believers" (also see Smith & Denton, 2005). Given this current spiritual/religious climate in modern Western nations, it becomes even more important to understand the unique role of personal, as compared to institutional S/R, in adolescent development. The goal of the third study that comprises this dissertation is to explore this issue explicitly.

Longitudinal research in the study of adolescent S/R. Another major limitation encompassing the body of literature on adolescent S/R in general is the lack of

longitudinal studies. Because it is a relatively new area of interest for developmental psychologists, very few longitudinal or large multi-cohort cross-sectional studies on the topic have been conducted. As King and Roeser (2009) stated in the first-ever chapter on religion and spirituality to appear in the *Handbook of Adolescent Psychology*, “There is a great need for longitudinal research...Understanding the developmental precursors and sequelae of various religious/spiritual identities and behaviors will be critical for untangling patterns of influence and pathways of continuity and change...Some of the most comprehensive studies remain cross-sectional in nature.” (p. 468).

There are four issues regarding the study of S/R in adolescence that can only be addressed using longitudinal studies. First, it is only by surveying adolescents at multiple time points that age-specific associations between S/R and adjustment can be understood. Second, longitudinal data allows for the exploration of whether the strength of the association between S/R and adjustment is stronger when S/R beliefs and behavior are sustained over many years. These two issues are particularly important for enhancing our understanding of the unique association between religious versus non-religious activities and adjustment. Namely, one of the ways in which religious activity involvement may be unique from involvement in other clubs is in the trajectories of participation over the course of adolescence. Results from multiple studies have found that religious service attendance declines steeply during the teen years, but involvement in other clubs remains more stable (e.g., Busseri, Rose-Krasnor, Willoughby, & Chalmers 2006; Raymore, Barber, & Eccles, 2001; Smith, Denton, Faris, & Regnerus, 2002; Steinman and Zimmerman, 2004). Because decreases in attendance at religious services over the course of adolescence may be common, individuals who consistently attend religious services

throughout high school (or who regularly attend religious services in late adolescence), may differ on many levels from individuals who sustain their involvement in other extracurricular activities throughout high school (or those who engage in these activities in the later years of adolescence). The correlates of religious service attendance, therefore, may differ from the correlates of non-religious activity involvement depending on the age of the adolescent and/or the degree of sustained involvement over the course of high school. Studies one and two – in which adolescents are assessed across the entire span of high school - specifically address these issues.

Third, a critically important issue that can only be addressed by using longitudinal data is an understanding of the *direction of effects* in the associations between S/R and adjustment. This issue is important for enhancing our understanding of the unique associations between institutional and personal S/R and multiple aspects of psychosocial adjustment. When a cross-sectional association is found between S/R and some domain of adjustment, it is unclear whether that association is a function of *socialization effects* (i.e., involvement in religious groups or one's search for the sacred predicts subsequent psychosocial adjustment) or *selection effects* (i.e., psychosocial adjustment predicts adolescents' subsequent decisions regarding participation in religious groups and involvement in behaviors that facilitate a search for the sacred). Because studies in which personal and institutional S/R, as well as psychosocial adjustment are assessed at more than one wave are extremely rare, this issue remains largely unexplored. Studies two and three focus specifically on these issues, as they assess the selection and socialization hypotheses with regard to: (a) the association between institutional S/R (i.e., religious service attendance) versus non-religious structured activities and psychosocial adjustment

(study two) and; (b) the association between institutional versus personal S/R and adjustment (study three).

Finally, another limitation in the current body of literature that is directly related to the dearth of longitudinal research is an understanding of how S/R develops as a domain in its own right. In the past ten years, progress has been made in understanding S/R primarily in terms of its relations with many of the commonly-studied domains of adolescent development (i.e., health/risk behaviors, internalizing/externalizing disorders, etc; for reviews see Cotton, Zebracki, Rosenthal, Tsevat, & Drotar, 2006; Dew, Daniel, Armstrong, Goldston, Triplett, & Koenig, 2008; Rew & Wong, 2006). Much less is known, however, about spirituality and religion as domains of development *in their own right*.

The lack of attention given to S/R as a domain of development in its own right during adolescence can be illustrated in examining the focus of the developmental psychological literature on religion and spirituality. Of the 56 empirical articles published in six prominent developmental and adolescent journals (*Child Development*, *Developmental Psychology*, *International Journal of Behavioral Development*, *Journal of Adolescent Research*, *Journal of Early Adolescence*, and *Journal of Research on Adolescence*) between 1990 and December 2010 with “religio*” or “spiritual*” referenced as descriptors, 46 (85%) of those articles were concerned with S/R *only* as it related to other domains of development (i.e., mental health/adjustment, risk behavior, moral decision-making, and family relationships). Of the other seven articles, only two (4.5%) specifically explored change over time in S/R (more specifically, religiousness) during adolescence (King, Elder, & Whitbeck, 1997; Koenig, McGue, & Iacono, 2008).

Therefore, although we know about the variables with which S/R may be correlated, our comprehension of these constructs in a truly developmental sense - how they unfold independently and in tandem over time, within individuals - is limited.

This oversight is a significant one, as it represents the neglect by researchers of one of the main goals of scientific research, namely, *description* (Magnusson, 2003). It is important to have a clear understanding of the over-time descriptive properties of the phenomenon of primary interest in the present dissertation (i.e., spirituality/religiosity), as this knowledge will foster a clearer interpretation and greater understanding of the potential meaning behind the major themes that will emerge with regard to the unique prediction of psychosocial adjustment by institutional and personal S/R in studies one, two, and three. The sole purpose of study four, therefore, is to enhance our understanding of the descriptive properties of S/R in terms of individual-level stability and change in various aspects of both institutional and personal S/R. Although the majority of information regarding the development of S/R in this dissertation will be gained from study four, studies one through three also will offer some knowledge about this issue, as over-time patterns of change and stability in S/R across adolescence will be assessed and reported in the first three studies.

Summary

At the broadest level, the goal of this dissertation was to examine how the domain of S/R, as both an institutional and personal phenomenon, developed over time, and how the institutional and personal components of S/R were uniquely linked with psychosocial adjustment across adolescence. The overarching goal of studies one and two was to examine the ways in which institutional S/R (i.e., religious service attendance) may be

uniquely associated with psychosocial adjustment as compared to involvement in non-religious structured activities, and to consider unique across-time associations (i.e., age-specific effects, sustained versus sporadic effects, and directional effects) between religious versus non-religious activities and psychosocial adjustment (specifically in terms of intrapersonal well-being, substance use, parental relationship quality, academic marks, and friendship quality). The goal of Study 3 was to assess the unique and joint associations between the institutional versus personal dimensions of S/R and a wide range of domains of psychosocial adjustment (namely, intrapersonal well-being, substance use, risk attitudes, parental relationship quality, academic orientation, and club involvement), and to examine the direction of effects in these associations. Finally, in Study 4, the goal was to examine how institutional and personal aspects of S/R developed (i.e., changed and remained stable over time) within individual adolescents².

² The samples for these studies were drawn from a large longitudinal study on youth lifestyle choices, which comprised 3 cohorts. As depicted in Appendix A, cohort 1 entered high school in 2002/03 and completed the study in grades 9, 11, and 12. Cohort 2 entered high school in 2003/04 and completed the study in grades 10, 11, and 12. Cohort 3 entered high school in 2004/05 and completed the study in grades 9, 10, 11, and 12. Only cohort 1 was included in study 1. All cohorts were included in study 2. Studies 3 and 4 were comprised of participants from cohort 3 only.

Chapter 2: Just another club? The distinctiveness of the relation between religious service attendance and adolescent psychosocial adjustment

A version of this chapter has been published. Good, M., Willoughby, T., & Frijters, J. (2009). Just another club? The distinctiveness of the relation between church attendance and adolescent psychosocial adjustment. *Journal of Youth and Adolescence*, 38, 1153-1171. Used with permission.

Within the emerging Positive Youth Development (PYD) framework (e.g., Lerner, Dowling, & Anderson, 2003) where priority is placed on understanding and promoting positive developmental features, both religious service attendance and involvement in other structured, prosocial clubs may be seen as environments that foster intrapersonal and interpersonal assets (e.g., Dworkin, Larson, & Hansen, 2003; King & Furrow, 2004; Smith, 2003a). Attendance at religious services and involvement in other extracurricular clubs are common adolescent activities. Reports from nationally representative surveys have indicated that 34% percent of Canadian adolescents and 54% percent of U.S. adolescents attend religious services at least once a month (Clark, 2003; Smith, Denton, Faris, & Regnerus, 2002) while 83% percent of Canadian adolescents and 69% of U.S. adolescents report participating in at least one type of in-school or out-of-school structured activity (Eccles & Barber, 1999; Statistics Canada, 2001a). There may be important differences between these two environments, however, that have been largely overlooked within the existing literature. In the present study, we review research that points towards the usefulness of examining religious service attendance independently from other types of extracurricular club involvement. Further, we empirically evaluate the differential longitudinal correlates of religious service attendance compared to involvement in other clubs, using a sample of adolescents assessed three times between grades nine and 12.

In studies of adolescent extracurricular activities, structured, prosocial clubs such as community groups (e.g., Boys and Girls Clubs), service-focused groups (e.g., Interact), and school leadership groups (e.g., student council) have been consistently and strongly associated with positive adolescent adjustment (e.g., Bartko & Eccles, 2003). There is some evidence, however, that adolescents who regularly attend religious services may be overrepresented among those individuals who are highly involved in structured, prosocial clubs. For example, Youniss, Yates, and Su (1997) found that the more frequently students attended religious services, the more they were involved in community service activities. Students who are highly involved in community groups, school clubs, and volunteering have also reported fairly high levels of participation in religious activities (e.g., Bartko & Eccles, 2003). Furthermore, a nationally representative study of U.S. adolescents also indicated that 74% of youth who stated that religion was important to them regularly volunteered in their communities compared to 24% of nonreligious young people (Youniss, McLellan, Yates, & Su, 1999). The significant number of religious adolescents among those involved in other prosocial clubs is important to consider, as many of the correlates of religious service attendance are similar to the correlates of involvement in other clubs. Namely, religious service attendance and involvement in prosocial clubs are both associated with good mental health (e.g., Barber, Eccles, & Stone, 2001; Ryan, Rigby, & King, 1993), positive interpersonal relationships (e.g., Good & Willoughby, 2006; Mahoney, Cairns, & Farmer, 2003), academic success (e.g., Mahoney, 2000; Regnerus & Elder, 2003), and lower rates of substance use (e.g., Youniss et al. 1999).

Despite the similar correlates of religious service attendance and other clubs, as well as the potential overrepresentation of adolescents who are part of religious congregations among individuals who are engaged in prosocial clubs, religious services typically are not examined as a unique type of extracurricular club. Instead, religion-based activities have been largely subsumed under the umbrella of “community,” “structured,” “prosocial,” or “service/civic” club categories (e.g., Darling, 2005). It is possible, therefore, that the association between involvement in structured, prosocial clubs and positive psychosocial adjustment may be partially confounded by religious involvement. Alternatively, if religious service attendance and club involvement are not analyzed independently, it may be difficult to infer if religious service attendance uniquely contributes to positive adjustment over and above its function as a structured prosocial activity. Although religious services may be thought of as just another type of structured, prosocial club in many respects, religious service attendance may also offer some unique experiences that are not provided in other types of clubs.

The Uniqueness of Religious Service Attendance

Perhaps the most unique aspect of religious service attendance in comparison with other clubs is that religious congregations generally present their adherents with a moral order or worldview about the purpose of life and a set of moral directives regarding what is right and wrong (Larson, Hansen, & Moneta, 2006; Smith, 2003a). Consequently, religious services may present a unique type of motivation for avoiding common adolescent risk behaviors such as the use of illicit substances (e.g., Regnerus & Uecker, 2007). Religious teachings may also offer adolescents a unique set of coping strategies for dealing with major life stressors (Mahoney, Pendleton, & Ihrke, 2006). These coping

strategies could include the beliefs that a loving deity is in control, that evil behavior will ultimately be punished and good deeds rewarded, or that believers will be reunited after death (Smith, 2003b).

Another unique aspect of involvement in religious services in comparison to other clubs is the spiritual experiences they may provide for some adolescents. Spiritual experiences include group rituals, individual prayer, meditation, or the perception of receiving divine guidance, among others (Good & Willoughby, 2007; Newberg & Newberg, 2005). Research has indicated that these experiences are not uncommon among adolescents. Using data from a nationally-representative survey (the National Study of Youth and Religion) that employed a random digit-dial telephone survey of U.S. households, Smith and Denton (2006, p.45) found that 51% of teenagers reported “having an experience of spiritual worship that was very moving and powerful.” Moreover, 50% reported “having experienced a definite answer to prayer or specific guidance from God,” and 46% reported “having witnessed a miracle from God.” These types of experiences may represent positive, powerful turning points in the lives of youth (e.g., Good & Willoughby, 2007).

Religious services could also foster unique interpersonal experiences over and above the benefits that would be associated with participation in any kind of structured, prosocial club. For example, religious congregations are one of the few remaining communities in Western society in which adolescents participate that are not rigidly age-stratified (Smith, 2003a). While many other clubs geared towards adolescents are led by adults and thus provide young people with important extra familial social connections, intergenerational networks within religious congregations may be unique for several

reasons. First, some adolescents may view certain adults within the congregation (particularly their youth group leaders) as friends or acquaintances rather than authority figures (e.g., Good & Willoughby, 2007). Second, adolescents may also come into contact with a greater age range of individuals (i.e., children and the elderly) within religious communities than in other clubs, where leaders are typically adults in their working years.

Social network closure is another interpersonal factor that may be unique to religious attendance. Network closure occurs when an individual is embedded within a system of interconnected individuals and communities (Coleman, 1988). As an illustration, an adolescent whose parents interact regularly with the parents of his/her friends as well as his/her teachers and principals, would have a high degree of network closure. Smith (2003a) hypothesized that religious communities are ideal settings for the facilitation of network closure, because within these congregations adolescents may form relationships with many individuals (such as rabbis/ministers/imams, youth leaders, choir directors, and Sunday school teachers,) who know each other and who also may have a relationship with the adolescents' parents. Indeed, Smith (2003b) found that participation in religious congregations was associated with greater connections between parents of adolescents, their children's friends, and the parents of their children's friends. In effect, researchers have suggested that network closure may facilitate better parental monitoring and supervision (e.g., Fletcher, Newsome, Nikerson, & Bazley, 2001). Because parental monitoring and parental knowledge about their adolescents' activities is associated with less involvement in risk-taking (e.g., Fletcher, Steinberg, & Williams-Wheeler, 2004; Kerr & Stattin, 2000; Stattin & Kerr, 2000), social network closure facilitated by

religious involvement may be indirectly related to lower levels of involvement in adolescent risk behaviors such as substance use.

Network closure facilitated by involvement in religious congregations (in comparison to other clubs) may be unique during adolescence. Typically, the amount of time that children spend with their families tends to decrease during the teenage years (e.g., Larson, Richards, Moneta, Holmbeck, & Duckett, 1996). Parents who are very involved in their young children's extracurricular clubs (e.g., as a Brownie leader or sports coach), therefore, may become less involved as their children enter adolescence and become more independent (e.g., Meeus, Iedema, Maaassen, & Engels, 2005). Religious service attendance, however, is an activity from which parents may be unlikely to decrease their own involvement. Smith and Denton (2006), in fact, found that 90% of adolescents who attended religious services attended with one or both parents. Because religious services are intergenerational, therefore, parents are likely to attend along with their teenagers.

While there are clearly some unique positive experiences that religious service attendance may offer adolescents (also see Maton & Wells, 1995, for a discussion of the unique role of religious groups in promoting empowerment), it is possible that it may be also associated with some distinct negative experiences. For example, while attendance at religious services has been associated with healthy general identity exploration (e.g., examination of values, morality, purpose in life, see Larson et al., 2006), religious ideological exploration may be obstructed in congregations where adherents are encouraged to accept the tenets of their faith unquestioningly. Indeed, some studies have found that religiously-committed adolescents are less likely than their nonreligious peers

to report engaging in identity exploration and are more likely to report ideological foreclosure (e.g., Hunsberger, Pratt, & Pancer, 2001). Some researchers have also suggested that involvement in religious congregations may be associated with heightened feelings of guilt, particularly when individuals engage in activities that conflict with the moral order of their religion (e.g., Albertsen, O'Connor, & Berry, 2006).

Few studies, however, have explored the potentially unique role of religious service involvement over and above its role as another type of structured club. In a comparison of developmental experiences that youth report in several types of clubs, Larson et al. (2006) found that participants in community and service-oriented groups reported high rates of positive interpersonal experiences (positive relationships, teamwork, and social capital). In contrast, participants in faith-based groups reported high levels of positive interpersonal *and* intrapersonal experiences (initiative, emotional regulation, and identity work). Interestingly, although faith-based activities stood out as the setting in which youth reported the greatest amount of positive experiences, adolescents reported having an equal amount of negative experiences (e.g., stress, social exclusion, and negative group dynamics) during participation in faith-based activities as they did during participation in other types of clubs. In another study, Markstrom Li, Blackshire, and Wilfong (2005) found that student government and volunteerism, but not religious service attendance, was related to ego strengths [positive psychosocial qualities based on Erikson's (1964) theory of lifespan development].

In a previous study (Good & Willoughby, 2006) using a different sample from the present study, we examined whether the association between religious service attendance and the reporting of more positive psychosocial adjustment was unique to religious

service attendance, or if similar results could be found for other structured clubs.

Participants were divided into four groups based upon their level of religious service attendance and club involvement: (a) weekly religious service attendance and weekly club participation; (b) weekly religious service attendance and no club participation; (c) no religious service attendance and weekly club participation; (d) no religious service attendance and no club involvement. We found no significant differences on indices of positive psychosocial adjustment (intrapersonal well-being, friendship quality, and quality of parental relationship) between adolescents in the weekly religious service/no clubs group and the no religious services/weekly clubs. We did find, however, that adolescents who attended religious services, regardless of their level of participation in clubs, reported lower involvement in risk-taking behavior than did those who were involved in clubs, but who did not attend religious services. Therefore, although religious service attendance and club involvement were equally associated with positive developmental assets, religious service attendance was uniquely associated with less risk-taking (see also Fauth, Roth, & Brooks-Gunn, 2007).

Overall, therefore, the unique characteristics of involvement in religious congregations as compared to other clubs include moral guidance, spiritual experiences, intergenerational contacts, social network closure, and identity exploration. Furthermore, these characteristics may be related to unique patterns of psychosocial adjustment. At the same time, however, there may be changes in these patterns of relations across the adolescent period.

Developmental Considerations: Involvement across Adolescence

Religious service attendance may also differ significantly from involvement in other clubs in terms of trajectories of participation over the course of adolescence. It may be normative for the frequency of religious service attendance to decrease considerably in high school (e.g., Smith, et al., 2002). In contrast, levels of involvement in other clubs may remain fairly stable as adolescents explore the wide range of activities available to them in high school or select one or two activities on which to focus intensely (Busseri, Rose-Krasnor, Willoughby, & Chalmers 2006; Raymore, Barber, & Eccles, 2001). Because decreases in attendance at religious services over the course of adolescence may be common, individuals who consistently attend religious services throughout high school (or who regularly attend religious services in late adolescence), may be quite different from individuals who sustain their involvement in other extracurricular activities throughout high school (or those who engage in these activities in the later years of adolescence). The correlates of religious service attendance, therefore, may differ from the correlates of club involvement depending on the age of the adolescent and/or degree of sustained involvement over the course of high school.

The benefit of involvement over time in religious services versus club involvement may also be highly dependent upon the *particular indicator* under consideration. Take into consideration the construct of intrapersonal well-being. While religious service attendance and club involvement have been found to be negatively correlated with indicators of intrapersonal difficulties such as depression (i.e., Mahoney, Schweder, & Stattin, 2002; Frankel & Hewitt, 1994), sustained involvement in religious services (and/or involvement in religious services in late adolescence) versus club involvement may show a different relation with intrapersonal difficulties. Indirect

support for this possibility comes from studies based on late adolescent and college student samples. Specifically, researchers have found that individual increases in religiosity are linked to the reporting of more personal problems (Zinnbauer & Pargament, 1998), low self-esteem (Kox et al., 1991), and insecure adult attachments (Kirkpatrick, 1998; Zinnbauer & Pargament, 1998). These findings could be related to the fact that many faith groups present their adherents with religious coping strategies for dealing with stressors (e.g., Smith, 2003a), and some individuals may be drawn towards these comforting strategies in times of trouble (Pendleton, Cavalli, Pargament, & Nasr, 2002). Participation in other types of clubs in late adolescence (or sustained participation), however, may not be expected to be linked to negative intrapersonal well-being or stressful life events. Furthermore, increasing autonomy has been associated with greater positive intrapersonal well-being (Ryan & Deci, 2002; Soenens et al., 2007) as well as with decreases in attendance at religious activities (Regnerus & Ueker, 2006). It is possible, then, that discontinuation (that is, non-sustained attendance over time) in religious attendance could actually show a positive correlation with intrapersonal well-being for some adolescents.

A similar conjecture could be made with regard to family relationships. While results from our previous study revealed that participation in religious services and other clubs were concurrently correlated with the reporting of more positive parent-adolescent relationships, it may be expected that discontinuation of religious service attendance - but not club involvement - would be associated with the reporting of less positive parent-adolescent relationship. Most adolescents who attend religious services have parents who also attend (e.g., Smith & Denton, 2006). Therefore, an adolescent's decision to stop

accompanying his or her family to church/temple/ synagogue may create friction in the parent-child relationship. Alternatively, family conflict may prompt an adolescent to decrease his or her involvement in all family-oriented activities, including religious services. Because other clubs may not be as strongly tied to family affairs, decreases over time in club involvement may be less strongly linked to quality of family relationships. Similarly, adolescents who attend religious services regularly, particularly in the late adolescent years, may have very positive relationships with their parents.

Furthermore, sustained religious service attendance may be more strongly associated with lower risk-taking over time than sustained club participation because of the emphasis religious institutions place on risk avoidance. The more exposure an adolescent has to religious teachings, the less he or she would be expected to engage in prohibited behaviors such as drinking alcohol or smoking (e.g., Regnerus & Ueker, 2007). Adolescents who report more sustained religious service attendance, therefore, may be expected to engage in less risk-taking than do their peers whose attendance is not sustained over time.

When considering different aspects of an adolescent's interpersonal environment - for instance, relationships with friends - attendance at religious services and other clubs may be more similar in their relations with positive outcomes, regardless of age of the adolescent or degree of sustained involvement. Religious service attendance and other clubs may both facilitate positive friendships, as both of these activities provide young people with opportunities to engage in healthy interactions with like-minded peers (e.g., King & Furrow, 2004; Larson et al., 2006).

Similarly, because both religious services and other structured, prosocial clubs are thought to foster skills that could promote school success (such as responsibility and respect for rules; Mahoney, 2000; Regnerus & Elder, 2003), club participation and religious services attendance may both be associated with academic success, at all stages of adolescence. A greater degree of sustained involvement may promote more extensive development of these skills and foster even greater academic success.

The Present Study

Using data in which frequency of religious service attendance, club involvement, and various indicators of psychosocial adjustment were measured at three time points from grade nine to grade 12, this study explored three research questions. For the first question, we asked whether the average pattern of change over time in attendance at religious services differed from the average pattern of change over time in club involvement. Based on research that suggests religious service attendance may be more likely to decrease over the course of adolescence than other nonreligious clubs (e.g., Busseri et al., 2006; Smith et al., 2002), we hypothesized that the participants would report an overall pattern of decline in frequency of religious attendance from grade nine to grade 12, but that this pattern would not be reported for frequency of involvement with other clubs.

For the second research question we asked whether the frequency of religious service attendance and the frequency of club involvement independently predict psychosocial adjustment (specifically, intrapersonal well-being, substance use, academic success, and quality of relationships with parents and friends) over time, and whether the strength of these relations change as adolescents get older. Five specific hypotheses were

made for this research question. First, given the strong family-religion connection (Smith & Denton, 2006), we predicted that religious service attendance would be uniquely associated with more positive parental relationships. We also expected this effect to be stronger for participants when they were in the later years of high school, as adolescents who frequently attend religious services at a developmental period when it is not normative to do so may choose to attend because they enjoy spending time with their families, and/or they want to please their parents (e.g., see Good & Willoughby, 2006). Second, given the emphasis that religious communities place on the avoidance of risk behaviors such as substance use (e.g., Regnerus & Uecker, 2006), we predicted that religious service attendance would be uniquely associated with less substance use, and that this association would be the same for individuals in grade nine, grade 11, and grade 12. Third, based on research that has generally found religiosity to be linked to positive intrapersonal/emotional well-being (e.g., Mahoney et al., 2002), we predicted that there would be an overall positive association between religious service attendance and intrapersonal well-being. However, given that a decrease in religious service attendance over adolescence is normative, this relation was expected to be weaker in the later years of high school than in earlier years. Fourth, given the evidence that religious attendance and club involvement may promote healthy friendships (e.g., King & Furrow, 2004; Larson et al., 2006), we hypothesized that both religious service and club participation would be positively associated with the reporting of good friendship quality. This effect was expected to remain constant over time. Finally, based on research that has linked both extracurricular clubs and religious service attendance to higher marks (Mahoney, 2000; Regnerus & Elder, 2003), it was hypothesized that both club involvement and

religious attendance would be positively associated with academic success at all three time points.

For our final question, we examined whether sustained attendance over time at religious services, compared to sustained club involvement over time, predicts positive psychosocial adjustment. Based on the consistency with which previous research has reported the positive effects of sustained involvement in extracurricular activities (Mahoney et al., 2003; Persson et al., 2002), we hypothesized that greater sustained participation in nonreligious extracurricular clubs would be positively associated with academic success and quality of peer relationships, and negatively associated with risk-taking and intrapersonal well-being. There is a lack of research on the unique effects of sustained religious service attendance, but based on the literature reviewed above, it was expected that more sustained religious service attendance would be negatively associated with risk-taking and positively associated with quality of parental relationships.

Given that gender differences have been found consistently for rates of attendance at religious services (e.g., Eccles & Barber, 1999; Miller & Hoffman, 1995; Stark, 2002) and involvement in club activities (e.g., Eccles & Barber, 1999), we controlled for the effect of gender in all analyses. Religious attendance and club involvement may also be associated with socioeconomic status (e.g., Beeghley, Van Velsor, & Bock, 1981; Csikszentmihalyi, Rathunde, & Whalen, 1993; Hood & Belzen, 2005; Mahoney, Cairns, & Farmer, 2003); therefore, we also controlled for the effect of socioeconomic status in all analyses.

Method

Participants

Students from eight high schools encompassing a school district in Ontario, Canada took part in the study. This study was part of a larger project examining youth lifestyle choices and involved three waves of survey data collection. A total of 1471 grade nine students completed the survey at Time 1. The overall participation rate at Time 1 was 83%; nonparticipation was due to student absenteeism (14.2%), parental refusal (2.1%), or student refusal (0.7%). The present results are based on 1050 students who completed the survey first when they were in grade nine and then again in grades 11 and 12. Five hundred and forty-five students completed the survey at all three time periods and 505 students completed the survey at two time periods (all of these latter students completed the survey at Time 1 but 347 completed the survey again only at Time 2 and 158 completed the survey again only at Time 3).

At Time 1, participants (53% boys) were in grade nine and had an average age of 14.27 years ($SD = 0.53$). At Time 2 and 3, these participants generally were in grades 11 and 12 and had an average age of 15.99 years ($SD = 0.37$) and 17.29 years ($SD = 0.50$), respectively. Consistent with the broader Canadian population (Statistics Canada, 2001b), 92.7% of the adolescents were born in Canada and the most common ethnic backgrounds reported other than Canadian were Italian (30%), French (18%), British (15%), and German (10%). The religious affiliation of the population in this region is predominantly Christian (79% Catholic/Protestant), with 14% reporting no religion, and 17% reporting “other” affiliations (e.g., Muslim, Hindu, Jewish) (Statistics Canada, 2001c). Data on socioeconomic status indicated mean levels of education for mothers and fathers falling between “some college, university or apprenticeship program” and “completed a college/ apprenticeship/technical diploma.” Further, 76% of the

longitudinal respondents reported living with both birth parents, 9% with two parents (including one birth parent), 10% with one birth parent (mother or father only), and the remainder with neither parent (e.g., other relatives, foster parents, guardians etc.).

Participants who completed the survey only in Time 1 did not significantly differ from the longitudinal participants with respect to demographic variables (e.g., parent education, gender), frequency of religious service attendance or frequency of club involvement. Differences between groups were significant ($ps < .001$), however, for risk behavior involvement and academic marks, such that the longitudinal participants reported lower risk behaviour involvement and higher marks than participants who only completed the survey at Time 1. Magnitudes of the between group differences, however, were small (mean difference of .24 for both measurement scales; individual η^2 values were .018; measures only explained a total of 3% of the difference between groups in a discriminant function analysis). Participants who completed three waves of the survey significantly differed from students who completed two waves of the survey only on risk behavior involvement, such that the two-wave participants reported more risk behaviour involvement than three-wave participants. The magnitude of the difference, however, was small (mean difference of .13; η^2 value was .007). Furthermore, none of the measures were significant in distinguishing between the groups in a discriminant function analysis.

The first and third waves of the survey were conducted in April, and the second wave was conducted in December. All three survey waves, therefore, were conducted at times of significant religious holidays for Catholics and Protestants (i.e., Christmas and Easter). To ensure, however, that there were no cohort differences because of the timing of our survey implementations, we examined grade differences in religious services and

club attendance across the three waves using the larger sample from which the present study was drawn. There were no significant differences in religious service or club attendance with the exception that students who were in grade 10 in the first wave indicated significantly higher religious attendance than students who were in grade 10 in the second or third waves. Since the first wave was conducted at the same time of year as the third wave and there were no significant differences between the second and third wave results, we did not expect that any changes in religious attendance over time in the present study would be due to the time of year that we implemented the survey.

Procedure

A passive parental consent procedure was used in this study to ensure a representative sample (see Weinberger, Tublin, Ford, & Feldman, 1990 for a discussion on how active parental consent procedures may result in overrepresentation of well-functioning adolescents and families). Active informed assent was obtained from the adolescent participants. Several strategies were applied in order to ensure parental awareness of the study. First, parents were provided with written correspondence mailed to each student's home prior to the survey administration outlining the study; this letter indicated that parents could request that their child not participate in the study (an automated phone message was also left at each student's home phone number). Second, parent information sessions were held throughout the school district. Third, there was extensive media coverage outlining the study. At all time periods, the self-report questionnaire was administered to students in classrooms by trained research staff. To ensure standardization of procedures across classrooms, at least one research staff person

was present in each classroom during survey administration. Students were informed that their responses were completely confidential.

Measures

The study questionnaire was developed as part of a larger project examining adolescent lifestyle choices. All measures used in the present study were assessed at all three time points, with the exception of socioeconomic status which was assessed only at Time 1. Study measures are described below; additional scale properties are provided in Table 1.1. Given the large number of variables examined and the expected covariation among predictors within a given domain, the study measures were grouped and combined according to content overlap as detailed in the measures section above (see also Table 1.1).

Demographic information. Participant age was assessed with the question “How old are you?;” ethnicity was assessed with the question “What culture or ethnic background does your family belong to?” A single-item was used to assess participant gender (0=*male*; 1=*female*). Socioeconomic status was assessed by the average of two questions measuring paternal and maternal education level (“What is the highest level of education your mother/father completed”); questions were responded to on a 6 point scale (1=*did not finish high school*, 6=*professional/ graduate training*). The correlation between paternal and maternal education was $r=.50$ ($p<.001$).

Quality of relationship with friends. Friendship quality was assessed by an 18-item scale measuring attachment to one’s friends (e.g., “My friends understand me”) adapted from Armsden and Greenburg (1987). Students were instructed to “think about your friends and answer the following questions.” Four response categories were used,

Table 1.1

Description of study measures

<i>Domain</i>	<i>Variable</i>	<i>Gr 9 M (SD)</i>	<i>Gr 11 M (SD)</i>	<i>Gr 12 M (SD)</i>
Parental education	Parental education	3.18 (.13)	--	--
Gender	Gender	.47 (.50)	--	--
Intrapersonal Well-Being	Depression	4.14 (.59)	4.02 (.66)	3.98 (.66)
	Social Anxiety	3.26 (.56)	3.29 (.54)	3.27 (.58)
	Self Esteem	3.84 (.65)	3.82 (.76)	3.87 (.67)
	Daily Hassles	2.29 (.34)	2.22 (.36)	2.24 (.39)
	Life Satisfaction	3.44 (.72)	3.23 (.84)	3.27 (.79)
	Intrapersonal Well-Being Composite (standardized estimates)	.09 (.91)	-.07 (1.07)	-.05 (1.02)
Academic Success	School grades	3.39 (.84)	3.30 (.87)	3.46 (.81)
Friendships	Friendship attachment	3.20 (.47)	3.21 (.49)	3.11 (.51)
Parental Relationships	Maternal attachment	3.08 (.56)	3.01 (.60)	3.02 (.57)
	Paternal attachment	2.99 (.58)	2.88 (.65)	2.87 (.60)
	Parental Attachment Composite	3.03 (.53)	2.94 (.56)	2.94 (.52)
Substance use	Alcohol – frequency	1.92 (1.89)	2.68 (1.44)	3.14 (1.65)
	Alcohol – amount	2.14 (1.33)	3.20 (1.52)	3.60 (1.56)
	Smoking	1.10 (.56)	1.25 (.89)	1.56 (1.35)
	Marijuana	1.58 (1.11)	2.22 (1.48)	2.44 (1.63)
	Substance Use Composite (standardized estimates)	-.38 (.70)	.10 (.95)	.44 (1.21)
Religious service attendance	Religious service attendance	1.98 (.91)	1.71 (.93)	1.67 (.92)
Club Activities	In-school clubs	1.93 (1.18)	2.17 (1.29)	2.25 (1.41)
	Out-of-school clubs	2.05 (1.17)	2.08 (1.18)	1.94 (1.24)
	Club Activities Composite	1.98 (1.00)	2.10 (1.02)	2.10 (1.10)

ranging from *almost never/never* to *almost always/always*. Higher scores indicated more positive ratings of one's friendships. Alpha values were .89, .91, and .90 for time one, two and three, respectively.

Quality of relationship with parents. Parental relationship quality was measured by 17 items from the Inventory of Parent and Peer Attachment (Armsden & Greenburg, 1987). Participants completed this scale for both mother and father. Items (e.g., "My mother trusts my judgment"; "My father can tell when I'm upset about something) were responded to on a 4 point scale ranging from *almost never/never* to *almost always/always*. Higher scores indicated more positive relationships with one's parents. Alpha values for paternal attachment, maternal attachment, and the composite measure were, .89, .89, and .86 at time 1; .92, .91, and .80 at time 2; and .91, and .89, .89, and .75 at time 3, respectively. The overall correlation between the mother and father scales was $r=.68$ ($p<.01$).

Academic success. Academic success was measured by the item "what grades do you typically get in school?" Participants responded on a 6-point scale where 1=*below 50%* and 6=A+. Higher scores indicated the reporting of higher typical grades.

Intrapersonal Well-Being. Intrapersonal well-being was a composite of five scales. Depression-related symptoms were measured using the Centre for Epidemiological Studies Depression (CES-D) scale (Radloff, 1977). Participants responded to 20 items (e.g., "I felt that I could not stop feeling sad, even with help from my family and friends") on a 5-point scale ranging from *most of the time* to *never*. The respective alpha values for time one, two and three were .90, .92, and .92.

Social anxiety-related symptoms were assessed using 14 items (e.g., “I only talk to other people my age that I know really well”) from Ginsberg, LaGreca, and Silverman (1998). Items were responded to on a 4-point scale ranging from *almost always/always* to *almost never/never*. Alpha values were .92, .92, and .93.

Self-esteem was measured using the Rosenberg self-esteem scale (Rosenberg, 1965). This scale consists of 10 items (e.g., “I feel that I have a number of good qualities”) that are responded to on a 5-point scale ranging from *strongly disagree* to *strongly agree*. Alpha values were .88, .90, and .88.

Daily hassles were assessed based on the frequency of experiencing 25 life stressors including finances, friends/peers, school work, and self-image (e.g., “How often does it bother you to have problems with peers). Items were responded to on a 3-point scale where 1=*often bothers me* and 3= *almost never bothers me*; alpha values were .86, .89, and .88.

Life satisfaction was measured with one item (“I am happy with my life”) that participants responded to on a 4-point scale ranging from *almost never/never* to *almost always/always*.

A composite index was formed by standardizing each scale score and combining the scores such that higher values indicated more positive intrapersonal well-being. Reliability for the composite index was .77 at time one, .83 at time two, and .79 at time three. To establish the validity of a one-factor solution, a factor analysis was conducted using principal component analysis. The results revealed a one-factor solution (factor loadings of .5 or higher), supporting our decision to create a composite for this construct. In the interest of parsimony, our analyses were conducted with the composite index.

Substance use. Alcohol use was measured by two items: (a) typical frequency of alcohol use on an eight point scale, where 1=*never*, and 8=*every day*; and (b) average consumption per drinking episode on a six point scale, where 1=*less than one drink*, and 6=*more than 10 drinks*. Smoking was indicated by the typical number of cigarettes smoked each day on an eight point scale where 1=*none* and 8=*more than a pack*. Marijuana use was assessed by the typical frequency of use in the past year on a six point scale where 1=*never* and 6=*every day*. A composite index was formed by standardizing each item score and combining the scores such that higher values indicated more substance use. Reliability for the composite index was .74 at time one, .75 at time two, and .76 at time three. Results from principal component analysis revealed a one-factor solution (factor loadings of .5 or higher), supporting our decision to create a composite for these constructs. Combining these scores into a composite is also consistent with previous research (Jessor & Jessor, 1977; Donovan, Jessor, & Costa, 1988; Willoughby, Chalmers & Busseri, 2004).

Religious service attendance and club involvement. Religious service attendance (church/synagogue/temple) was measured by one item assessing the frequency of attendance in the past month using a 5-point scale ranging from *never* to *every day*³. Club involvement was measured by two items assessing the frequency of attendance in the past month, using a 5-point scale ranging from *never* to *every day*, for (a) school clubs, and (b) community clubs. These scores were combined to create an average score for club involvement.

Missing Data

³ Skewness and kurtosis statistics indicated that the distribution of religious service attendance at all grades was normal (i.e., skewness and kurtosis <2). However, the shapes of the distributions were slightly positively skewed at all grades, indicating that infrequent religious service attendance was common.

Some adolescents did not finish the survey at each time period. To ensure that any missing data was missing at random, we included three versions of the survey at each time period so that the same scales were not always near the end of the survey. The majority of adolescents had either complete data or less than 10% missing data at each time period and only 11, 5, and 3% of adolescents with missing data in Time 1, Time 2, Time 3, respectively, had more than 35% missing. Missing data within each wave were imputed using the EM (expectation-maximization) algorithm in SPSS. EM is an iterative maximum-likelihood (ML) procedure in which a cycle of calculating means and covariances followed by data imputation is repeated until a stable set of estimated missing values is reached. Methodological research has demonstrated that ML estimation is preferable to more common methods such as pair-wise deletion, list-wise deletion, or means substitution (Schafer & Graham, 2002). Missing data across waves was not imputed.

Results

Research Question 1: What is the Pattern of Change over Time in Religious Service versus Club Attendance?

Descriptive trajectory groups. To describe the average patterns of change in religious service attendance and involvement in other clubs over time, participants were classified into one of five trajectory groups for both religious service and club involvement. To create these groups, at each time point, individuals were assigned a score (high, moderate, or low) on two variables: one that reflected their level of religious service attendance, and one that reflected their level of club participation. Individuals whose frequency of involvement was in the top 33% were classified as “high”, those in

the middle 33% were classified as “moderate”, and those in the bottom 33% were classified as “low”. These variables were used to create two sets of trajectory groups – one representing the pattern of religious service attendance over time, and one representing the pattern of club involvement over time. Participants were labeled with the following classifications for both religious services and clubs: stable high involvement (individuals whose reported frequency of participation was in the top 33% of the sample at all assessment points); stable moderate involvement (individuals whose frequency of participation was in the middle 33% of the sample at all assessment points); stable low involvement (frequency of participation in the bottom 33% of the sample at all assessment points); increased involvement (individuals who reported movement from low to moderate, low to high, or moderate to high participation over the course of the study); and decreased involvement (movement from high to moderate, high to low, or moderate to low participation over the course of the study).

For religious service attendance, 38.6% of participants were classified into the “decreasing involvement” group, 9.4% were in the increased involvement category, 22.7% were categorized into the stable low involved group, 7.3% into the stable moderate involved group, and 12.7% into the stable high involved group. Due to a mixed pattern of involvement, 9.3% of the sample could not be classified. For club attendance, 27.5% of participants decreased their involvement, 28.9% reported increased involvement, 12.6% were categorized as stable low involved, 15.5% as stable moderately involved, and 6.4% as stable high involved. Due to mixed patterns, 12.7% could not be classified.

Multi-level analyses. All further analyses were conducted with multi-level modeling using the Hierarchical Linear Modeling (HLM) program (Raudenbush, Bryk, &

Congdon, 2005). In multi-level modeling, two levels of equations are specified for each outcome variable. The level-1 equation (also called the *within-person model*) describes within-individual change in the outcome variable as a function of time (for the present study, school grade was used as the index of time). Time-varying covariates also can be added to the equation. A time-varying covariate is a variable that is measured at all time points, and its addition to a model allows us to estimate the overall relation (i.e., across all time points) between the time-varying covariate and the time-varying dependent variable. In this study, the time-varying covariates were religious service attendance and club involvement.

The interaction between time and the time-varying covariate is also commonly estimated in multi-level models. The interaction estimates whether the relation between the time-varying covariate and the dependent variable is constant across time points. Therefore, there may be an overall significant relation between a time-varying covariate and a dependent variable (i.e., a main effect), but this effect may be stronger or weaker at one or more assessment points. To illustrate, the relation between parental monitoring and substance use may be negative across adolescence overall; however, this relation may be stronger in early adolescence than in late adolescence. The equation for a within-person model is presented in Equation One. The coefficients (π_{0i} , π_{1i} , π_{2i} , π_{3i}) are interpreted similarly to a regular regression equation.

$$\begin{aligned} \text{Dependent}_{ij} = & \pi_{0i} + \pi_{1i}(\text{TIME}) + \pi_{2i}(\text{TimeVaryingCovariate}) \\ & + \pi_{3i}(\text{TimeVaryingCovariate} \times \text{TIME}) + e_{ij} \end{aligned} \quad (1)$$

The level-2 equations (also called the *between-persons model*) predict the level and the rate of change in the outcome variable as a function of predictors that vary

between individuals. Level-2 predictors are measured at one time point, and are therefore *fixed predictors*. The equations for the between-person model are presented in Equations Two and Three. These equations specify that the level of the outcome variable (π_{oi}) and the rate of change in the outcome variable (π_{1i}) is a function of *between-persons differences* in (a) certain variable(s).

$$\pi_{oi} = \gamma_{00} + \gamma_{01}(\text{BetweenPersonsVariable}) + r_{0j} \quad (2)$$

$$\pi_{1i} = \gamma_{10} + \gamma_{11}(\text{BetweenPersonsVariable}) + r_{1j} \quad (3)$$

Model fitting for these analyses followed guidelines set by Singer and Willet (2003), where several nested models are fitted and models are respecified in order to determine the best-fitting model. For all analyses, our index variable was centered on grade nine, the grade at which all participants in this sample entered the study. We conducted a preliminary analysis assessing whether age or grade would be the most appropriate index of time, with results from latent growth curve analyses indicating that grade provided the best model fit. Results of these analyses are available from the first author. In addition, predictor variables were standardized. Therefore, coefficients also can be interpreted as measures of effect size, such that a one standard deviation change in the predictor variable corresponds to a one unit change in the outcome variable.

To further clarify results for the first research question, two multi-level analyses were conducted to estimate average trajectories for religious service attendance and club involvement. The final within-person (level-1) model was specified as:

$Y_{ij} = \pi_{oi} + \pi_{1i}(\text{GRADE}) + e_{ij}$, while the between-persons (level-2) model was specified as:

$\pi_{oi} = \beta_{00} + r_{0j}$; $\pi_{1i} = \beta_{10} + r_{1j}$. Results from these analyses indicated that there was a

significant decrease in religious service attendance over the course of the study, $\pi_{1i} = -.13$, $SE=.01$, $p<.001$. Club involvement, conversely, increased slightly but significantly over the course of the study, $\pi_{1i} = .04$, $SE=.01$, $p=.008$

Research Question 2: Do Religious Service Attendance and Club Involvement Independently Predict Psychosocial Adjustment Consistently Over Time?

To address the second research question, five series of multi-level models were fitted, with indicators of adjustment (substance use, intrapersonal well-being, quality of relationship with friends, quality of relationship with parents, and academic success) as outcome variables. Predictor variables included frequency of religious service attendance and club involvement, as well as their interaction with grade. The level-1 equation template for this set of analyses is presented in Equation Four.

$$Dependent_{ij} = \pi_{0i} + \pi_{1i}(GRADE) + \pi_{2i}(CLUBS) + \pi_{3i}(CLUBS_X_GRADE) + \pi_{4i}(RELIG) + \pi_{5i}(RELIG_X_GRADE) + e_{ij} \quad (4)$$

The level-2 equations are presented in equations two and three. Gender and parental education were covariates for each model, and entered as fixed predictors in the equations.

$$\pi_{0i} = \gamma_{00} + \gamma_{01}(GENDER) + \gamma_{02}(PARENT_EDUCATION) + r_{0j} \quad (5)$$

$$\pi_{1i} = \gamma_{10} + \gamma_{11}(GENDER) + \gamma_{12}(PARENT_EDUCATION) + r_{1j} \quad (6)$$

These equations specify that the level of the outcome variable (π_{0i}) and the rate of change in the outcome variable (π_{1i}) is a function of between-person differences in gender and parent education. Although parental education could change over time, in the present study it was measured only at the first wave of data collection and is therefore

treated as a fixed predictor. The error components of these equations allow individuals to differ randomly from each other.

First, an unconditional means model was specified to establish whether systematic variation existed in each outcome variable. Second, an unconditional growth model was specified to establish whether significant change over time occurred in the outcome variable. In the final model, demographic covariates (gender and parental education) were added to the level-2 equations and the time varying covariates (religious service attendance and club involvement) and their interactions with grade were entered in the level-1 equation. By entering religious service attendance and club involvement into the model simultaneously, the coefficients for each independent variable represent the independent relation (i.e., accounting for the shared variance between involvement in both types of activities) between religious service attendance/club involvement and the outcome variables

Substance use. The unconditional means model demonstrated significant variability in within and between person sources of variation in levels of substance use. The unconditional growth model showed that there was a significant increase in substance use over the course of the study ($\gamma_{10} = .28, SE=.01, p<.001$). The final model (see Table 1.2) showed that neither club involvement ($\gamma_{20} = -.01, SE=.02, p>.05$) nor the interaction between clubs and grade ($\gamma_{30} = -.001, SE=.01, p>.05$) predicted substance use. The main effect of religious service attendance was significant ($\gamma_{40} = -.05, SE=.02, p<.01$), demonstrating that higher frequency of religious service attendance predicted lower levels of substance use at each grade. The interaction between religious service attendance and grade was not significant. Gender was a significant level-2 predictor for

Table 1.2

Results for full models

		Variable				
	Parameter	Substance Use b (SE)	Intrapersonal b (SE)	Parent Relationship b (SE)	Friendship b (SE)	Grades b (SE)
Fixed Effects						
Intercept	γ_{00}	-.24 (.06)***	-.29 (.08)***	1.78 (.05)***	1.99 (.04)***	3.23 (.07)***
Gender	γ_{01}	-.07 (.04)	.21 (.05)***	.01(.03)	.30 (.02)***	.17 (.04)***
Parent Education	γ_{02}	-.03 (.02)	.21 (.02)***	.06 (.01)***	.02 (.01)	.16 (.02)***
Grade (rate of change)	γ_{10}	.30 (.04)***	.07 (.05)	-.05 (.02) *	-.02 (.03)	.01 (.04)
Gender	γ_{11}	-.09 (.02)***	.05 (.03)	.03 (.01)*	-.03 (.02)	.10 (.02)***
Parent Education	γ_{12}	.003 (.01)	.01 (.01)	-.002 (.01)	-.002 (.01)	.01 (.01)
Clubs	γ_{20}	-.01 (.02)	.02 (.02)	-.01 (.01)	.02 (.01)*	.06 (.02)***
Clubs X Grade	γ_{30}	-.003 (.02)	.004 (.02)	.01 (.01)	-.01 (.01)	.02 (.01)
Rel. Services	γ_{40}	-.05 (.02)**	-.04 (.02)*	-.002 (.01)	-.03 (.01)**	.06 (.02)***
Rel. Services X Grade	γ_{50}	-.01 (.01)	-.06 (.02)***	-.03 (.01)**	-.01 (.01)	-.01 (.01)
Variance components						
Level-1: Within- person	σ_e^2	Variance (SD) .37 (.61)*	Variance (SD) .66 (.44)*	Variance (SD) .10 (.32)*	Variance (SD) .12 (.34)*	Variance (SD) .29 (.54)*
Level-2: Between-person						
In intercept	σ_0^2	.13 (.22)***	.13 (.35)***	.19 (.43)***	.08 (.29)***	.33 (.58)***
In rate of change	σ_1^2	.05 (.22)***	.02 (.16)***	.01 (.11)***	.02 (.12)***	.02 (.16)***

* $p < .05$; ** $p < .01$; *** $p < .001$. SE = Standard Error, SD = Standard Deviation. As all the predictors were standardized before entering the model, coefficients can be interpreted as measures of effect size, such that a one standard deviation change in the predictor variable corresponds to a one unit change in the outcome variable.

slope ($\gamma_{11} = -.09, SE=.02, p<.001$), indicating that girls reported slower increases in substance use over time. Parental education was not a significant level-2 predictor.

Intrapersonal well-being. The unconditional means model demonstrated that significant variability existed in intrapersonal well-being for within and between person sources of variation. The unconditional growth model showed that there was a significant decrease in positive intrapersonal well-being across the course of high school ($\gamma_{10} = -.06, SE=.01, p<.001$). The final model (see Table 1.2) showed that neither club involvement ($\gamma_{20} = .01, SE=.02, p>.05$) nor the interaction between clubs and grade ($\gamma_{30} = .004, SE=.01, p>.05$) predicted intrapersonal well-being. The main effect of religious service attendance was significant ($\gamma_{40} = -.04, SE=.02, p>.05$), and the interaction between attendance at religious services and grade was significant ($\gamma_{40} = -.04, SE=.01, p<.001$). To characterize the nature of this interaction, prototypical growth plots were plotted using model-predicted outcomes based on the final model (See Figure 1.1). Growth plots were constructed following instructions set by Singer and Willet (2003). These plots present predicted values for intrapersonal well-being for individuals with high (one standard deviation above the mean) and low (one SD below the mean) religious service attendance at each time point. By examining the plots, therefore, we can examine how the relation between intrapersonal well-being and grade differs for individuals with differing levels of religious service attendance. The plots indicated that, in grade nine, higher frequency of religious service attendance was associated with the reporting of more positive intrapersonal well-being, but this effect was much weaker in grade 11, and by grade 12, more frequent attendance at religious services was actually associated with *less* positive intrapersonal well-being. Gender was a significant predictor for level of

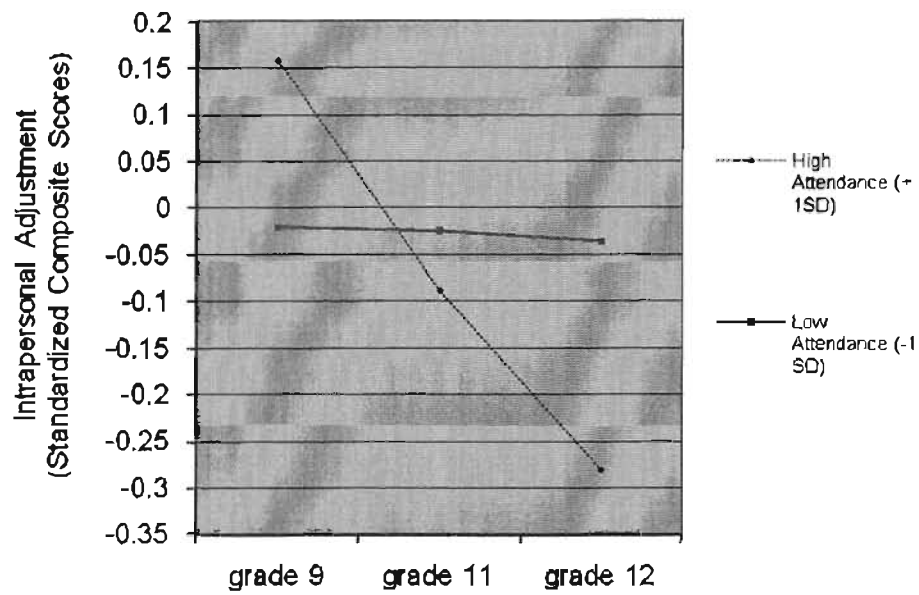


Figure 1.1. Prototypical growth plot illustrating the time-varying relation between religious service attendance and intrapersonal well-being.

intrapersonal well-being ($\gamma_{01} = -.21, SE=.05, p<.001$); girls reported less positive adjustment than boys. Parent education significantly predicted level of intrapersonal well-being ($\gamma_{02} = .11, SE=.02, p<.001$); higher education was associated with more positive intrapersonal well-being.

Quality of relationship with parents. The unconditional means model demonstrated that significant variability existed in within and between person sources of variation. The unconditional growth model showed that there was a significant decrease in perceived quality of parental relationship across the course of high school ($\gamma_{10} = -.03, SE=.01, p<.001$). The final model (see Table 1.2) showed that neither club involvement ($\gamma_{20} = -.01, SE=.01, p>.05$) nor the interaction between clubs and grade ($\gamma_{30} = .01, SE=.01, p>.05$) predicted quality of parental relationship. The main effect of religious service attendance was not significant but the interaction between religious service attendance and grade was significant ($\gamma_{50} = -.03, SE=.01, p=.002$). To characterize this interaction, prototypical growth plots were plotted using model-predicted outcomes based on the final model (See Figure 1.2). The nature of this interaction was similar to that of intrapersonal well-being. In grade nine, more frequent religious service attendance was associated with the reporting of more positive parent relationships, but in grade 11 and 12, more frequent attendance at religious services was associated with *less* positive parent relationships. Gender was not significantly associated with level of parental relationship quality, but girls reported significantly faster decreases in perceived quality of parental

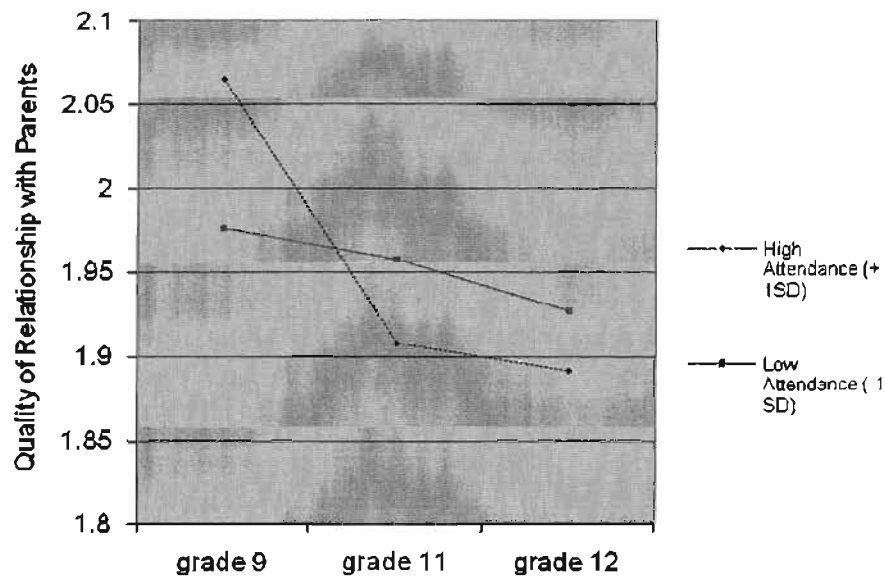


Figure 1.2. Prototypical growth plot illustrating the time-varying relation between religious service attendance and quality of relationship with parents

relationship over time than boys ($\gamma_{11} = .03$, $SE = .01$, $p < .05$)⁴. Higher parental education was associated with the reporting of more positive relationships with parents, ($\gamma_{02} = .06$, $SE = .01$, $p < .001$), but was not significantly associated with rate of change in parent relationship.

Quality of relationship with friends. The unconditional means model demonstrated significant variability in within and between person sources of variation in friendship quality. The unconditional growth model showed that there was a significant decrease in perceived quality of friendships over the course of the study ($\gamma_{10} = -.02$, $SE = .01$, $p < .001$). The final model (see Table 1.2) showed that club involvement ($\gamma_{20} = .02$, $SE = .01$, $p = .03$) significantly predicted friendship quality; higher frequency of club involvement predicted the reporting of more positive friendships at each grade. The interaction between clubs and grade was not significant. The main effect of religious service attendance was significant ($\gamma_{40} = -.03$, $SE = .01$, $p = .007$); higher frequency of attendance at religious services predicted lower reported quality of friendships. The interaction between religious service attendance and grade was not significant. Gender was a significant predictor for level of friendship quality ($\gamma_{11} = .30$, $SE = .02$, $p < .001$); girls reported more positive scores than boys, but gender was not a significant predictor of rate of change; parent education was not a significant predictor of level or rate of change.

⁴ While gender was not a focus of this paper, in a supplementary analysis we tested cross-level interactions for gender between religious service/club attendance and the outcome variables. The only outcome variable for which the cross-level interaction was significant was parental relationship. Specifically, for parental relationship, the interaction between religious service attendance and time was significant only for girls.

Academic marks. The unconditional means model demonstrated that significant variability existed in both within and between person sources of variation. The unconditional growth model showed that there was not a significant change in academic marks from grade nine to grade 12 ($\gamma_{10} = -.01, SE=.01, p>.05$). The final model (see Table 1.2) revealed that more frequent club involvement was significantly associated with higher academic marks, $\gamma_{20} = .06, SE=.02, p<.001$. The interaction between clubs and grade was not significant. The main effect of religious service attendance was also significant ($\gamma_{40} = .06, SE=.02, p<.001$); more frequent attendance at religious services was associated with higher marks. The interaction between religious service attendance and grade was not significant. Gender was significantly associated with level ($\gamma_{01} = .16, SE=.04, p<.001$) and rate of change in marks ($\gamma_{11} = .10, SE=.02, p<.001$), wherein girls reported higher marks and faster increases in marks over time than boys. Higher parental education levels were significantly associated with a higher level of marks ($\gamma_{02} = .16, SE=.02, p<.001$), but was not associated with rate of change in marks.

Research Question 3: What is the Effect of Sustained Involvement in Religious Services versus Other Clubs?

To create the variables used to answer the final research question, participants were first assigned scores indicating the total number of waves in which they reported involvement (yes or no) in religious services and club activities. Second, participants were assigned a score indicating the total number of waves in which they participated (two or three). Third, these variables were used to calculate a fixed variable (i.e., at the between-persons level) representing the ratio of number of waves of participation in religious services or clubs to number of total waves in which a participant completed.

These two variables (one for religious services, one for club activities) ranged from 0 to 1, with a score of 0 reflecting no participation at any wave, a score of .33 indicating completion of 3 waves and religious service/club involvement reported at one wave, a score of .5 indicating participation in two waves and religious service /club involvement reported at one of those waves, a score of .67 indicating participation in three waves and religious service /club involvement reported at two waves, and a score of 1 indicating religious service /club involvement reported at all waves of participation.. Calculating the variables in this way allowed us to control for the possible effects of the number of waves in which an adolescent participated. It also accounted for the fact that an individual who reported religious service or club involvement in half of the waves in which s/he participated (i.e., one out of two), for example, technically represents a greater degree of “sustained” participation than an individual who reported involvement in only one-third of the waves (one out of three) in which s/he participated.

The variables for sustained religious services and sustained club activities were entered simultaneously into the between-persons model for each outcome variable. Gender and parent education were entered as covariates, as was total waves of participation. Results revealed that a greater degree of sustained involvement in clubs was significantly associated with higher level of marks ($\gamma_{03} = .10$, $SE=.03$, $p<.001$), quality of relationship with friends ($\gamma_{03} = .04$, $SE=.01$, $p<.01$), and intrapersonal well-being ($\gamma_{03} = .07$, $SE=.03$, $p<.01$), and lower levels of substance use ($\gamma_{03} = -.09$, $SE=.02$, $p<.001$). No significant results were found for quality of relationship with parents. Sustained club involvement did not predict the slopes for the outcome variables; thus the effect of sustained club involvement was constant across grades. A greater degree of

sustained religious services attendance was associated with lower levels of substance use ($\gamma_{04} = -.06$, $SE=.02$, $p=.007$), slower increases in substance use over time ($\gamma_{14} = -.02$, $SE=.01$, $p=.01$), and higher level of marks ($\gamma_{04} = .09$, $SE=.03$, $p<.001$). No significant results were found for quality of relationship with parents, intrapersonal well-being, or quality of relationship with friends. Full results for the final sustained models are presented in Table 1.3.

Discussion

Results from the present study revealed that differences existed in patterns of change in religious service attendance versus club involvement over the course of high school. Our first hypothesis was supported, as participants reported a significant mean decrease in attendance at religious services from grade nine to grade 12, while there was a small mean increase in participation in clubs. Percentages of religious service and club increasers and decreasers further clarified these divergences. There was a striking difference in the percentage of adolescents who increased their frequency of religious service attendance (9.4%) compared to the percentage of adolescents who increased their frequency of involvement in clubs (28.9%), and in the percentage of participants who decreased their religious service attendance (38.6%) compared to those who decreased their frequency of participation in clubs (27.5%). These findings suggest that religious attendance and other clubs follow different patterns of involvement during the teen years. It is less normative to remain committed to religious services or increase religious participation, whereas sustained or increased commitment to other clubs appears to be more common.

The hypotheses for our second research question were partially supported, as religious service attendance was uniquely associated with less risk-taking at all time points, and club involvement was uniquely associated with more positive friendship quality and higher academic marks at all time points. Contrary to our predictions, however, religious service attendance was associated with less positive parental relationships and intrapersonal well-being in grades 11 and 12. The hypotheses for our third research question were largely supported, as sustained club involvement predicted positive intrapersonal well-being, higher academic marks, good friendship quality, and less substance use. Sustained religious service attendance, as predicted, was associated with significantly lower substance use (with sustained attendees also reporting slower increases in substance use over time). It was not associated with positive relationships with parents, however, but a positive association was found between sustained attendance and academic marks.

Some of the unique positive and negative experiences that adolescents may have in religious services (over and above what it provides as another type of extracurricular club) could help explain the mixed results (i.e., associations with both positive and negative adjustment) for religious service attendance, as well as the results that did not support our hypotheses. Religious groups often discourage behavior such as substance use, and encourage conventional conduct such as school success (Dworkin et al., 2003; Smith, 2003a; 2003b). Alternatively, high levels of parental monitoring and/or control may explain why religiously-involved adolescents attend these services in the first place, as well as why they report less risk-taking and better grades. Findings from several studies have indicated that greater parental monitoring may be negatively related to risk-

Table 1.3

Results for model with sustained religious service and clubs

	Parameter	Variable				
		Substance Use b (SE)	Intrapersonal b (SE)	Parent Relationship b (SE)	Friendship b (SE)	Grades b (SE)
Fixed Effects						
Intercept	γ_{00}	-.30 (.07)***	-.16 (.09)	1.85 (.05)***	2.00 (.04)***	3.16 (.08)***
Gender	γ_{01}	-.06 (.04)	-.27 (.06)***	.03 (.04)	.34 (.03)***	-.04 (.05)
Parent Education	γ_{02}	-.02 (.02)	.11 (.02)***	.06 (.01)***	.02 (.01)	.15 (.02)***
Sustained clubs	γ_{03}	-.09 (.02)***	.07 (.03)**	.01 (.02)	.04 (.01)**	.10 (.03)***
Sustained rel. services	γ_{04}	-.06 (.02)**	.04 (.3)	.02 (.02)	.01 (.01)	.09 (.03)***
Total waves	γ_{05}	-.06 (.02)**	.01(.03)	.01(.02)	.01 (.01)	.02(.02)
Grade (rate of change)	γ_{10}	.32 (.04)***	.05 (.04)	.04 (.02)*	.01 (.02)	.02 (.03)
Gender	χ_{11}	-.10 (.02)***	.05 (.02)*	.02 (.01)*	.03 (.01)*	.08 (.02)***
Parent Education	γ_{12}	.001(.01)	.01 (.01)	.002 (.01)	.001 (.01)	.002 (.01)
Sustained clubs	γ_{13}	.003(.01)	.002 (.01)	.001 (.01)	.01 (.01)	.01 (.01)
Sustained rel. services	γ_{14}	-.03 (.01)*	.02(.01)	.01 (.01)	.001 (.01)	.001 (.01)
Total waves	γ_{15}	-.01(.01)	.02 (.01)*	.001(.01)	.002 (.01)	.02(.01)
Variance components		Variance (SD)	Variance (SD)	Variance (SD)	Variance (SD)	Variance (SD)
Level-1: Within- person	σ_e^2	.36 (.60)*	.45 (.67)*	.10 (.31)*	.12 (.35)*	.29*
Level-2: Between- person						
In intercept	σ_0^2	.14 (.36)***	.38 (.61)***	.19 (.43)***	.07 (.27)***	.37 (.60)***
In rate of change	σ_1^2	.05 (.22)***	.02 (.13)***	.01 (.09)***	.01 (.10)***	.01 (.11)***

$p < .05$; ** $p < .01$; * $p < .001$. SE = Standard Error, SD = Standard Deviation. As all the predictors were standardized before entering the model, coefficients can be interpreted as measures of effect size, such that a one standard deviation change in the predictor variable corresponds to a one unit change in the outcome variable.

taking (Pettit et al., 2001; Soenens, Vansteenkiste, Luyckx, & Gossens, 2006) and positively related to school grades (Crouter, et al., 1990).

The negative associations between religious service attendance and intrapersonal adjustment (specifically, the reporting of less positive intrapersonal well-being in grades 11 and 12 and lower quality of friendships) may seem somewhat counterintuitive in light of research that has linked religious service attendance with positive mental health (e.g., Ryan, Rigby, & King, 1993). However, there is evidence to suggest that it may make sense in some circumstances for adolescents who frequently attend religious services (particularly in the later years of high school) to report less positive intrapersonal well-being. For example, increases in religious service attendance have been associated with negative life events (Kox et al., 1991; Zinnbauer & Pargament, 1998). Because decline in religious service attendance has been found in other studies to be common over the course of adolescence (e.g., Smith et al., 2002) and was indeed the case in the present study, a deviation from that pattern at this developmental stage could imply that an individual is going through a difficult time (e.g., parents' divorce), and they are turning to religion for comfort.

Another possibility is that adolescents who attend religious services consistently across high school may be experiencing a sense of general lack of autonomy granted to them by their parents. Decline in attendance at religious services has been linked to increasing personal autonomy (e.g., Regnerus & Uecker, 2006), which in turn is associated with positive psychosocial adjustment (e.g., Soenens et al., 2007). Among the group of regular attendees in later adolescence may be young people who are forced to attend by their parents. Parents who do not allow their teenagers to choose whether or not

they attend religious services also may be less likely to grant them autonomy in other areas of life. Adolescents who do not have a great deal of personal autonomy may report a decline in intrapersonal well-being as they get older. The issue of autonomy may also help to interpret the relation between religious service attendance and lower satisfaction of relationships with parents in grades 11 and 12. Analyses demonstrated that although religious service attendance was positively associated with quality of parental relationships in grade nine, in grades 11 and 12 it was associated with lower perceived quality of relationships with parents. It is possible that some teenagers who attend religious services regularly in the later years of adolescence may resent the lack of independence granted to them by their parents. Forced attendance at religious services may be a small part of the dissatisfaction some adolescents may feel with this lack of independence. It is important to qualify, however, that there is a great degree of heterogeneity among religious groups and religiously-committed parents. Certainly, many congregations and families foster more restrictive religious practices that discourage adolescent autonomy, but others are much more empowering (e.g., see Maton & Rappaport, 1984). Conversely, as was explored above, older adolescents who attend religious services frequently may be experiencing greater amounts of intrapersonal problems such as depression and low self-esteem, which may cause them to perceive all of their interpersonal relationships more negatively than their peers.

Previous research has indicated that one of the ways in which religious groups and clubs may be quite similar is in the promotion of positive friendships (e.g., Dworkin et al., 2003). Results of the present study, however, revealed that only club involvement was associated with the reporting of more positive friendships, and in fact, religious

service attendance was associated with the reporting of slightly less positive friendships. Again, this finding may be related to potentially elevated levels of intrapersonal problems among sustained attendees, and the corresponding negative perceptions of relationships that may accompany negative thought patterns. Alternatively, this finding could be related to limitations of our measure of religious service attendance, which only assessed frequency of attendance at church/temple/synagogue. It would have been beneficial to have considered other aspects of religious service attendance, such as participation in youth group or involvement in activities that are provided by religious congregations. An individual who is highly involved in a variety of religious activities would have more opportunities to develop positive relationships with their religiously-committed peers than someone who simply shows up once a week for Sunday services. Among adolescents who attend religious services regularly, two groups of individuals would therefore be represented: the “Sunday only” attendees, and the highly involved participants. The measure of religious service involvement used in the present study, however, did not differentiate between these two types of individuals. These two typologies of attendees may be less likely to exist for other extracurricular activities. In other clubs, an adolescent would be unlikely to be able to passively show up once or twice a month and still be considered a member. Because school and community clubs are typically related to an adolescent’s personal interests (Hansen, Larson, & Dworkin, 2003), it is likely that young people would want to interact with and create relationships with their fellow club members.

It is interesting that club involvement, as a time-varying predictor, was only significantly associated with friendship quality and academic marks, but sustained club

involvement was significantly related to friendship quality, substance use, marks, and intrapersonal well-being. While at first these findings may seem to challenge other studies that have reported significant cross-sectional associations between clubs and positive adjustment (including our own previous research), it is important to consider this apparent contradiction in light of the interpretation of clubs as a time-varying predictor versus our measure of sustained club involvement. A significant main effect for a time-varying predictor indicates that a relation exists between the time-varying predictor and the outcome variable at each grade. The group of individuals who reported club participation in grade nine, however, may be a different group from those who participated in grade 11, which in turn may be comprised of different individuals from the grade 12 participators. Within every grade, therefore, there would be sustained participators and sporadic participators.

Our sustained measure of club and religious service involvement, in contrast, allowed us to specifically distinguish the sporadic and sustained participants and, hence, we were able to differentiate between involvement at only one grade versus involvement at several grades. Our results for sustained involvement are consistent with other longitudinal studies that have found sustained, intense participation in extracurricular clubs to be more strongly related to positive adjustment than sporadic involvement (e.g., Mahoney et al., 2003).

Sustained club involvement in high school may be more likely than religious attendance to represent a commitment to self-development within a self-selected activity. Adolescents who are consistently involved with an activity over many years may have more opportunities to gain valuable skills and social connections, develop positive

friendships with peers who have similar interests, and acquire activity-based identity commitments. These benefits may give adolescents an advantage in many areas of life, including academics, social relationships, emotional regulation, and decision-making skills (e.g., Larson et al., 2006). At the same time, one can imagine that some adolescents may be part of a particular club because their parents want them to be; similarly, some adolescents may participate in self-selected religious activities that differ from their parents' religious affiliation. We assume, however, that these adolescents may represent a small group of individuals. Future research should explore the effect of involvement in self- versus parent-selected activities on adolescent adjustment.

Adolescents who are less well-adjusted also may be more likely to drop out of extracurricular clubs, thus decreasing their chances for reaping the benefits of sustained participation. Researchers have suggested that all adolescents do not have equal access to extracurricular activities, and that gatekeeping practices exist within many clubs (Mahoney & Cairns, 1997). Sustained participation in activities is often contingent upon social skills, talent in a particular area, or the attainment of a certain grade point average. For instance, young people who participate in marching band throughout high school are likely to be the more musically talented students. Students who report a greater degree of sustained involvement may be, on average, slightly more talented and popular than other students who may not have the social skills, discipline, intelligence, or self-confidence required to remain engaged in one or more activities for many years. Religious services, conversely, may not have the same set of gatekeeping practices as clubs. Theoretically, there are no competence requirements for attending religious services. Individuals who are less socially skilled, talented, or who are less confident than their peers may be less

likely to self-select out of religious activities than they would be to discontinue their involvement in other clubs.

The finding that sustained religious service involvement was related to less risk-taking and better academic marks across grades may reflect the possibility that adolescents who conform to conventional expectations of behavior are less likely to stop attending religious services than are individuals who do not conform to these conventions (e.g., Benda & Corwyn, 1997). These findings for sustained religious involvement could also be related to the aforementioned lack of autonomy that some adolescents who regularly attend religious services may experience. These adolescents may be more likely to conform to the expectations of their parents and society, which would include going to religious services, getting good grades, and avoiding substance use.

There were several limitations of this study. First, religious service attendance and club involvement were measured by one and two items, respectively, and may limit the validity of the results. However, religious service attendance is typically quite strongly correlated with broader measures of spirituality or religiosity (e.g., Ball, Armistead, & Austin, 2003; Gestdottir, Anderson, von Eye, & Lerner, 2003; King & Furrow, 2004). Also, we were specifically interested in investigating the role of religious service attendance as a unique structured activity, as opposed to the much broader construct of “religiosity.” Often, in scales of “religiosity,” religious service attendance is assessed along with questions that measure intrapersonal aspects of faith such as private prayer, solitary reading of sacred texts, and personal importance of religion (e.g., Kerestes et al., 2004; King & Furrow, 2004; Koenig, McGue, & Iacono, 2008). These broader scales would not answer the core question that we wished to explore in the present study - the

role of religious service attendance, independent of personal/private faith or belief. Presumably, however, the effects of religious service attendance would be stronger for adolescents who attended religious services and who had a strong personal faith/spirituality. Our results, therefore, may represent a conservative estimate of the impact of religious service attendance. In addition, we specifically examined *only* community and school club involvement, as they are the activities where religiously-involved adolescents may be overrepresented.

Similarly, because we did not include religiously-based youth groups within our measure of religious service attendance, it is possible such groups may have been subsumed within a community-based club. However, frequency of attendance at religious youth groups is strongly correlated with frequency of attendance at church/temple/synagogue (Smith et al., 2002). Also, to diminish the possibility of this limitation strongly influencing our results, in the analyses we examined the independent effects of both religious services and community/school clubs by simultaneously controlling for the effect of the other.

Further, the effect sizes in the relation between religious service attendance/club involvement and the indicators of psychosocial adjustment were quite small. It will be important, therefore, for future research to replicate these findings (particularly the interactions between religious service attendance and grade). Another important shortcoming stems from our reliance on self-report measures. In particular, self-reported school grades may have been affected by participant bias or social desirability. It would have been beneficial to have measured academic access via students' school records; however, the policies of the Ministry of Education do not permit school records to be

disclosed for research purposes. Finally, although the longitudinal participants in the present study did not differ substantively from the participants who only completed the survey in grade nine, the longitudinal sample did report significantly less risk behaviour involvement and higher academic marks than the grade nine-only participants. It may be that the students who did not complete the later surveys dropped out of school - a sample that previous research consistently has indicated is more likely to be involved in risky behaviors such as substance use (Townsend, Flisher, & King, 2007). Results obtained in the present study, therefore, may not apply to students characterized by less positive scores on these measures in grade nine. Also, although the participants in the present study included a large sample of enrolled students from a school district, findings may not generalize to other geographic, ethnic and/or demographic contexts.

Despite these limitations, the present study offers a much needed examination of differences between religious service attendance and club involvement with regard to their longitudinal trajectories and relation to psychosocial adjustment over time. The results suggest that religious service attendance may provide some unique experiences - both positive and negative - over and above what may be provided in other clubs; adolescents who attend religious services consistently throughout high school may also represent a distinct group of individuals who are drawn towards religion as a means of coping with life stressors. An additional strength of this study was the examination of sustained involvement in clubs versus religious services, revealing that sustained participation in clubs may be a particularly strong indicator of positive adjustment. These findings support our proposition that it is important for researchers to examine these activities independently, and highlight the importance of examining these issues

longitudinally. It would be beneficial for future research to use advanced longitudinal modeling techniques (i.e., growth mixture modeling) to identify and classify adolescents into unique trajectory groups for both religious service attendance and club involvement, and to identify the longitudinal predictors of membership in these groups. It would also be useful to conduct similar analyses with children and adults, to identify how trajectories of religious service attendance versus club involvement (as well as the predictors of those trajectories) may differ over the lifespan.

Chapter 3: Evaluating the Direction of Effects in the Relationship between Religious versus Non-Religious Activities, Academic Success, and Substance Use

A version of this chapter has been published. Good, M., & Willoughby, T. (2011). Evaluating the direction of effects in the relation between religious versus non-religious activities, academic success, and substance use. *Journal of Youth and Adolescence*, 40, 680-693. Used with permission.

Within the Positive Youth Development framework (e.g., Lerner, Dowling, & Anderson, 2003), in which priority is placed on understanding and promoting positive developmental features, both religious and non-religious structured activities are seen as environments in which intrapersonal and interpersonal assets may be fostered in adolescents (e.g., Dworkin, Larson, & Hansen, 2003; King & Furrow, 2004). Religious activities (e.g., attendance at church), however, may be a particularly unique form of structured activity where young people may have experiences not typically gained in other types of clubs (e.g., Smith, 2003a). Different assets, therefore, may be fostered by religious, as compared to non-religious clubs. Similarly, different types of adolescents may be drawn to participate in religious versus non-religious activities.

Differences between religious and non-religious activities have been largely overlooked within the literature, as religious activities often are not examined as a unique category (e.g., Gardner, Roth, & Brooks-Gunn, 2008). Not surprisingly, then, potential differences in the relationships between religious versus non-religious activities and adolescent psychosocial adjustment also have not been examined. In the present study, we evaluated differential relationships between participation in these activities and two commonly-studied indicators of adjustment in adolescence (substance use and academic achievement), with a focus on assessing differences in the direction of effects for

religious versus non-religious activities, as well as the robustness of these effects across time and in the presence of multiple control variables.

The Uniqueness of Religious Service Attendance

There are several unique aspects of religious as compared to non-religious activities (see Good, Willoughby, & Fritjers, 2009). For example, religious congregations typically present their adherents with worldviews about the purpose of life, a set of moral directives about what is right and wrong (e.g., Smith, 2003a), and distinct (i.e., religion-based) strategies for coping with stress (e.g., Smith, 2003a). Further, spiritual experiences such as group rituals, prayer, and the perception of receiving divine guidance - which may be positive, powerful experiences in the lives of adolescents – often happen within the context of religious groups (e.g., Good & Willoughby, 2007). Religious activities also offer unique interpersonal environments. Notably, because religious groups are one of the only formal institutions in which adolescents participate that are not rigidly age-stratified, teens may develop relationships with individuals from younger and older cohorts (e.g., Glanville, Sikkink, & Hernandez, 2008), which may lead to increased social network closure and social capital (e.g., Smith, 2003b). There also may be some unique negative experiences inherent in being part of some religious groups, including the obstruction of identity exploration (e.g., adherents in some religious groups are encouraged to unquestioningly accept the tenets of their faith; Hunsberger, Pratt, & Pancer, 2001), and guilt for adolescents who engage in activities that go against the moral order of their religion (e.g., Albertsen, O'Connor, & Berry, 2006).

Given their unique features, it could be argued that religious activities should be examined as a separate category of extracurricular clubs. In studies on activity

involvement in adolescence, however, religion-based activities have been largely subsumed under the umbrellas of “community,” “prosocial,” “structured”, or “service/civic” club categories (e.g., Barber, Eccles & Stone, 2001; Gardner et al., 2008). Failing to separate religious from non-religious activities is problematic because adolescents who are involved in religious activities are also more likely to be involved in non-religious clubs (i.e., they are more likely to be “joiners”, Glanville et al., 2008; Regnerus & Smith, 2005). As a result, it is possible that associations that have been found between general activity involvement and psychosocial adjustment may be partially explained by religious activity involvement, and, conversely, associations between religious involvement and adjustment may be partially explained by involvement in non-religious clubs.

Academic success and substance use are two commonly-studied indicators of adolescent adjustment that are particularly illustrative of the potential problems with examining activity involvement without separating religious and non-religious activities. Studies have found that more frequent activity involvement is associated with lower substance use (e.g., Barber et al., 2001; Youniss, McLellan, Su, & Yates, 1999) and greater academic success (e.g., Mahoney, 2000; Regnerus & Elder, 2003). However, because many religious groups explicitly discourage any adolescent substance use, but most non-religious clubs do not, it is possible that religious attendance may (at least partially) explain the link between general activity involvement and substance use. Conversely, for academic achievement, because non-religious groups may foster skills that are more directly related to school success (particularly school clubs, as members often have to keep their GPA at a certain level in order to participate) than religious

activities, involvement in non-religious clubs may at least partially explain the link between religious activity involvement and academic success.

In two previous studies, we attempted to disentangle the associations between religious versus non-religious activity involvement and substance use and academic achievement (Good & Willoughby, 2006; Good et al., 2009). The results indicated that religious service attendance, in comparison to non-religious activity involvement, was more consistently associated with lower substance use, and non-religious activity involvement, in comparison to religious service attendance, was more consistently associated with higher academic success. These studies were limited, however, in that they focused primarily on within-time (i.e., concurrent) associations, and, as such, did not explore the *direction of effects* among these associations. In other words, it is unclear whether prior involvement in religious services or non-religious clubs may have influenced adolescents' subsequent levels of substance use and/or academic success or, conversely, prior substance use and academic standing influenced adolescents' subsequent attendance at religious services and/or involvement in clubs.

There are two hypotheses, therefore, with regard to the direction of effects for the link between religious and non-religious activity involvement and positive adjustment. The first hypothesis is that religious and/or non-religious club involvement may contribute to adolescents' decisions to engage in less substance use and/or do better at school (the *influence of involvement hypothesis*). An alternative possibility is that adolescents who get better grades and/or engage in lower levels of substance use are more likely to choose to attend religious and/or non-religious clubs (the *selection hypothesis*). Below we consider both theoretical rationale and empirical evidence

pointing to the possibility that these hypotheses may be differentially supported for religious as compared to non-religious activities.

With regard to substance use, a unique trait of religious groups is their promotion of moral/religious worldviews (Smith, 2003a) and, in many religions, the wrongness of adolescent substance use is a component of those beliefs. Consistent exposure to these worldviews, as well as being part of a community of individuals who believe adolescent substance use is a moral offense, are factors unique to religious activities that may influence adolescents' decisions about substance use (Smith, 2003b). These characteristics are consistent with the *influence of involvement* hypothesis. In contrast, because non-religious activities typically do not present religious worldviews, it is perhaps less likely that involvement in non-religious activities would directly affect adolescents' views about the morality of substance use. On the other hand, the *selection* hypothesis also may help explain the link between substance use and religious activities. Adolescents who engage in substance use may decrease their involvement in religious activities over time, as they could feel uncomfortable in the presence of religious peers and adults who disapprove of their actions (Regnerus & Uecker, 2006). Because substance use is not usually directly discouraged in non-religious activities, however, adolescents who use substances may be less likely to drop out of non-religious clubs, as compared to religious activities.

With regard to academic achievement, because non-religious groups may foster skills (e.g., dance, music, politics, debating, business; Larson, Hansen, & Moneta, 2006) that are more directly related to school success, non-religious clubs may be the driving factor behind "involved" adolescents' academic achievement. These factors are

consistent with the *influence of involvement* hypothesis. For example, participation in non-religious extracurricular clubs is associated with school engagement (e.g., Dotterer, McHale, & Crouter, 2007) and positive attitudes towards education (e.g., Fredricks & Eccles, 2008). Because religious groups may not promote behaviors and attitudes so directly related to educational or career success, it is perhaps less likely that religious activity involvement would directly impact upon academic achievement. Similarly, *selection* effects of academic achievement may be stronger for non-religious clubs than religious activities. Individuals who do not do as well in school as their peers may feel uncomfortable in clubs where members are largely comprised of high-achieving students (e.g., Mahoney & Cairns, 1997). Further, many school-based clubs may require their members to keep their GPAs at a certain level. There are, of course, no academic competence requirements for attending religious services, and so individuals who do not do well in school may be less likely to drop out of religious activities than they would be to discontinue their involvement in other clubs.

Only a very limited number of studies have tested the direction of effects in the relationship between either religious or non-religious activity participation and substance use and/or academic success. The direction of effects is typically assessed with longitudinal data, where the temporal ordering of variables can be inferred. With regard to the relationship between religious attendance and substance use, researchers have found support for both the *influence of involvement* hypothesis (e.g., religiosity at time 1 predicted substance use at time 2, after controlling for time 1 substance use; Mason & Windle, 2002; Nonnemaker, McNeeley, & Blum, 2006; Steinman & Zimmerman, 2004) and, to a lesser extent, the *selection* hypothesis (substance use at time 1 predicted

religiosity at time 2 after controlling for religiosity at time 1; Burkett & Warren, 1987).

Only two studies of which the authors are aware have evaluated the direction of effects in the relationship between religious activities and academic success. Glanville et al (2008) and Muller and Ellison (2001) tested the direction of effects by using autoregressive cross-lagged models, and both found support for the *influence of involvement* hypothesis.

Several longitudinal studies have assessed the direction of effects for the relationship between general structured activity involvement and academic success or substance use. For academic success, support has been found for both the *influence of involvement* hypothesis (e.g., Fredricks & Eccles, 2006; Gardner et al., 2008; Mahoney, Cairns, & Farmer, 2003), as well as the *selection* hypothesis (e.g., Fredricks & Eccles, 2006). Similarly, for substance use, both the *influence of involvement* (e.g., Fredricks & Eccles, 2006; Hoffman, 2006) and the *selection* (e.g., Fredricks & Eccles, 2006) hypotheses have been supported. These studies are limited, however, because they either did not assess religious activities, or did not assess them as a unique category.

The authors are aware of no studies that have simultaneously assessed both the *influence of involvement* and the *selection* hypotheses for religious versus non-religious activities in relation to both substance use and academic achievement. Therefore, the relative strength of these hypotheses for the associations among these variables has never been compared. Given the uniqueness of religious activities and the finding that religiously-committed adolescents may be overrepresented in non-religious clubs, this issue is important to consider.

Further, studies that have tested the direction of effects share an important limitation, in that the time-specific effects of cross-lagged relationships (e.g., differences

in the path between grades 9 and 10 versus the path between grades 10 and 11) were not assessed. This limitation is partially due to the fact that nearly all of these studies only assessed participants at two time points. Only one other study of which the authors are aware has assessed across-time differences in direction of effects for the relationship between religiosity and substance use (Burkett & Warren, 1987), but this study had a relatively small sample size ($n=264$), and only examined marijuana use. Almost nothing is known, therefore, about whether the *influence of involvement* and *selection* hypotheses are consistently supported over the adolescent years.

The lack of attention paid to over-time differences is a significant limitation, as another way in which religious activities differ from non-religious activities is in the trajectory of involvement across adolescence. It is normative for the frequency of religious service attendance to decline (e.g., Steinman & Zimmerman, 2004), while levels of involvement in other structured clubs remain stable (e.g., Busseri, Rose-Krasnor, Willoughby, & Chalmers 2006). As involvement in religious activities becomes less typical in late adolescence, the “effect” of being involved may change. It could become stronger, as adolescents may identify more powerfully with their religious beliefs as something that makes them unique, and/or identify more strongly with peers who hold similar religious beliefs (i.e., religious peers may reinforce conventional behavior such as avoiding substance use and doing well at school). It is perhaps more likely, however, that the effect of religious service attendance could become weaker over time in its effect as a social control mechanism, particularly when peers do not hold similar religious beliefs and engage in substance use (i.e., peers’ substance use may be a more powerful determinant of individuals’ substance use as adolescents get older, as compared to

religious proscriptions). Further, because religious doubt/questioning tends to increase throughout adolescence (e.g., Levenson, Aldwin, & D'Mello, 2005), older adolescents may question the validity of their religious groups' claims that substance use is wrong to a greater extent than young adolescents. All of these factors may result in religious service attendance having less of an impact on substance use as adolescents get older.

It is also possible that adolescents who attend religious services in late high school may be experiencing a lack of autonomy granted to them by their parents (i.e., they may be forced to attend). Decline in attendance at religious activities has been linked to increasing personal autonomy (e.g., Regnerus & Uecker, 2006), which in turn is associated with positive adjustment (e.g., Soenens et al., 2007). Some late adolescent attendees, therefore, may experience less positive well-being than do non-attendees, and this may weaken the relationship between religious service attendance and positive adjustment. The effect of involvement in non-religious clubs, however, may be expected to remain more stable across adolescence. From a developmental perspective, then, it is important to evaluate whether the direction of effects are consistent over time for the relationship between religious versus non-religious activities and positive adjustment.

Third Variable Problem. It also is important to consider the possibility that the link between religious or non-religious activity participation and substance use and/or academic success may be due to their common associations with other unmeasured, or third, variables. Potential third variables, or control variables, have been suggested in previous research, and these variables appear to be similar for religious and non-religious activity involvement. Specifically, being female, having higher socio-economic status, having fewer deviant friends, reporting better relationships with parents and greater

parental control/monitoring, having an “easy” temperament characterized by self-control, persistence, and attention, and being more risk averse or intolerant of deviance are all associated with greater involvement in religious and non-religious activities, greater academic success, and less substance use (e.g., Feldman & Matjasko, 2007; Fredricks & Eccles, 2006; Glanville et al., 2008; Regnerus & Smith, 2005).

In the present study, we measured each of these control variables and specifically assessed whether *influence of involvement* and *selection* hypotheses for both religious and non-religious activities “held up” after controlling for these variables. The robustness of the findings in the presence of control variables is another way in which the differences in the relationship between religious versus non-religious activities and substance use/academic marks may be revealed. For instance, if both religious service attendance and non-religious activity involvement predicted substance use over time (supporting the *influence of involvement* hypothesis for both activities), but non-religious involvement no longer predicted substance use after accounting for the control variables, it would imply that only religious service attendance uniquely predicted substance use, while the effect for non-religious involvement could be explained by the control variables.

The Present Study

The present study is unique in that it simultaneously tested the *influence of involvement* and *selection* hypotheses (i.e., the direction of effects) for religious and non-religious activities in relation to both substance use and academic achievement, tested if the *influence of involvement* and *selection* hypotheses were consistently supported across four grades of high school, and evaluated the robustness of the results in the presence of multiple control variables reflecting individual-, friend-, and parent-level characteristics.

Our analyses were primarily exploratory, given that this is the first study to assess both the *influence of involvement* and *selection* hypotheses for religious and non-religious activities simultaneously over multiple waves. However, for substance use, because attendance at religious services (but *not* involvement in non-religious clubs) may foster unique motivations for avoiding substance use (Smith, 2003a), and because adolescents who engage in substance use may feel uncomfortable in religious communities (Regnerus & Uecker, 2006), it was expected that both the *influence of involvement* and *selection* hypotheses would be stronger for religious service attendance than for non-religious involvement, and would be robust in the presence of the control variables. In contrast, with regard to academic success, because non-religious clubs may foster skills that are more directly related to educational/career success (e.g., Wood, Larson, & Brown, 2009) than religious services, and since adolescents who are less skilled academically may be more likely to be excluded from non-religious clubs than from religious groups, both the *influence of involvement* and *selection* hypotheses were expected to be stronger for non-religious than religious activities, and robust in the presence of control variables. Further, while our assessment of the consistency of effects over time were exploratory, we expected that for religious attendance, but not for non-religious club involvement, the *influence of involvement* hypothesis may be supported in the early years rather than in the later years of high school (particularly for substance use).

Method

Participants

Students from eight high schools encompassing a school district in Ontario, Canada took part in the study. This longitudinal-sequential study was part of a larger

project examining youth lifestyle choices, involving 5 waves of survey data from 2003 to 2008. The current analysis is based on the 3993 participants (49.4% female) who completed the survey at a minimum of 2 time points (out of a total of 4,412 participants). The overall participation rate ranged from 83% to 86%; non-participation was due to student absenteeism (average of 13.7%), parent refusal (average of .90%), or student refusal (average of 1.3%). Student absenteeism from class was due to illness, a co-op placement, a free period, or involvement in another school activity. Consistent with the broader Canadian population (Statistics Canada, 2001b), 92.4% of the participants were born in Canada and the most common ethnic backgrounds reported other than Canadian were Italian (31%), French (18%), British (15%), and German (12%). Data on socioeconomic status indicated mean levels of education for mothers and fathers falling between “some college, university or apprenticeship program” and “completed a college/apprenticeship/technical diploma.” Further, 70% of the respondents reported living with both birth parents, 12% with one birth parent and a stepparent, 15% with one birth parent (mother or father only), and the remainder with other guardians (e.g., other relatives, foster parents). The school board did not permit the release of students’ religious affiliations; however, the board was publicly funded (i.e., the schools were not private) and the religious affiliation of the population in this region is predominantly Christian (79% Catholic/Protestant), with 14% reporting no religion, and 17% reporting “other” affiliations (e.g., Muslim, Hindu, Jewish) (Statistics Canada, 2001c).

Because of the study’s longitudinal-sequential design, the sample included 3 cohorts. One cohort included students ($N = 1471$) who entered high school in the academic year 2002/2003 and completed the survey when they were in grades 9, 11, and

12. The second cohort of students entered high school in the academic year 2003/2004 ($N = 1226$) and completed the survey when they were in grade 10, 11, and 12. The third cohort of students ($N = 1492$) entered high school in the academic year 2004/2005 and completed the survey when they were in grade 9, 10, 11, and 12. An additional 223 students who were absent at the first wave of data collection completed the survey during the subsequent data collection periods. Because the missing data due to the longitudinal-sequential design was not dependent on the values of the study measures, it is reasonable to assume that this data is missing at random (Little & Rubin, 2002). In analyses using AMOS 17.0, missing waves are estimated using the full information maximum likelihood (FIML) estimation method. FIML retains cases missing one or more waves, thus avoiding the biased parameter estimates that can occur with pair-wise or list-wise deletion (Schafer & Graham, 2002).

In addition, an examination of mean differences on the main study measures depending on cohort revealed no significant differences among the cohorts other than in grade 10, in which the second cohort entering high school in the 2003/2004 academic year reported significantly lower scores on friends' tolerance of substance use, than the third cohort entering high school in the academic year 2004/2005 ($p < .001$; mean difference of .27 and η^2 value of .016). As differences between cohorts were limited, all analyses combined students across cohorts into one sample with the data structured by grade (9, 10, 11, and 12). Cohort was included as a covariate in all analyses.

A second source of missing data occurred because some students did not finish the entire questionnaire. To ensure that any missing data was missing at random, we included three versions of the survey at each time period so that the same scales were not

always near the end of the survey. For multi-item scales, composite scores were computed for participants who responded to at least 50% of the relevant items. For respondents who did not give a sufficient number of responses within a multi-item scale, or did not provide a response to a single-item measure, missing values *within each wave* were imputed. In total, 12.2% of the data were imputed, using the EM (expectation-maximization) algorithm. This percentage of imputed data is consistent with other longitudinal survey studies (e.g., Feldman, Masyn & Conger, 2009). EM is an iterative maximum-likelihood (ML) procedure in which a cycle of calculating means and covariances followed by data imputation is repeated until a stable set of estimated missing values is reached. Research has demonstrated that ML estimation is preferable to more common methods such as pair-wise deletion, list-wise deletion, or means substitution (Schafer & Graham, 2002).

Participants who completed the survey at only one time period reported significantly less positive scores than longitudinal participants on all the measures with the exception of religious and non-religious club attendance as well as task orientation (all $ps < .001$). Magnitudes of the between group differences, however, were small (mean differences ranging from .12 for parental relationship quality to .40 for academic marks; individual η^2 values ranging from .005 for parental education to .028 for academic marks).

Procedure

Active informed assent was obtained from the adolescent participants. Parents were provided with written correspondence mailed to each student's home prior to the survey administration outlining the study; this letter indicated that parents could request

that their adolescent not participate in the study. An automated phone message about the study also was left at each student's home phone number. This procedure was approved by the participating school board and the University Research Ethics Board. At all time periods, the questionnaire was administered to students in classrooms by trained research staff. Students were informed that their responses were completely confidential.

Measures

Means and standard deviations for the measures are provided in Table 2.1. Each measure other than gender and parental education was assessed at each of the high school grades.

Religious service attendance. Religious service attendance (church/synagogue/temple) was measured by one item assessing the frequency of attendance in the past month using a 5-point scale ranging from *never* to *every day*⁵.

Non-religious club involvement. Non-religious club involvement was measured by a composite of two items assessing the frequency of attendance in school clubs and out-of-school clubs in the past month, using a 5-point scale ranging from *never* to *every day*.

Substance use. Substance use was measured by a composite scale of four items: typical frequency of alcohol use on an 8-point scale, where 1=*never*, and 8=*every day*; average consumption per drinking episode on a 6-point scale, where 1=*less than one drink*, and 6=*more than 10 drinks*; typical number of cigarettes smoked each day on an 8-point scale where 1=*none* and 8=*more than a pack*; and frequency of marijuana use in the past year on a 6-point scale where 1=*never* and 6=*every day*. All behaviors were recoded

⁵ Skewness and kurtosis statistics indicated that the distribution of religious service attendance at all grades was normal (i.e., skewness and kurtosis <2). However, the shapes of the distributions were slightly positively skewed at all grades, indicating that infrequent religious service attendance was common.

Table 2.1

Means and standard deviations of study measures

<i>Variable</i>		<i>Grade 9</i>	<i>Grade 10</i>	<i>Grade 11</i>	<i>Grade 12</i>
	<i>Scale Range</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Gender	1-2	1.49 (.50)			
Parental Education	1-6	3.23 (1.05)			
Age	--	14y (0.32)	15y (0.45)	16y (0.49)	17y (0.50)
Religious Service Attendance	1-5	1.90 (.89)	1.72 (.87)	1.66 (.91)	1.65 (.92)
Non-Religious Club Involvement	1-5	2.05 (.98)	2.07 (1.03)	2.03 (1.09)	2.08 (1.09)
Substance Use	1-6	1.48 (.68)	1.91 (.93)	2.26 (1.00)	2.45 (1.01)
Academic Marks	1-5	3.40 (.87)	3.37 (.90)	3.39 (.89)	3.51 (.86)
Task Orientation	1-4	2.50 (.53)	2.45 (.57)	2.46 (.56)	2.47 (.57)
Temperament					
Attitudinal Tolerance of Deviance	1-4	1.88 (.48)	1.99 (.52)	2.01 (.54)	2.01 (.59)
Friends' Tolerance of Substance Use	1-4	2.38 (.89)	2.66 (.86)	2.79 (.83)	2.86 (.79)
Friends' Attitudes Toward Academic Success	1-4	2.53 (.43)	2.49 (.54)	2.42 (.50)	2.49 (.59)
Parental Relationship Quality	1-4	3.00 (.48)	2.92 (.51)	2.88 (.50)	2.88 (.48)
Parental Control	1-4	3.02 (.64)	2.87 (.74)	2.73 (.76)	2.56 (.78)

Note: Higher scores for religious service attendance, non-religious club involvement, substance use, and academic marks indicate higher levels of the variables. Higher scores for Task Orientation Temperament indicate more persistence/less distractibility. Higher scores for attitudinal tolerance of deviance and friends' tolerance of substance use indicates more tolerance. Higher scores for friends' attitudes towards academic success indicates more positive attitudes. Higher scores for parental relationship quality indicate higher relationship quality, and higher scores for parental control indicate greater control.

to fit a range of 1 to 6 in order to create the composite (Cronbach alphas were .77, .77, .75, and .75 for grades 9, 10, 11, and 12, respectively). Results from a principal component analysis revealed a one-factor solution at each grade (factor loadings of .5 or higher), supporting our decision to create a composite for these variables. Combining these scores into a composite is also consistent with previous research (e.g., Donovan, Jessor, & Costa, 1988).

Academic success. Academic success was measured by the item “what grades do you typically get in school?” Participants responded on a 5-point scale where 1=*below 50%* and 5=*A*.

Control variables.

Demographic characteristics. *Gender* and *parental education* (as an indicator of socio-economic status, one item per parent, averaged for those reporting on both parents, $r = .44$) were assessed. Higher scores indicate greater age, female gender (1 = *male*, 2 = *female*), and greater parental education respectively (1 = *I did not finish high school to 6 = professional degree*).

Individual characteristics. Individual-level characteristics included attitudinal tolerance of deviance and task orientation temperament. *Attitudinal tolerance of deviance* (adapted from Costa, Jessor, and Turbin, 1999) is an 11-item scale assessing general attitudes and beliefs about right and wrong. Questions deal with issues such as trust, respect, social rules and boundaries (e.g., How wrong is it to cheat on a test; give a fake excuse to a teacher; damage someone’s property?). Respondents answered on a 4-point scale from 1=*very wrong* to 4=*not at all wrong* ($\alpha = .88, .88, .89$, and $.90$). *Task Orientation Temperament* is a subscale adapted from the Revised Dimensions of

Temperament Survey (Windle & Lerner, 1986). The subscale consists of 6 items that assess how persistent and distractible individuals perceive themselves to be when working on a task (e.g., I persist at a task until it is finished; Once I am involved in a task nothing can distract me from it). Response options ranged from 1=*almost never or never* to 4=*almost always or always* ($\alpha=.70, .74, .70$, and $.65$).

Friend characteristics. Friend characteristics assessed in the present study were friends' tolerance of substance use and friends' attitude towards academic success.

Friends' tolerance of substance use was assessed by a 4-item scale that measures how upset a participant believes his/her friends would be if s/he was to engage drinking alcohol, smoking, using marijuana, or using other illegal drugs. Respondents answered on a 4-point scale, from 1=*very upset* to 4=*not at all upset*. Alpha values in grades 9-12 were .89, .85, .82, and .80. *Friends' attitude towards academic success* was measured by a single item (How important is it to your friends that you do well in school?). Respondents answered on a 4-point scale, from 1=*not at all important* to 4=*very important*.

Parent characteristics. Parent-level characteristics included parental control and quality of relationship with parents. *Parental control* was assessed with 6 items (Stattin & Kerr, 2000) that asked the extent to which parents imposed restrictions and required information about adolescent's activities and whereabouts (e.g., Do you need your parent's permission to stay out late on a weekday evening?). Respondents answered on a 4-point scale from 1=*almost never or never* to 4=*almost always or always* ($\alpha=.88$ at all grades). *Parent relationship quality* was measured by 17 items from the Inventory of Parent and Peer Attachment (Armsden & Greenberg, 1987). Participants completed this scale for both mother and father. Items (e.g., My mother trusts my judgment; My father

can tell when I'm upset about something) were responded to on a 4-point scale ranging from 1=*almost never or never* to 4=*almost always or always*. A composite score averaging the mother and father items was created (average $r = .61$, $\alpha = .94$, $.93$, $.93$ and $.92$).

Results

Preliminary Analyses

All variables exhibited acceptable skewness and kurtosis (Kline, 2005). Table 2.2 outlines the correlations among variables. There was stability in scores across grades for each variable, with the greatest stability shown for substance use (average $r = .64$ across adjacent grades).

Primary Analysis

The *influence of involvement* and *selection* hypotheses were assessed using autoregressive (panel) models, where all variables were measured at each wave. Autoregressive models allow researchers to assess direction of effects by estimating reciprocal cross-lagged parameters that test whether a variable assessed at one point in time predicts another variable assessed at a later point in time, after controlling for the over-time stability in the variable being predicted, and vice versa (Little, Card, Preacher, & McConnell, 2009). The primary statistical analyses were carried out using path analysis with AMOS 17.0, which allowed us to simultaneously estimate all cross-lagged parameters of interest among religious service attendance, non-religious club involvement, substance use, and marks. We adopted a conservative approach to our analyses by including only manifest variables, as a fully latent approach is more difficult to estimate with the number of variables included in our study. Overall model fit was

Table 2.2

Correlations Among Main Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. RS. Attendance 9	-	.47	.37	.36	.24	.09	.11	.10	-.11	-.14	-.10	-.08	.14	.16	.09	.09	-.03	.14
2. RS Attendance 10		-	.44	.43	.15	.17	.05	.09	-.05	-.11	-.12	-.13	.08	.15	.10	.12	.03	.15
3. RS Attendance 11			-	.48	.11	.09	.26	.11	-.07	-.09	-.07	-.07	.07	.10	.10	.06	-.03	.14
4. RS Attendance 12				-	.08	.11	.11	.28	-.09	-.06	-.05	-.07	.08	.07	.06	.13	-.03	.13
5. NRC Involvement 9					-	.40	.32	.27	-.03	-.07	-.03	-.06	.14	.17	.14	.15	.04	.15
6. NR Involvement 10						-	.42	.37	-.02	-.03	-.02	-.02	.12	.17	.12	.13	.02	.16
7. NR Involvement 11							-	.48	-.07	-.05	-.03	-.02	.18	.17	.19	.19	.01	.19
8. NR Involvement 12								-	-.08	-.04	-.06	-.04	.16	.13	.16	.21	.03	.14
9. Substance Use 9									-	.61	.43	.38	-.26	-.21	-.20	-.15	-.02	-.08
10. Substance Use 10										-	.66	.52	-.28	-.28	-.21	-.17	-.09	-.08
11. Substance Use 11											-	.66	-.24	-.29	-.28	-.23	-.12	-.07
12. Substance Use 12												-	-.18	-.27	-.26	-.23	-.19	-.06
13. Academic Marks 9													-	.57	.54	.49	.07	.22
14. Academic Marks 10														-	.63	.58	.14	.24
15. Academic Marks 11															-	.62	.15	.24
16. Academic Marks 12																-	.19	.23
17. Gender																	-	-.05
18. Parental education																		-

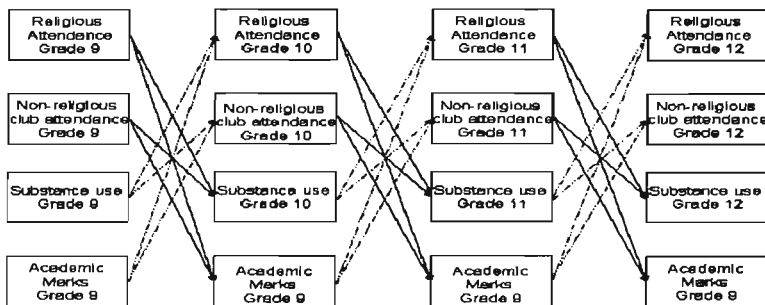
Note. The smallest correlation significant at $p < .05$ is $r = .05$; the smallest correlation significant at $p < .01$ is $r = .06$. Due to space constraints, only the demographic covariates (gender and parental education) are included; RS=religious services. NRC=non-religious club

evaluated using the comparative fit index (CFI), and the root mean squared error of approximation (RMSEA). As recommended by Hu and Bentler (1999), CFI values greater than .95 and RMSEA's less than .06 (simultaneously) were used as the criteria for a well-specified model.

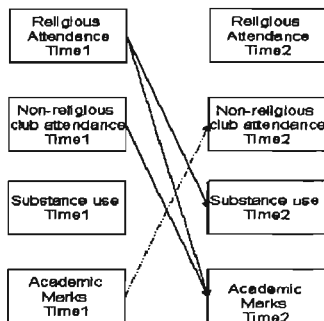
Assessing the *influence of involvement and selection* hypotheses across time. A model was estimated that included each of the primary variables (religious service attendance, non-religious club involvement, academic marks, and substance use) assessed at each grade. The stability model (Model 1) consisted only of direct paths across grades within each variable (first- and second-lags), as well as the concurrent correlations among all variables. The model had good fit, $\chi^2(76) = 437.3, p < .001$, CFI = .97, RMSEA = .035 (.031-.038). Another model was then fit (Model 2), which was nested within the stability model, which added the cross-lagged paths that directly assessed the *influence of involvement* and *selection* hypotheses (see Figure 2.1a). All cross-lagged paths were estimated simultaneously so that the coefficients would reflect the independent effects for religious service attendance after controlling for the effect of non-religious activity involvement, and vice versa. The chi-square difference test of relative fit revealed that the model including the cross-lagged paths had significantly better fit than the stability model, $\chi^2_{diff}(24) = 162.1, p < .001$ [CFI = .979 RMSEA = .033 (.029 - .032) for the cross-lagged model].

We then assessed whether the pattern of results for the cross-lagged paths was invariant across grade. Invariance was tested by comparing a model in which cross-lagged paths were constrained to be equal across grade to the unconstrained model in

2.1a. Full Model with All Estimated Cross-Lagged Paths



2.1b. Significant Cross-Lagged Paths Prior to Addition of Covariates



2.1c. Significant Cross-Lagged Paths After Addition of Control Variables

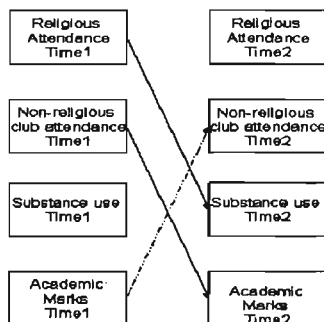


Figure 2.1. Notes. Concurrent associations among constructs within a grade, stability paths across adjacent grade, and the cohort covariate are not shown. Solid lines represent paths assessing *influence of involvement* effects; dashed lines represent paths assessing *selection* effects. For 1b and 1c, only 2 time points are shown as cross-lagged paths were invariant across the four high school grades.

which cross-lagged paths were free to vary across grade. The chi-square difference test indicated that the unconstrained model was not a significantly better fit than the constrained model, suggesting that the cross-lagged paths were consistent across the high school years, $\chi^2_{diff}(16) = 17.3, p = .60$ [CFI = .98, RMSEA = .029 (.025 - .032) for the constrained model]. As the constrained model was the most parsimonious, all further interpretations were based on the constrained model. Cross-lagged paths were then examined to determine the direction of effects among the variables. Figure 2.1b summarizes the significant paths (note that as paths across each adjacent grade were constrained to be equal, paths are shown for only 2 time points, labeled as Time 1 and Time 2).

The relative strength of the *influence of involvement* and *selection* hypotheses for religious service attendance versus non-religious activity involvement was assessed in two ways. First, for paths that were significant for both religious service attendance and non-religious activity involvement, the magnitude of the significant cross-lagged paths were compared; significant paths with larger standardized coefficients were considered stronger predictors of the outcome variable. Second, the robustness of the significant cross-lagged paths in the presence of the control variables was examined; paths that remained significant after the control variables were added were considered to be stronger than paths that became non-significant when control variables were added.

The *influence of involvement* hypothesis. The *influence of involvement* hypothesis for the relationship between religious service attendance and substance use was supported, consistent with our expectations. Higher levels of religious service attendance predicted lower substance use over time, $\beta = -.05, p < .001$, after controlling

for stability over time in substance use and religious attendance. In contrast, there was no support for the *influence of involvement* hypothesis for the relationship between non-religious activities and substance use.

For the relationship between non-religious activities and academic marks, as expected, the *influence of involvement* hypothesis was supported, wherein greater non-religious involvement predicted higher subsequent marks. $\beta = .04, p < .001$, after controlling for stability in non-religious attendance and marks. The *influence of involvement* hypothesis was also supported for the relationship between religious service attendance and academic marks, as higher religious service attendance predicted higher marks over time, $\beta = .02, p = .03$, after controlling for stability in religious attendance and marks.

The selection hypothesis. The *selection* hypothesis was supported only for the association between academic marks and non-religious activity involvement. Higher academic marks predicted greater subsequent non-religious activity involvement, $\beta = .10, p < .001$, after controlling for stability in the constructs. All other cross-lagged paths were not significant.

Third variable problem. The next step in the analyses involved testing whether the *influence of involvement* and *selection* hypotheses that were supported (i.e., significant cross-lagged paths) were reduced or eliminated by adding the control variables to the model. This step provided an additional way in which to test the strength of the direction of effects (i.e., whether the effects were unique to the variables of primary interest, or, rather, could be explained by the control variables). Correlations were estimated between the control variables and the primary variables (religious service

attendance, non-religious club involvement, substance use, and marks) at Time 1, and paths were estimated between the control variables and primary variables at Time 2. The cross-lagged paths remained significant after the control variables were added, with the exception of the paths supporting the *influence of involvement* hypothesis for the relationship between religious service attendance and academic marks. The complete model illustrating the cross-lagged paths that remained significant after the control variables were added is presented in Figure 2.1c.

Discussion

Within the Positive Youth Development framework, both religious and non-religious activities have received attention as environments where developmental assets may be fostered. However, only a limited amount of research has been conducted on the ways by which religious and non-religious activities may be differentially related to psychosocial adjustment – particularly with regard to how these effects may differ over time. The goal of the present study was to extend our previous work (Good & Willoughby, 2006; Good et al., 2009) in order to develop a more comprehensive understanding of the associations among religious service attendance versus non-religious club involvement and two indicators of adjustment (substance use and academic achievement). Our focus specifically was on assessing the direction of effects among these variables. We tested two main hypotheses: the *influence of involvement* hypothesis (religious and non-religious activity involvement predict adjustment) and the *selection* hypothesis (adjustment predicts religious and non-religious activity involvement). We also assessed the robustness of these effects across four grades of high school, and after adding control variables.

Results indicated support for the *influence of involvement* hypothesis, in that more frequent involvement in religious activities (but *not* non-religious activities) led to lower levels of substance use over time. This finding is consistent with two-wave studies that have used autoregressive models to assess the impact of religiosity on substance use (Mason & Windle, 2002; Nonnemaker et al., 2006). The fact that the cross-lagged paths remained significant after multiple control variables reflecting individual-, friend-, and parent-level characteristics were entered into the model provides a degree of confidence that the effect of religious attendance on substance use was not a spurious association. These results imply, therefore, that there may be something unique to religious service attendance that makes adolescent adherents less likely to engage in substance use. It is particularly interesting that the effect of religious service attendance on substance use was still significant after variables assessing both individuals' and friends' tolerance of deviance/substance use were included as control variables. Presumably, one of the more salient reasons why religiously-involved adolescents would engage in less substance use would be because of their (and their friends') beliefs about the wrongfulness of smoking cigarettes, drinking alcohol, and using marijuana. Steinberg (2007; 2010) has suggested, however, that attitudes or beliefs may not protect against involvement in risky behavior, and the most effective way to reduce risk taking in adolescence may be to reduce *opportunities* for engaging in these behaviors. This argument is based on recent evidence supporting a dual-systems model of adolescent risk-taking (e.g., Paus, 2005), where risk behavior is thought to be the result of a slow-maturing *cognitive-control system* (the neural network that controls self-regulatory functions such as planning and thinking ahead) and a particularly active *socio-emotional system* (the network that drives the

desire for thrilling, immediately gratifying experiences such as using substances). Steinberg states that risk taking decreases as the cognitive-control system gradually matures, and, as there may be little that can be done to hasten its maturation, interventions focused on knowledge or attitudes (e.g., religious communities teaching about the wrongness of substance use) are not useful. From the perspective of the dual-systems model, then, perhaps the effect of religious service attendance on substance use found in the present study may be due to reductions in opportunities for risk taking among religiously-involved adolescents. Our results suggest that these reductions in opportunities may involve more than just parental control, as the paths linking religious attendance and substance use were significant after parental control was added as a control variable.

In contrast to the idea that religious activity involvement prevents adolescent substance use because of reduced opportunities for risk-taking, there is some evidence to suggest that religious involvement may actually increase capacities for self-control and self-regulation. In a comprehensive review, McCullough, and Willoughby (2009) found support for the suggestion that religion may promote self-control and self-regulation, and the links that have been found between religiousness and health (including lower substance use) may be partially due to self-control and self-regulation. In light of the growing support for the dual-systems model (Steinberg, 2007), future research should explore whether the effect of religious involvement on substance use is related to improvements in self-regulatory and self-control capabilities (i.e., maturation in the cognitive-control system) or reductions in opportunities to engage in substance use, or both.

Although other longitudinal studies have found support for the *influence of involvement* hypothesis for the relationship between religious attendance and substance use, the present study was unique in that it surveyed adolescents across all the high school grades (i.e., grades 9 through 12), and therefore could assess across-time differences in these effects. While we expected the effect of religious service attendance on adjustment would differ across the high school years (for substance use in particular), significant differences in cross-lagged paths across high school grades were not found. Because this is only the first study of which the authors are aware to have assessed across-time differences in cross-lagged effects among these variables (except see Burkett & Warren, 1987), future research should replicate these findings in order to establish whether across-time effects are consistent. It also would be beneficial for future research to examine a greater range of psychosocial adjustment variables. It may be that the effects are consistent across high school grades for some variables (e.g., substance use and academic achievement), but differ across time for other variables.

It is interesting that there were no associations between non-religious activity involvement and substance use. Other studies often have reported that extracurricular activity participation is associated with lower substance use (e.g., Barber et al., 2001). The vast majority of studies that have looked at this association, however, have not controlled for the effect of religious involvement (although see Fauth, Roth, & Brooks-Gunn, 2007). Therefore, it is possible that some of the associations found between non-religious club involvement and substance use could be explained (at least partially) by the fact that religiously-involved adolescents are overrepresented in non-religious clubs (e.g.,

Youniss et al., 1999), again highlighting the importance of controlling for religious involvement when examining the impact of structured clubs on adjustment.

It was notable that the *influence of involvement* hypothesis for the relationship between religious activity involvement and academic marks was only weakly supported, and reduced to non-significance when the control variables were added. This finding is inconsistent with studies by Glanville et al. (2008) and Muller and Ellison (2001) who found support for the *influence of involvement* hypothesis for the relationship between religious involvement and academic success even after accounting for several control variables. Differences between the present study and Muller and Ellison's results may be due to the variables they used to assess school success (cutting class and time spent in homework). Cutting fewer classes and spending more time on homework are behaviors that may be more strongly related to religiosity than academic marks, as they reflect effort and prosocial attitudes rather than achievement, per se.

It is puzzling, however, that our results were not more similar to Glanville et al, who, like us, assessed achievement and also controlled for extracurricular club participation. These differences may be related to the fact that the present study assessed achievement via self-reported marks, whereas Glanville et al. used students' GPA from their transcripts. Because Glanville et al. used a more objective measure of achievement, the results of the present study may be a more conservative estimation of the cross-lagged relationships between religious attendance and academic success. We do not claim, therefore, that our results imply that there are no academic-related effects of religious attendance, but, rather, when considering both religious and non-religious activities simultaneously, the strength of the relationship between non-religious activities and

marks may be more robust than the relationship between religious activities and marks. It is possible that previous links that have been found in the literature between religious activity involvement and academic success may be (at least partially) explained by involvement in non-religious activities.

It was surprising that the *selection* hypothesis for the relationship between religious service attendance and substance use received no support. Previous studies have found at least partial support for the *selection* hypothesis (e.g., Steinman & Zimmerman, 2004), but this difference may be partially explained by the fact that the strength of the association between individuals' religiosity and deviant behavior is thought to be weaker in contexts where community-level religiosity is low (Regnerus, 2003). All of the studies that have been conducted on this topic have used U.S. samples, whereas the present study was conducted with Canadian youth. On average, U.S. citizens are more religious (i.e., more involved in religious institutions) than Canadians. Citing results from nationally representative surveys, Smith and Denton (2005) reported that 59% of American adolescents attend religious services on a monthly basis, whereas Bibby (2009) reported that only 33% of Canadian youth attend religious services at least monthly. The relationship between religious attendance and substance use, therefore, may have been attenuated in this Canadian sample, relative to American samples. Another possibility is that, in this sample, the selection effects may have occurred earlier than grade nine (i.e., adolescents with certain characteristics may have already stopped attending religious services by grade nine). Future research should explore selection effects in a younger sample of Canadian adolescents.

Finally, consistent with past research (e.g., Fredricks & Eccles, 2006; Gardner et al., 2008), we found support for both the *influence of involvement* and *selection* hypotheses when examining the association between non-religious involvement and academic success over time. Not only did non-religious activity involvement predict higher grades over time, but higher grades also predicted more non-religious activity involvement over time. Adolescents who are involved in non-religious activities acquire skills related to academic tasks (e.g., debating), and so it is no surprise that they achieve greater academic success over time. At the same time, selection effects also play a significant role. Most likely, adolescents with lower grades have fewer opportunities than higher achieving students to become involved in non-religious activities.

Limitations

One limitation of the present study is that religious activity involvement was measured by one item (frequency of attendance at religious services). Presumably, the effects of religious service attendance would be stronger for adolescents who had a strong personal faith. Our results, therefore, may be a conservative estimate of the impact of religiosity. Similarly, because we did not include religiously-based youth groups within our measure of religious service attendance, it is possible such groups may have been subsumed within a community-based club. However, the frequency of attendance at religious youth groups is typically strongly correlated with the frequency of attendance at religious services (e.g., Smith, Denton, Faris, & Regnerus, 2002). Also, to diminish the possibility of this limitations' strongly influencing our results, we examined the independent effects of both religious services and community/school clubs by simultaneously controlling for the effect of the other. Another shortcoming stems from

our reliance on self-report measures. In particular, it would have been beneficial to have measured academic success via students' school records. The population from which the sample was drawn also was fairly homogenous in terms of religion/ethnicity. Further, because students' religious affiliations were not known, differences in the results by religious affiliation could not be examined. For example, some religious affiliations may be more likely to denounce alcohol use than others. In addition, although Canadians are less religious than Americans on average, there are pockets/regions where religiosity is high (Clark, 2003). Present results, therefore, may generalize to adolescents of other nationalities from primarily Caucasian/European backgrounds living in regions where religiosity is low and religious institutions play minor roles in public life (e.g., U.S. Pacific Northwest; Silk, 2008). Finally, given that standardized path coefficients of .10 are typically seen as small effects in the social sciences, the structural paths that were significant in the present study were all small in magnitude. However, these effect sizes are common in cross-lagged models with high stability coefficients between adjacent waves of data and when accounting for concurrent associations among variables. In this case, small effects would be expected. However, small effects are not necessarily trivial effects – particularly the effects that remained significant in the presence of a substantial number of control variables. Importantly, the magnitude of effects is consistent with the other studies that have used similar models (e.g., Fredricks & Eccles, 2006; Mason & Windle, 2002).

Conclusions

The present study offers an important longitudinal examination of the differences in the direction of effects when assessing the relationship between religious service

attendance versus non-religious club involvement and two commonly-used indicators of adolescent adjustment (academic success and substance use). The findings suggest that religious service attendance is uniquely linked to lower levels of substance use over time, supporting the *influence of involvement* hypothesis. In contrast, non-religious club involvement was uniquely related to higher academic achievement over time, but academic achievement was also related to higher levels of non-religious club involvement over time, supporting both the *influence of involvement* and *selection* hypotheses. Results were consistent across all high school grades. These findings support our proposition that it is important for researchers to examine religious activities independently from non-religious activities, and highlights the importance of examining these issues longitudinally. Importantly, these results suggest that religious activities are not just another “club” in which adolescents participate, but rather, that different developmental assets may be fostered by religious activities as compared to non-religious activities.

Chapter 4: Institutional and Personal Spirituality/Religiosity and

Psychosocial Adjustment in Adolescence: Within- and Across-Time Associations

A version of this chapter has been submitted for publication. Good, M., & Willoughby, T. (Submitted to *Psychology of Religion and Spirituality*). Institutional and personal spirituality/religiosity and psychosocial adjustment in adolescence: Within- and across-time associations.

The past decade has seen a surge of interest among developmental psychologists in the long-neglected topics of spirituality and religiosity (S/R; Roehlkepartain, Benson, King, & Wagener, 2006). This increased interest may be partially due to the attention that S/R has received within the Positive Youth Development (PYD) framework (e.g., Lerner, Roeser, & Phelps, 2008). The PYD perspective, which has come to the foreground of developmental psychology in the past 10 years (see Lerner, Phelps, Forman, & Bowers, 2009), places priority on understanding and promoting positive developmental features. In this framework, S/R has been studied as a factor that promotes thriving and the development of assets in young people (e.g., Dowling et al., 2004). The aim of the present study is to enhance our understanding of how both the *institutional* components of S/R (i.e., involvement in religious activities) and the *personal* components (i.e., connection with the sacred or a higher power) may be differentially and/or jointly associated with a wide range of psychosocial adjustment domains at both the within- and across-time levels.

Measurement of Spirituality/Religiosity in the Extant Literature

Although definitions of spirituality and religiosity vary across studies, spirituality is often defined as the search for sacred, divine, or nonmaterial aspects of life, whereas religiosity is conceptualized as behavior and beliefs associated with organized religion. Despite this apparent separation between the concepts of spirituality and religion, for

many individuals, the search for the sacred takes place within faith institutions (Zinnbauer & Pargament, 2005). Rather than define spirituality and religiosity as separate constructs, therefore, it may be more useful to conceptualize a single construct of spirituality/religiosity (S/R) encompassing two dimensions: institutional (i.e., involvement in and attitudes towards religious organizations/traditions) and personal (i.e., feelings towards and behaviors facilitating one's connection with the sacred).

The most common way in which S/R has been measured in the existing literature is with one- or two-item composite variables reflecting frequency of participation in religious activities (Rew & Wong, 2006). Researchers have reported consistent associations between these measures of religious involvement and positive adjustment in terms of lower substance use (e.g., Good, Willoughby, & Frijters, 2009), less depression (e.g., Schapman & Inderbitzen-Nolan, 2002), higher academic achievement (e.g., Glanville, Sikkink, & Hernandez, 2008), and better family relationships (e.g., Regnerus & Burdette, 2009). Because participation in religious groups is moderately to strongly correlated with behaviors involved in a personal search for the sacred (e.g., McCullough & Willoughby, 2009), however, it is not possible to infer from these studies whether institutional S/R is uniquely associated with various aspects of psychosocial adjustment, or whether the associations could be (at least partially) explained by personal S/R.

Although some researchers have examined differential associations between institutional versus personal S/R and adjustment (e.g., Regnerus & Smith, 2005), most of these studies have measured "personal S/R" as the more private aspects of religious commitment (e.g., scales comprised of items assessing importance of religion in daily life, private Bible-reading, "born-again" status, etc.). These scales, therefore, do not

capture the dimension of personal S/R for individuals whose search for the sacred is not tied to religion. This limitation is an important one, as statistics from nationally-representative surveys in Canada, Europe, and the U.S. indicate that for many adolescents, the search for the sacred may be pursued outside of religious organizations and traditions. Bibby (2009), for example, reported that although only 13% of Canadian high school students said that religious involvement was very important to them, over 75% reported that they often wondered about “ultimate questions” (such as what happens after death and the purpose of life), 66% believed that God or a higher power cared about them personally, and 54% believed they had “spiritual needs” (see also Lippman & Keith, 2006; Smith & Denton, 2005).

Although a growing body of research is examining how “inclusive” measures of personal S/R [i.e., scales that reflect a search for the sacred that is not inherently tied to organized religion such as the Spiritual Well-Being Scale (Buford, Paloutzian, & Ellison, 1991), the Spiritual Transcendence Index (Seidlitz et al., 2002), and the Daily Spiritual Experiences Scale (Underwood & Teresi, 2002)], are associated with positive psychosocial adjustment (e.g., Cotton et al., 2009; Perez, Little, & Henrich, 2009; Ritt-Olson et al., 2004), most of these studies have not controlled for institutional S/R in their analyses. Because many individuals pursue a connection with the sacred within religious organizations and traditions, scales such as those listed above are typically correlated with religious activity involvement (e.g., Kelley & Miller, 2007). These studies, therefore, suffer from the same limitation as studies that exclusively assess frequency of religious activity involvement; namely, it is possible that some of the associations that have been reported between psychosocial adjustment and personal S/R may have been at

least partially due to the overlap between personal and institutional S/R. Failing to account for shared variance between personal and institutional dimensions when assessing their associations with other variables may result in misleading findings (e.g., see McCullough & Willoughby, 2009, p.74).

The development of the Multidimensional Measure of Religiousness and Spirituality (MMRS; Fetzer Institute, 1999), which consists of 12 subscales assessing different aspects of institutional and personal forms of S/R, is a promising step in the direction of understanding the unique associations between personal versus institutional aspects of S/R and psychosocial adjustment. Results from studies that have used the MMRS, however, have yielded inconsistent findings, as researchers have been inconsistent in the number and type of subscales used across studies (Desrosiers & Miller, 2007; Kelley & Miller, 2007; Pearce, Little, & Perez, 2003; Dew, Daniel, Goldston, & Koenig, 2008).

Further, a limitation shared by studies that use only one measure of S/R and studies where numerous dimensions of S/R are considered (such as those cited above using the MMRS), is that both of these approaches preclude the examination of the joint effects of S/R dimensions. This limitation is important, as one of the main tenets of developmental systems theory (DST, upon which the PYD framework is based) is that in order to truly understand human development, it is necessary to consider the interactions between individual-level traits and the social contexts in which individuals are situated (e.g., Lerner & Castellino, 2002). DST proposes that optimal development occurs when there is goodness-of-fit between an individual and his/her social context (e.g., Lerner, Roeser, & Phelps, 2008). In applying these concepts to the topic of S/R, it could be

hypothesized that the impact of a personal search for the sacred on an adolescent's life may be enhanced by participation in a community of believers (King, 2008). Religious groups (when they are effective) provide youth with opportunities to make sense of and "live out" their search for the sacred, through the development of relationships with peers and adults who share their beliefs (e.g., King & Furrow, 2004; Schwartz, Bukowski, & Aoki, 2006), the observation and emulation of spiritual role models (e.g., Good & Willoughby, 2007) the explicit teaching of religious principles, and the provision of opportunities to engage in faith-based service projects (King & Furrow, 2004; Youniss, McLellan, & Yates, 1999). Similarly, individuals who are involved in religious groups may be more likely to follow their standards of behavior (e.g., avoiding premarital sex, abstaining from substance use) if they personally espouse the beliefs of their congregations (e.g., Nonnemaker, McNeely, & Blum, 2006).

Despite a strong theoretical rationale, the hypothesis that the association between personal S/R and adjustment may be enhanced by institutional S/R remains largely untested in empirical studies. In fact, only two studies of which the authors are aware have addressed this issue. Nonnemaker et al. (2006) found a significant interaction between "public religiosity" (religious activity involvement) and "private religiosity" (personal importance of religion, frequency of prayer) in the prediction of adolescents' transitioning from not smoking to experimental smoking over the course of one year. As expected, the protective effect of private religiosity on the probability of initiating experimental smoking was enhanced when individuals reported higher levels of public religiosity. Similarly, Regnerus and Smith (2005) found that personal importance of

religion was a stronger predictor of good family relationships and lower self-reported theft at higher levels of religious service attendance.

From the research reviewed above, it is clear that the way in which S/R has been conceptualized and measured in the existing body of literature has limited our understanding of how the different dimensions of S/R are uniquely and/or jointly associated with psychosocial adjustment. We believe, therefore, that it is advantageous to conceptualize S/R in terms of two distinct dimensions - institutional and personal - measured, respectively, by involvement in religious or spiritual activities/groups, and the “inclusive” search for the sacred (i.e., using scales that are relevant for individuals whose personal search for the sacred is, or is not, tied to religious traditions). This conceptualization facilitates a straightforward assessment of both the unique and joint/interactive associations between the social/contextual (i.e., institutional) aspects of S/R, as well as the individual (i.e., personal) aspects, and psychosocial adjustment.

Only one study of which the authors are aware has conceptualized S/R in a similar way. Walker, Ainette, Wills, and Mendoza (2007) found that while both “behavioral” (participation in religious activities) and “personal” (a composite variable of daily spiritual experiences, forgiveness, and personal importance of religion) religiosity were both negatively correlated with substance use at the zero-order level, multivariate analyses revealed that only the “personal” variable uniquely predicted less substance use. Based on these results, it might be hypothesized that personal S/R is a stronger predictor of positive adjustment than institutional S/R; however, the interaction between the behavioral and personal variables was not considered. Further, the researchers focussed on only one domain of adjustment (i.e., substance use). In order to gain a more complete

and nuanced understanding of the way that personal and institutional S/R may be associated with psychosocial adjustment, it is important to consider multiple domains within the same study. It may be that personal S/R uniquely predicts some aspects of adjustment, while institutional S/R uniquely predicts others. Further, some domains may be best predicted by the interaction between institutional and personal S/R. In the present study, therefore, we consider a wide range of domains, including intrapersonal well-being, quality of relationships with parents substance use, permissive risk attitudes, academic orientation, and club involvement.

Personal and Institutional S/R: Associations with Multiple Domains of Psychosocial Adjustment

Personal S/R may be uniquely (i.e., over and above institutional S/R) associated with positive intrapersonal well-being (e.g., less depression and anxiety, greater life satisfaction).

Behaviors involving a personal search for the sacred may promote feelings of peace, hope, wonder, self-transcendence, and connection with a higher power (e.g., Hart, 2006; Jankowski & Sandage, 2010), as well as effective coping in the face of stressful life situations. For instance, Barnes, Treiber, and Johnson (2004) found that engaging in transcendental meditation caused decreases in blood pressure in African American adolescents at risk for hypertension, and Sharp (2010) found that prayer helped individuals who were victims of abuse to manage their negative emotions. We expect that the association between personal S/R and well-being would be maintained in a model where institutional S/R was statistically controlled, as the benefits specific to personal S/R (e.g., peace, coping) are likely more proximal to the domain of intrapersonal well-

being than the assets specific to participation in religious activities (e.g., social capital, community involvement; Smith, 2003a). For example, in a study using five subscales from the Multidimensional Measure of Religiousness/Spirituality (daily spiritual experiences, forgiveness, positive religious coping, congregational benefits, and congregational problems) as well as items assessing self-rated spirituality and religiosity, frequency of prayer, and religious service attendance, Kelley and Miller (2007) found that daily spiritual experiences was the only scale that uniquely predicted life satisfaction. Although interactions between personal and institutional S/R were not assessed, the association between personal S/R and well-being may be stronger for individuals who are involved in a religious or spiritual community, as the link between one's personal search for the sacred and well-being may be enhanced by the social benefits inherent in belonging to a supportive community of fellow believers (King, 2008).

Personal S/R also may be uniquely associated with more positive interpersonal relationships. Support for this idea comes from studies on attachment and religiosity, where researchers have suggested that an individual's internal working model may generalize to an individual's image of God or a higher power (e.g., Granqvist, Ivarsson, Broberg, & Hagekull, 2007). Namely, individuals who report a positive internal working model and secure attachment to partners in adulthood may be more likely to perceive God or a higher power as being loving as opposed to distant or controlling (e.g., Kirkpatrick and Shaver, 1992). Although the link between "non-religious" spirituality and interpersonal relationships has not been widely explored in the literature, a recent study by Desrosiers, Kelley, and Miller (2010) found that perceived warmth and care

from parents was positively associated with adolescents' "relational spirituality" (a composite of daily spiritual experiences, forgiveness, and positive religious coping).

In contrast, after accounting for personal S/R, institutional S/R may not be associated with parental relationship quality. Although parental religiosity (which is strongly linked to adolescents' religious activity involvement, Smith & Denton, 2005) may foster parenting strategies that promote good parent-child relationships (e.g., Gunnoe, Heterington, & Reiss, 1999), and studies have found that religious attendance is associated with positive parental relationships (e.g., Regnerus & Burdette, 2006), both Regnerus and Smith (2005) and Regnerus and Burdette (2006) found that, when religious service attendance and personal importance of religion were entered into the same regression model, only importance of religion predicted positive parent-teen relationships. These studies imply that it may be an adolescents' personal commitment to his/her religious beliefs, rather than involvement in religious groups, that is linked with positive parental relationships (which would be consistent with the attachment theory model). It may be expected, then, that "inclusive" scales of personal S/R would also uniquely predict parental relationship quality after accounting for institutional S/R.

There also may be domains of adjustment that are independently associated with institutional - but not personal - S/R. One domain in which institutional S/R (but not necessarily personal S/R) may be expected to have unique benefits is in risk-taking attitudes and behavior. Because religious congregations generally present their adherents with a set of moral directives regarding what is right and wrong (e.g., Smith, 2003b) - and in many religions, the wrongness of adolescent substance use is a component of those beliefs - the attitudes of religiously-involved adolescents towards risk-taking behavior

(i.e., one's perception of how wrong or risky it is to get drunk, smoke, etc) may reflect what they have been taught in their congregations (Rew & Wong, 2006). A potentially unique association between institutional S/R and less engagement in risk-taking behavior may be expected because of the enhanced social network closure (i.e., the embedding of an individual within a system of interconnected individuals; Coleman, 1988) that occurs in many religious communities (Smith, 2003a). Network closure may facilitate better parental monitoring and supervision (e.g., Fletcher, Newsome, Nikerson, & Bazley, 2001), and parental knowledge about their adolescents' activities is associated with less involvement in risk-taking (e.g., Stattin & Kerr, 2000). Adolescents who are involved in religious communities, therefore, may be better monitored, and as a result, engage in less risk-taking.

Although some studies have found personal S/R to be associated with lower levels of engagement in risk behavior (e.g., Ritt-Olson et al., 2004), the relations could have been partially attributed to institutional S/R, given that institutional S/R was not simultaneously assessed. Further, few studies have assessed whether the nature of the association between S/R and risk-taking behavior and attitudes is best understood in terms of the *interaction* between personal and institutional S/R. It may be expected that personal S/R would be a stronger predictor of both risk attitudes and substance use if institutional S/R was also high (i.e., reporting high institutional S/R would mean that an individual likely is exposed to regular religious teachings on the "wrongness" of typical adolescent risk behaviors). Indeed, Nonnemaker et al (2006) and Regnerus and Smith (2005) reported that the association between importance of religion and risk-taking was

stronger for adolescents who frequently attended church. It is not clear if a similar interaction would be found when using a more “inclusive” measure of personal S/R.

Another unique benefit associated with being part of religious groups is the building of social capital through the formation of intergenerational relationships and connections with individuals who can offer resources to which adolescents may not have otherwise had access (e.g., King & Furrow, 2004; Smith, 2003a). For example, connections made through religious communities may open doors to become involved with other community and school-based groups, and, as such, institutional S/R may be uniquely associated with greater club involvement. Indeed, studies have consistently demonstrated that adolescents who regularly attend religious services are overrepresented among those individuals who are highly involved in structured, prosocial clubs (e.g., Bartko & Eccles, 2003; Youniss et al, 1999). Personal S/R, conversely, may not be expected to uniquely foster assets specifically related to community integration and social capital, and therefore may not show an association with involvement in prosocial school and community clubs when institutional S/R is statistically controlled.

Institutional S/R, as compared to personal S/R, may also be uniquely associated with academic success. Regnerus (2000) hypothesized that involvement in religious institutions may reinforce values and behaviors that promote academic success, and the social capital gained from religious participation may transfer into the school domain in the form of greater educational aspirations and tools for achieving higher grades. Further, McCullough and Willoughby (2009) proposed that institutional S/R (but not necessarily personal S/R) promotes self-regulation, which is known to be important for academic achievement (e.g., Shoda, Mischel, & Peake, 1990). Indeed, religious involvement is

associated with higher educational aspirations, school engagement, and grades (e.g., Loury, 2004; Regnerus & Elder, 2003). Although these studies did not include personal forms of S/R in their models, we expect that the association between institutional S/R and academic success would hold even after personal S/R was statistically controlled, as religious activities may facilitate assets that are more proximal to school success (e.g., social capital, self-control) than the assets that may be promoted by personal S/R. As no studies have examined the association between personal forms of S/R and academic achievement when controlling for institutional S/R, this issue represents an important area of inquiry.

Longitudinal Issues in the Association between Institutional versus Personal S/R and Psychosocial Adjustment

Another critically important way in which the understanding of S/R can be enhanced is by considering the *direction of effects* in the associations between the dimensions of S/R and adjustment. When a cross-sectional association is found between S/R and some domain of adjustment, it is unclear whether that association is a function of *socialization effects* (i.e., prior involvement in religious groups or one's prior search for the sacred influences adolescents' subsequent psychosocial adjustment) or *selection effects* (i.e., prior psychosocial adjustment influences change in adolescents' subsequent decisions regarding participation in religious groups and involvement in behaviors that facilitate a search for the sacred).

No studies of which the authors are aware have assessed the direction of effects in the relation between *both* personal and institutional S/R and psychosocial adjustment. A few studies, however, have examined this issue using limited measures of S/R, with

results primarily supporting the socialization hypothesis. For example, religious service attendance and importance of religion consistently have been found to predict subsequent risk-taking behavior such as substance use (e.g., Mason & Windle, 2002). Further, Possel, Martin, Garber, Bannister, Pickering, and Hautzinger (2011) found that intrinsic religious orientation predicted lower depressive symptoms four months later, after controlling for initial level of depression (but *not* vice versa). In what is perhaps the most comprehensive study on this issue to date, Sallquist et al (2010) assessed the socialization and selection hypotheses for the relation between a latent S/R variable (encompassing both personal and institutional dimensions) and multiple domains of psychosocial adjustment (social competence, self-esteem, loneliness, and externalizing problems). Results supported both the socialization and selection hypotheses for social competence, but only the socialization hypothesis for loneliness. Studies such as these represent important steps forward in our understanding of the direction of effects in the association between S/R and adjustment; however, replication is needed, given that the personal and institutional dimensions of S/R have not been assessed simultaneously, and most studies have included only a limited number of psychosocial adjustment domains.

The Present Study

To address these gaps, the goal of the present study was to evaluate the unique (and interactive) within-time and longitudinal associations between personal versus institutional S/R and a wide range of psychological adjustment domains, including intrapersonal well-being, quality of relationships with parents, attitudes towards risk-taking behaviour, substance use, involvement in school and community clubs, and academic orientation. We assessed three different aspects of institutional S/R (religious

service attendance; involvement in other religious/spiritual activities; and enjoyment of participation in one's religious/spiritual group) and three aspects of personal S/R (perceptions of and experiences with the sacred; wondering about spiritual issues; and frequency of prayer). These S/R variables were selected for several reasons. First, they are frequently used as aspects of scales that combine personal and institutional S/R in adolescent populations, but they are not expected to be so highly correlated as to introduce problems of collinearity. The item assessing wondering about spiritual issues is less common in the literature; however, it was included in response to nationally-representative surveys suggesting that Canadian teens frequently wonder about issues related to spirituality and the supernatural (Bibby, 2009). Second, these items incorporated not only behavior related to S/R (religious activity involvement, prayer, spiritual wondering), but also beliefs and perceptions about that behavior (enjoyment of religious activities, perceived effects of one's spirituality).

Two research questions were addressed. First, we assessed how the institutional and personal dimensions of S/R uniquely and jointly predicted the seven domains of psychosocial adjustment. We also wished to determine if the effects were similar across both grade 11 and 12, as replication across grades would provide support for the reliability of the findings. Given the literature reviewed above, we expected that personal S/R would be uniquely related to more positive intrapersonal well-being and quality of parent-child relationships, and institutional S/R would be uniquely related to less permissive risk attitudes, lower substance use, more frequent involvement in school/community clubs, and more positive academic orientation. With regard to the joint effects of personal and institutional S/R, we expected that the association between

personal S/R and positive adjustment (specifically in the domains of well-being, permissive risk attitudes, and substance use) would be stronger for individuals who reported high institutional S/R than for those who reported low institutional S/R.

In our second research question, we explored the direction of effects in the association between personal versus institutional S/R and psychosocial adjustment. Given the dearth of longitudinal studies examining the direction of effects for the relation between adjustment and *both* personal and institutional S/R, it is difficult to make specific predictions; however, in light of the general consistency with which the socialization hypothesis has been supported in the few studies that have been conducted on this issue, we expected that the socialization hypothesis would receive some support for the domains of adjustment related to loneliness/depression (i.e., intrapersonal well-being) and risk-taking (i.e., substance use and permissive risk attitudes).

Because gender differences have been consistently found for institutional (e.g., Stark, 2002) and personal S/R (e.g., Smith & Denton, 2005), we controlled for gender in all analyses. S/R may also be associated with socioeconomic status (e.g., Hood & Belzen, 2005), and therefore, we also controlled for parental education level.

Method

Participants

Students from eight high schools encompassing a school district in Ontario, Canada took part in the study. This study was part of a larger longitudinal-sequential project examining youth lifestyle choices across the high school years (e.g., see Willoughby & Hamza, 2010). In the larger study, surveys were completed several times between 2003 and 2008, with some students starting the study in 2003 and others joining

the study in subsequent years. The current analysis is based on 803 students (52% female) who completed the survey in May 2007 when they were in grade 11 (M age = 16.23) and again in May 2008 when they were in grade 12 (M age = 17.31), as questions regarding S/R were only included in the surveys conducted in 2007 and 2008.

The overall participation rate for eligible students (i.e., students who were registered in a course during the period when the survey was conducted) was 83% in 2007 and 85% in 2008; nonparticipation was due to student absenteeism (15%, 14%), parental refusal (.04%, .01%), or student refusal (2%, 1%) in 2007 and 2008, respectively. There were no significant differences between longitudinal participants and those who completed the survey at only one time point on any of the S/R variables or parental relationship quality. There were slightly more girls than boys in the longitudinal sample (52% girls) than in the non-longitudinal sample (49% girls) and parental education level was higher for longitudinal participants ($p < .001$), but the magnitude of this difference was small ($Xdiff = .21$, $\eta^2 = .01$). The longitudinal sample also reported more positive scores on substance use, risk attitudes, intrapersonal well-being, academic orientation, and extracurricular club involvement than the non-longitudinal sample, but again the magnitude of the differences were small (largest $Xdiff = .26$, $\eta^2 = .02$ was for risk attitudes). Consistent with the broader Canadian population (Statistics Canada, 2001b), 92% of the participants were born in Canada and the most common ethnic backgrounds reported other than Canadian were Italian (31%), French (18%), British (15%), and German (12%) (information on language(s) spoken in the home was not available). Data on socioeconomic status indicated mean parental levels of education falling between “some college, university or apprenticeship program” and “completed a

college/apprenticeship/technical diploma.” Further, 70% of the respondents reported living with both birth parents, 12% with one birth parent and a stepparent, 15% with one birth parent (mother or father only), and the remainder with neither parent (e.g., other relatives, foster parents, etc.). The school board did not permit the release of students’ religious affiliations; however, the board was publicly funded (i.e., the schools were not private) and the religious affiliation of the population in this region is predominantly Christian (79% Catholic/Protestant), with 14% reporting no religion, and 17% reporting “other” affiliations (e.g., Muslim, Hindu, Jewish) (Statistics Canada, 2001c).

Procedure

Active informed assent was obtained from the adolescent participants. Parents were provided with written correspondence mailed to each student’s home prior to the survey administration outlining the study; this letter indicated that parents could request that their adolescent not participate in the study. An automated phone message about the study also was left at each student’s home phone number. This procedure was approved by the participating school board and the University Research Ethics Board. At all time periods, the questionnaire was administered to students in classrooms by trained research staff. Students were informed that their responses were completely confidential.

Measures. All measures were assessed in both 2007 and 2008 (see Table 3.1 for descriptive information). Correlations are reported in Table 3.2.

Demographics. Sex and parental education (one item per parent, averaged for those reporting on both parents, $r=.44$) were measured. Higher scores indicated female gender and greater parental education.

Table 3.1

Means and standard deviations of study measures

Domain	Variable	Range	Scale Anchors	Grade 11		Grade 12	
				<i>M</i> (SD)	α	<i>M</i> (SD)	α
Gender	Gender	1-2	1(<i>male</i>) to 2 (<i>female</i>)	1.53(.50)		--	
Parental education	Mother's education level	1-6	1(<i>did not finish high school</i>) to 6(<i>professional degree</i>)	3.43(1.46)		--	
	Father's education level	1-6	1(<i>did not finish high school</i>) to 6(<i>professional degree</i>)	3.39(1.51)		--	
Personal S/R	Spiritual Transcendence Index	1-5	1(<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	3.08(1.02)	.96	3.03(1.05)	.97
	Wondering about spiritual issues	1-5	1(<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	3.66(1.09)	--	3.53(1.11)	--
	Frequency of prayer	1-4	1(<i>never</i>) to 5(<i>every day</i>)	2.49(1.57)	--	2.18(1.50)	--
Institutional S/R	Religious service attendance	1-5	1(<i>never</i>) to 5(<i>every day</i>)	1.59(.77)	--	1.49(.73)	--
	Attendance at other religious activities	1-5	1(<i>never</i>) to 5(<i>every day</i>)	1.18(.51)	--	1.18(.52)	--
	Enjoyment of religious activities	1-5	1(<i>I don't attend or I never enjoy</i>) to 5(<i>I always enjoy</i>)	1.39(.71)	--	1.37(.70)	--
Intrapersonal well-being	Depression	1-5	1(<i>most of the time</i>) to 5(<i>never</i>)	3.95 (.68)	.92	3.88 (.68)	.93
	Social anxiety	1-4	1(<i>almost always/always</i>) to 4(<i>almost never/never</i>)	3.32 (.51)	.91	3.21 (.71)	.93
	Daily hassles	1-3	1(<i>often bothers me</i>) to 3(<i>never bothers me</i>)	2.21 (.38)	.87	2.21 (.39)	.91
	Self-esteem	1-5	1(<i>strongly disagree</i>) to 5(<i>strongly agree</i>)	3.80 (.72)	.91	3.76 (.71)	.89
	Life satisfaction	1-4	1(<i>almost never/never</i>) to 4(<i>almost always/always</i>)	3.27 (.80)	--	3.19 (.80)	--
Parental relationship	Relationship with mother	1-4	1(<i>almost never/never</i>) to 4(<i>almost always/always</i>)	3.00(.58)	.90	2.96(.59)	.88
	Relationship with father	1-4	1(<i>almost never/never</i>) to 4(<i>almost always/always</i>)	2.84(.57)	.91	2.80(.55)	.90
Permissive risk attitudes	Permissive risk attitudes	1-5	1(<i>very high risk</i>) to 6(<i>very low risk</i>)	2.40(.94)	.80	2.50(.97)	.80
Substance use	Alcohol frequency	1-8	1(<i>never</i>) to 8(<i>every day</i>)	2.71(1.42)	--	2.93(1.46)	--
	Alcohol amount	1-6	1(<i>less than one drink</i>) to 6(<i>more than 10 drinks</i>)	3.37(1.54)	--	3.56(1.50)	--
	Smoking	1-8	1 (<i>none</i>) to 8(<i>more than a pack</i>)	1.29(.90)	--	1.35(1.02)	--
	Marijuana	1-6	1(<i>never</i>) to 6(<i>every day</i>)	2.29(1.57)	--	2.45(1.64)	--
Extracurricular clubs	In-school clubs	1-5	1(<i>never</i>) to 5(<i>every day</i>)	2.15(1.40)	--	2.19(1.41)	--
	Out-of-school (community) clubs	1-5	1(<i>never</i>) to 5(<i>every day</i>)	1.99(1.30)	--	1.91(1.23)	--
Academic orientation	School grades	1-5	1(<i>below 50%</i>) to 5(<i>A</i>)	3.55(.87)	--	3.57(.83)	--
	Educational aspirations	1-6	1(<i>not finish high school</i>) to 6(<i>professional training</i>)	4.98(1.06)	--	4.90(1.07)	--
	Importance of doing well in school	1-4	1(<i>not at all important</i>) to 4(<i>very important</i>)	3.37(.75)	--	3.36(.77)	--

Table 3.2

Correlations between study measures

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<i>Main Study Variables</i>																
1. Personal S/R 11	-	.69*	.44*	.35*	.08*	.05	.18*	.14*	-.17*	-.18*	-.21*	-.18*	.09*	.09*	.22*	.23*
2. Personal S/R 12		-	.42*	.49*	.06	.07	.14*	.21*	-.14*	-.19*	-.15*	-.17*	.09*	.18*	.18*	.23*
3. Institutional S/R 11			-	.62*	.00	.02	.06	.06	-.02	-.08*	-.16*	-.19*	.16*	.11*	.12*	.13*
4. Institutional S/R 12				-	.01	-.03	.05	.08*	-.06	-.11*	-.13*	-.15*	.14*	.23*	.10*	.14*
5. Intrapersonal well-being 11					-	.62*	.52*	.39*	-.11*	-.09*	-.01	.01	.04	.06	.16*	.15*
6. Intrapersonal well-being 12						-	.37*	.49*	-.09*	-.09*	-.03	-.02	.07	.06	.22*	.23*
7. Parental relationship 11							-	.65*	-.20*	-.12*	-.18*	-.18*	.02	.09*	.19*	.15*
8. Parental relationship 12								-	-.09*	-.15*	-.10*	-.15*	.01	.08*	.20*	.21*
9. Permissive risk attitudes 11									-	-.38*	.28*	.28*	-.09*	-.07	-.24*	-.24*
10. Permissive risk attitudes 12										-	.30*	.39*	-.06	-.11*	-.22*	-.24*
11. Substance use 11											-	.69*	-.06	-.09*	-.35*	-.32*
12. Substance use 12												-	-.05	-.04	-.31*	-.31*
13. Club involvement 11													-	.57*	.21*	.24*
14. Club involvement 12														-	.18*	.20*
15. Academic orientation 11															-	.74*
16. Academic orientation 12																-
<i>Covariates</i>																
Gender	.15*	.17*	.03	.05	-.11*	-.05	.05	.10*	-.14*	-.14*	-.17*	-.19*	.06	.05	.27*	.29*
Parental education	.06	.08*	.13*	.14*	.12*	.07*	.05	.04	-.01	-.04	-.11*	-.10*	.20*	.11*	.24*	.22*

* $p < .05$

Institutional S/R. Institutional S/R was measured by three items: (a) *involvement in religious services* (“In the past month, how often have you gone to church/temple/synagogue?”); (b) *other religious activity involvement* [(“How often in the last month have you gone to religious/spiritual meetings other than church/synagogue/temple (e.g., youth groups)?”)]; and (c) *enjoyment of religious activities* (“I enjoy attending activities held by my religious/spiritual group”). These items were standardized and combined to create a composite variable⁶.

Personal S/R. Personal S/R was assessed by three constructs: (a) *perceptions of and experiences with the sacred*, using seven items adapted from the Spiritual Transcendence Index (STI; Seidlitz et al., 2002, e.g., “My spirituality gives me a feeling of fulfillment”); (b) *wondering about spiritual issues*, as assessed by a single item (“I often wonder about spiritual issues (i.e., life after death, the existence of a higher power, etc)”); and (c) frequency of *prayer* assessed by one item (“In the past month, how often have you prayed”). These variables were combined to create a composite variable of personal S/R⁷.

Intrapersonal well-being. Intrapersonal well-being was a composite of five scales: (a) *Depression-related symptoms*, measured using the Centre for Epidemiological Studies Depression (CES-D) scale (Radloff, 1977), which consisted of 20 items (e.g., “I felt that I was just as good as other people”); (b) *social anxiety-related symptoms*, assessed using 14 items (e.g., “I only talk to other people my age that I know really

⁶ The skewness statistic for the institutional S/R was acceptable (<2), however, the shape of the distribution was leptokurtotic at both grades (kurtosis = 3.18 at grade 11; 4.37 at grade 12). Given that multiple regression is robust to slight violations of normality, however, we did not transform the institutional variable.

⁷ Skewness and kurtosis statistics indicated that the distribution of personal S/R at all grades was normal (i.e., skewness and kurtosis <2).

well”) from Ginsberg, LaGreca, and Silverman (1998); (c) *daily hassles*, assessed based on the frequency of experiencing 25 life stressors including finances, friends/peers, school work, and self-image; (e.g., “How often does it bother you to have problems with peers?”); (d) *self-esteem*, measured using the Rosenberg self-esteem scale (Rosenberg, 1965), which consists of 10 items (e.g., “I feel that I have a number of good qualities”); and (e) *life satisfaction*, measured with one item (“I am happy with my life”). A composite index was formed by standardizing each scale score and combining the scores such that higher values indicated more positive intrapersonal well-being. Reliability for the composite index was .80 in 2007 and .81 in 2008. To establish the validity of a one-factor solution, a factor analysis was conducted using principal components analysis. Results revealed a one-factor solution (factor loadings of .5 or higher), supporting our decision to create a composite.

Parental relationship. Parent-child relationship was measured by 17 items from the Inventory of Parent and Peer Attachment (Armsden & Greenburg, 1987). Participants completed this scale for both mother and father (e.g., “My mother trusts my judgment”; “My father can tell when I’m upset about something”). Higher scores indicated more positive relationships with one’s parents. The average correlation between the mother and father scales was $r=.50$ ($p<.01$).

Permissive risk attitudes. Permissive risk attitudes were assessed by four questions measuring adolescents’ cognitive evaluations of how risky the respondents believed it was for him or her to engage in four types of risk-taking behaviors (drinking alcohol, smoking cigarettes, smoking marijuana, and using other illegal drugs) on a 5-

point scale. Alpha values were .80 in 2007 and 2008. Higher scores indicated more permissive attitudes (i.e., perception of the behaviors as less risky).

Substance use. *Alcohol use* was measured by two items: typical frequency of alcohol use; and average consumption per drinking episode. *Smoking* was indicated by the typical number of cigarettes smoked each day. *Marijuana use* was assessed by the typical frequency of use in the past year. A composite index was formed by standardizing each score and combining the scores. Reliability for the composite index was .78 in 2007, and .75 in 2008. Principal components analysis revealed a one-factor solution (factor loadings of .5 or higher), supporting our decision to create a composite (see also Donovan, Jessor, & Costa, 1988).

Involvement in clubs. Club involvement was measured by two items assessing the frequency of attendance in the past month in school clubs and community-based clubs, which were combined to create an average score.

Academic orientation. Academic orientation was measured by three questions: (a) “What grades do you typically get in school?”; (b) “How important is it to you that you do well in school?”; and (c) “How far do you plan to go in school?”. A composite index was formed by standardizing and combining items; alpha values were .71 and .70 in 2007 and 2008.

Results

Preliminary Analyses

Data screening. Multivariate outliers on the six S/R variables (Mahalanobis’s distance scores significant at $p < .001$) at either wave were removed ($n = 10$, 1% of the sample), as well as a small number of cases ($n = 37$, 5% of the sample) where data

screening revealed that these participants did not take the questionnaire seriously⁸. The final analysis sample comprised 756 participants (53% female, 47% male, *M* age in Grade 11 = 16.41 years, *M* age in Grade 12 = 17.36 years).

Missing data. To counterbalance missing data due to survey length, we included three versions of the survey at each time so that the same scales were not always near the end of the survey. For multi-item scales, composite scores were computed for participants who responded to at least 50% of the items. For respondents who did not give a sufficient number of responses within a multi-item scale or who did not provide a response to a single-item measure, missing values within each wave were imputed using the EM (expectation-maximization) algorithm. EM is an iterative maximum-likelihood (ML) procedure in which a cycle of calculating means and covariances followed by data imputation is repeated until a stable set of estimated missing values is reached (see Schafer & Graham, 2002). In total, 7.8% of the data were imputed in 2007 and 7.6% were imputed in 2008. This percentage of imputed data is comparable with other longitudinal survey studies (e.g., Feldman, Masyn, & Conger, 2009).

Establishing personal and institutional S/R as separate factors. Although we selected which variables *a priori* would represent the personal and institutional dimensions of S/R, in order to establish that these variables comprised two statistically separate domains we conducted a principle components analysis (PCA) followed by a confirmatory factor analysis (CFA). First, in both grades, all S/R variables were entered

⁸ In order to determine which students did not take the questionnaire seriously (in particular, the questions relating to S/R), I examined all participants' responses to an open-ended question which asked "Have you ever had a spiritual experience that changed your life?". Participants who entered clearly inappropriate responses were deleted from analyses. Also, participants' responses to the S/R items were examined, and individuals whose pattern of responses were suspicious at either grade (i.e., reported engaging in all of the S/R activities "every day" but also reported very low scores on the STI) were deleted.

into a PCA with oblique (oblimin) rotation. Results revealed that two components emerged at each grade with eigenvalues greater than one. The first component represented a “personal” factor (loadings over .5 for the STI, frequency of prayer, and wondering about spiritual issues), while the second component represented an “institutional” factor (loadings over .5 for religious service attendance, involvement in other religious activities, and enjoyment of religious activities).

A CFA was then conducted using AMOS 17.0, where we specified two (correlated) latent factors (personal and institutional) for each grade, with STI, prayer, and wonder loading on the personal factor, and religious service attendance, other religious/spiritual activity involvement, and enjoyment of religious involvement loading on the institutional factor. As recommended by Hu and Bentler (1999), CFI values greater than .95 and RMSEA's less than .06 (simultaneously) were used as the criteria for a well-specified model. Results of the two-factor model for grade 11 revealed adequate fit, $\chi^2(6) = 28.16$, $p < .001$, CFI = .98, RMSEA = .07. Following Kline (2005), to assess if the two-factor model was better than a one-factor model, we conducted a chi-square difference test between a model where the correlation between the latent factors were freely estimated (i.e., two factors) and a model where the correlation was fixed to 1.0 (i.e., one factor). Results revealed that the fit of the two factor model was significantly better than the one-factor model $\chi^2_{diff}(1) = 193.24$, $p < .001$ [CFI = .80 RMSEA = .20 for the fixed model]. Similarly, in grade 12, results for the two-factor model revealed an adequate fit to the data ($\chi^2(6) = 30$, $p < .001$, CFI = .98, RMSEA = .07), and in the test of chi-square difference, the two-factor (i.e., freely estimated correlation between factors) model was statistically better than the one-factor (i.e., fixed) model, $\chi^2_{diff}(1) = 210.3$, p

<.001 [CFI = .82 RMSEA = .81 for the fixed model]. Given these results, we concluded that the creation of separate personal and institutional composite variables (as described in the measures section) was appropriate.

Main Analyses

Research question 1: How do the institutional and personal dimensions of S/R uniquely and jointly predict psychosocial adjustment in grade 11 and in grade 12?

At each grade, seven hierarchical regression analyses were performed - one for each domain of adjustment. All predictor variables were standardized prior to being entered into the model, with the exception of the variable representing the interaction between institutional and personal S/R (the interaction variable was the product of the standardized institutional and personal variables, as recommended by Aiken & West, 1991). Gender⁹ and parental education were entered on Step 1, and the two S/R dimensions were entered on Step 2. On Step 3, the interaction term was entered. Full results are reported in Table 3.3.

Grade 11. For intrapersonal well-being, the model explained 3.8% of the variance in total, and the R-squared change was significant for the first two steps. Results from the final (i.e., second step) model indicated that being male, higher parental education, and higher personal S/R predicted more positive well-being.

For parental relationship quality, the model explained 3.7% of the variance. The first step was not significant (indicating that neither gender nor parental education

⁹ Gender was examined as a moderating variable but did not change the pattern of results in the relation between personal or institutional S/R and the psychosocial adjustment variables.

Gender	-.05(.03)	.04(.02)*	-.10(.04)**	-.13(.03)***	.03(.04)	.20(.03)***
Parent Ed	.06(.03)*	.02(.02)	-.02(.04)	-.05(.03)*	.08(.04)*	.16(.03)***
Personal	-.10(.03)**	.10(.02)***	-.16(.04)***	-.07(.03)*	.09(.04)*	.13(.03)***
Institutional	.10(.04)**	.03(.03)	.05(.05)	-.06(.04)	.19(.06)**	-.01(.04)
Pers X Inst	.05(.03)	.02(.02)	-.09(.04)*	-.01(.03)	-.01(.04)	.03(.03)
ΔR^2	.003	.002	.008*	.000	.000	.002
Model R^2	.022	.051	.054	.064	.065	.158

* $p < .05$, ** $p < .01$, *** $p < .001$. All predictors are standardized, the interaction term is the product of the standardized variables.

For permissive risk attitudes, the overall model explained 5.2% of the variance, with all steps indicating a significant R-squared change. Significant predictors of less permissive risk attitudes included being female, and reporting higher personal and institutional S/R. The interaction between personal S/R and institutional S/ also was significant. Simple slopes (and standard errors) were calculated for the regression of risk attitudes on personal S/R at different levels of institutional S/R (Aiken & West, 1991). At high levels of institutional S/R (i.e., one standard deviation above the mean), the relation between personal S/R and permissive risk attitudes was much stronger ($b = -.27, p < .001$) than it was at low levels (i.e., one standard deviation below the mean) of institutional S/R ($b = -.09, p = .05$).

For substance use, the R-squared change was significant for each step, and the overall model explained 8.4% of the variance. Results from the final model indicated that lower substance use was predicted by being female, higher parental education, higher personal S/R, and the interaction between personal and institutional S/R. At low levels of institutional S/R, personal S/R did not predict substance use ($b = -.05, p > .05$); however, at high institutional S/R, personal S/R negatively predicted substance use ($b = -.21, p < .001$).

For club involvement, all three steps were significant, and the model accounted for 7.6% of the variance. Coefficients from the final model indicated that higher parental education and higher levels of institutional S/R predicted greater extracurricular activity involvement. The interaction between institutional and personal S/R also was significant. Simple slopes for the for the regression of club involvement on personal S/R revealed that personal S/R predicted greater involvement when institutional S/R was *low* ($b = .16$,

$p < .001$); however, when institutional S/R was high, personal S/R predicted *less* involvement in clubs ($b = -.18, p = .01$).

Finally, for academic orientation, the first two steps were significant, and the model accounted for 15.6% of the variance. Being female and higher levels of parental education predicted having a more positive academic orientation. Personal S/R, but not institutional S/R, also was a significant (positive) predictor of academic orientation.

Grade 12. For intrapersonal well-being, the first and second steps were significant, and the overall model accounted for 2.2% of the variance. Higher parental education and personal S/R were positive predictors of well-being. In contrast to grade 11, however, institutional S/R also emerged as a significant *negative* predictor of well-being. Further inspection revealed that personal S/R was a suppressor of institutional S/R, and institutional S/R was acting as a suppressor of personal S/R. Although neither variable *on its own* was a significant predictor of intrapersonal well-being, the coefficients increased when the other variable was entered in the model. To a lesser extent, gender was also a suppressor of personal S/R, and parental education was a suppressor of institutional S/R. Therefore, when the variance associated with personal S/R and parental education was removed, institutional S/R predicted less positive intrapersonal well-being; similarly, when the variance associated with institutional S/R and gender was removed, personal S/R was associated with more positive well-being.

For grade 12 parental relationship quality, the first and second steps were significant, and the model accounted for 5.1% of the variance. Being female and having higher personal S/R predicted higher parental relationship quality.

For permissive risk attitudes, the model accounted for 5.4% of the variance, and all three models were significant. In the final model, being female and reporting higher personal S/R predicted less permissive attitudes, and the interaction term was also significant. Similar to grade 11, simple slopes revealed that the relation between personal S/R and risk attitudes was not significant at low institutional S/R ($b = -.07, p > .05$), but, at high levels of institutional S/R, personal S/R predicted less permissive risk attitudes ($b = -.25, p < .001$). For substance use, the overall model accounted for 6.5% of the variance. The first two steps were significant, with being female, higher parental education, greater personal S/R and greater institutional S/R predicting lower levels of substance use.

For club involvement, the overall model accounted for 6.5% of the variance, and the first two steps were significant. Higher parental education, institutional S/R, and personal S/R predicted more frequent involvement in clubs. For academic orientation, the first two steps were significant, with the model accounting for 15.8% of the variance. Being female, higher parental education, and personal S/R significantly predicted stronger academic orientation.

Research question 2: What is the direction of effects in the association between personal versus institutional S/R and psychosocial adjustment?

The *socialization* and *selection* hypotheses were assessed using autoregressive (panel) models. These models allow researchers to assess direction of effects by estimating reciprocal cross-lagged parameters that test whether a variable assessed at one point in time predicts another variable assessed at a later point in time, after controlling for the over-time stability in the variable being predicted, and vice versa (Little, Card, Preacher, & McConnell, 2009).

To test the socialization hypothesis (i.e., prior personal and/or institutional S/R predict subsequent psychosocial adjustment after controlling for over-time stability in adjustment), seven hierarchical regression analyses were performed, one for each grade 12 adjustment variable. The corresponding grade 11 adjustment variable was entered as a predictor at step 1 (i.e., to control for stability in the construct) along with the covariates (gender and parental education). Grade 11 personal and institutional S/R were entered as predictors in step 2, and the interaction between grade 11 institutional and personal S/R was entered at step 3. Support for the socialization hypothesis (i.e., models where there was a significant r -squared change after step 1) was found only for risk attitudes and substance use.

For permissive risk attitudes, all three steps of the regression model were significant (step 1 $R^2=.16$, $p<.001$; step 2 $\Delta R^2=.01$, $p<.01$; step 3 $\Delta R^2=.01$, $p<.05$). In the final model, higher personal S/R in grade 11 predicted less permissive risk attitudes in grade 12 after controlling for stability in risk attitudes ($b=-.12$, $p<.01$). This effect was qualified by an interaction with institutional S/R, such that, at low levels of grade 11 institutional S/R, grade 11 personal S/R did not significantly predict grade 12 permissive risk attitudes ($b=-.04$, $p>.05$); however, at high levels of grade 11 institutional S/R, personal S/R predicted less permissive risk attitudes in grade 12 ($b=-.20$, $p<.001$).

For substance use, the socialization hypothesis was supported for institutional but not personal S/R. The model accounted for 49% of the variance. More specifically, the first ($R^2=.48$, $p<.001$) and second steps of the regression model ($\Delta R^2=.01$, $p<.05$) were significant, and higher institutional S/R at grade 11 significantly predicted lower substance use in grade 12 after controlling for stability in substance use ($b=-.06$, $p<.01$).

To test the selection hypothesis (i.e., prior psychosocial adjustment predicts changes in institutional and/or personal S/R), two hierarchical regression analyses were performed, with grade 12 personal S/R as the criterion in one model and grade 12 institutional S/R the criterion in the other. In the first step, gender and parental education, as well as the corresponding grade 11 S/R variable was entered. In the second step, the seven grade 11 adjustment variables were entered. Results from the models revealed that the selection hypothesis was not supported for any of the psychosocial adjustment variables for either institutional or personal S/R.

Discussion

The goals of the present study were to evaluate the unique and joint associations between personal versus institutional dimensions of S/R and a wide range of psychosocial adjustment domains, and to assess the direction of effects in these associations. As expected, in both grades, personal S/R was uniquely associated with intrapersonal well-being. This result provides evidence that it may be personal - rather than institutional - S/R that is linked with well-being, and strengthens the validity of the findings from studies such as Ritt-Olsen et al. (2004), and Perez et al (2009) where “spirituality” was found to predict various aspects of intrapersonal well-being, but institutional S/R was not statistically controlled. The consistency with which personal S/R uniquely predicted well-being is also important given that, often, exceptionally broad conceptualizations of “spirituality” have been used in previous studies (e.g., the Spiritual Well-Being Scale includes items such as “I feel that life is a positive experience”, and “I feel that life is full of conflict and unhappiness”). Koenig (2008) points out that when spirituality is assessed in such a broad manner, individuals who are well-adjusted would score higher than their

peers on measures of well-being simply because the items used to assess spirituality and well-being are similar. The present study used a narrower conceptualization of personal S/R (i.e., the scales comprising the personal S/R variable did not include items that overlapped with the construct of well-being) and still found a significant association between personal S/R and intrapersonal well-being at both grades, thus providing corroborating evidence for the link between having a connection with the sacred and feeling good about oneself – even when controlling for involvement in religious/spiritual groups.

Contrary to expectations, the association between personal S/R and well-being was not stronger for adolescents who reported higher institutional S/R than for those who reported low institutional S/R. Our measure of institutional S/R (which included involvement in religious activities and enjoyment of participation in religious activities), however, may not have captured the specific aspects of involvement in religious communities, such as social support, that may enhance the association between personal S/R and well-being (e.g., Desrosiers & Miller, 2008).

Another finding in which our predictions were confirmed was for the unique link between personal S/R and positive relationships with parents. Given that only one other study has examined the association between personal S/R and parent-child relationships (Desrosiers et al., 2010), the present study represents an important replication and extension of the hypothesis that individuals who have positive internal working models for the parent-child relationship may not only report more positive relationships with parents, but also may be more likely to engage in a search for the sacred, as they may

perceive God or a higher power in a more positive manner than individuals with negative internal working models (e.g., Granqvist et al., 2007).

Contrary to our predictions, it was personal - not institutional - S/R that was associated with more positive academic orientation in both grades. This finding was unexpected, given that institutional S/R is thought to promote assets more directly relevant for school success (e.g., Regnerus, 2000). Interestingly, at the zero-order level, institutional S/R was significantly correlated with academic orientation at both grades, but in the multiple regression model, only personal S/R emerged as a significant predictor. It is possible that the associations between institutional S/R and academic success found in prior studies in which personal S/R was not statistically controlled (e.g., Loury, 2004; Regnerus & Elder, 2003) have been at least partially due to shared variance with personal S/R. The association between personal S/R and academic orientation may be a function of personality characteristics that may be more common in individuals who seek a connection with the sacred. For example, in adult samples, spiritual seeking (independent of institutional S/R) has been associated with openness to experience (e.g., McCullough & Willoughby, 2009), which is linked to factors that promote school success, such as intellectual curiosity (Costa & McCrae, 1995).

Another unexpected finding was that institutional S/R predicted *less positive* well-being (although this relation was significant only in grade 12). Results revealed that it was only after accounting for the shared variance between personal and institutional S/R (and parental education, to a lesser extent) that this association emerged. Interestingly, Kelley and Miller (2007) also reported that religious attendance became a significant *negative* predictor of life satisfaction when controlling for Daily Spiritual Experiences.

Because decline in religious service attendance is so common in high school (e.g., Smith et al., 2002), it is possible that individuals who attend religious activities frequently in late adolescence (particularly if they are not personally spiritual/religious) may be forced to participate in religious activities by parents. Such adolescents also may fare less well in many areas of life, as parents who force attendance at religious services may also be less likely to grant their children autonomy in other areas of life, and lower autonomy has been linked to less positive adjustment (e.g., Soenens et al., 2007). These adolescents may also be experiencing religious doubt, which has been significantly (albeit weakly) associated with negative adjustment (e.g., Hunsberger, Alisat, Pancer, & Pratt, 1996). The suggestion that institutional S/R may be linked with less positive well-being after statistically controlling for personal S/R must be interpreted with caution, however, as the effect size was very small, and it was not found in grade 11. Nonetheless, given that Kelley and Miller (2007) reported similar results, future research should seek to further replicate this finding.

In contrast to the negative relation found between institutional S/R and well-being, higher institutional S/R uniquely predicted *greater* involvement in clubs, consistent with our hypothesis. Even though personal S/R also predicted more frequent club involvement, this relation was not as consistent (i.e., personal S/R was a significant predictor of club involvement in grade 12 only) or as strong (i.e., $b=.09$ for personal, versus $b=.19$ for institutional) as was found for institutional S/R. This finding may reflect the unique opportunities for school and community involvement that may be fostered by the social connections that adolescents may acquire in religious communities (King & Furrow, 2004; Glanville et al., 2008). Alternatively, it may be that adolescents who are

“joiners” are simply more likely to be involved in many activities, including religious ones (e.g., Glanville et al., 2008; Regnerus & Smith, 2005). Interestingly, in grade 11, there was an interaction between institutional and personal S/R, such that it was only when personal S/R was *low* that institutional S/R predicted more frequent club involvement. This finding is somewhat counterintuitive, given research that has found positive associations between both institutional and personal aspects of S/R and community involvement (e.g., Youniss et al., 1999); these studies, however, have not considered the interaction between personal and institutional S/R. Adolescents who are highly involved in religious organizations and are also highly “personally” spiritual/religious may not be “joiners” per se; that is, they may only be involved in religious groups because of their personal beliefs, and may not participate frequently in other types of clubs. Conversely, adolescents who participate in religious activities even though they do not have strong personal beliefs may be more likely to be the type of individuals who like to participate in a variety of activities.

Although personal S/R uniquely and consistently predicted positive adjustment in terms of greater intrapersonal well-being, parental relationship quality, and academic orientation, and institutional S/R uniquely and consistently predicted positive adjustment in terms of more frequent club involvement, results from the longitudinal analyses revealed that these associations could not be explained by either the socialization or selection hypotheses. That is, grade 11 personal S/R did not predict well-being, parental relationship, or academic orientation in grade 12, and grade 11 well-being, parental relationship, and academic orientation did not predict personal S/R in grade 12; similarly, there were no longitudinal relations between institutional S/R and club involvement.

Our failure to find support for the socialization hypothesis in the association between personal S/R and intrapersonal well-being was unexpected, given that both Possel et al. (2011) and Sallquist et al (2010) found that prior S/R predicted subsequent well-being. However, methodological differences between these studies and the present study may explain the differential findings; namely, Possel et al used a much shorter time frame (i.e., 4 months between assessment points) than the one year used in the present study, and Sallquist et al used a sample that was younger (i.e., 7th-9th grade) and lived in a culture (Indonesia) where religion was a much more salient part of daily life (Lippman & Keith, 2005).

It also is possible that our longitudinal results may be reflective of *third variable effects* [i.e., although the variables are associated, it may be another variable that is influencing change in both S/R as well as the domain(s) of adjustment]. For example, reporting high personal S/R may be part of a constellation of factors that include feeling good about oneself, having good relationships with one's parents, and doing well in school. Changes in this constellation of factors may be driven by broader psychological-level variables such as personality or temperament. Reporting high institutional S/R is likely part of a different (but related) constellation of factors that includes involvement in religious/spiritual groups, as well as school/community clubs. The factors that drive change in this constellation of variables may be more social-contextual in nature, such as family community involvement, socio-economic status, or opportunities for faith- and non-faith-based activities in one's community. Future research should seek to discover the psychological and social/contextual variables that may affect change in both personal

and institutional S/R, as well as the domains of adjustment with which the dimensions of S/R are correlated.

The domains of psychosocial adjustment in which the results implied that S/R may be influential, however, were for permissive risk attitudes and substance use. For risk attitudes, the results were consistent at both the within and across-time levels, in that higher personal S/R predicted less permissive attitudes towards risk taking (in comparison to their peers) concurrently in grades 11 and 12, as well as over time, specifically *when institutional S/R was high*. This is not surprising, given that many religious organizations emphasize the wrongness of adolescent substance use. In contrast, adolescents who go to religious activities but who have lower personal S/R may be less likely to accept the teachings of their congregations than individuals with higher personal S/R.

For substance use, the most consistent finding was that institutional S/R was a significant unique predictor of less substance use, both concurrently and longitudinally (although only at an interaction level with personal S/R at the within-time level in grade 11). Institutional S/R may impact upon an adolescent's engagement in substance use because attending religious/spiritual groups can create constraints on adolescents' opportunities to take part in substance use. Namely, adolescents who are involved in religious activities may experience a greater degree of social network closure (Smith, 2003), may be more involved in a variety of activities (e.g., Bartko & Eccles, 2003), and, if their parents participate in religious activities (which is most often the case for religiously-involved adolescents, Smith & Denton, 2005), they may be more likely to have parents who use an authoritative parenting style (e.g., Gunnoe et al., 1999) - all of

which can prevent engagement in risk-taking (e.g., Fletcher et al., 2001, Mahoney & Stattin, 2000; Steinberg, 2001). In addition, because the practices associated with religious activities (e.g., getting up to go to church/temple/mosque on the weekend) may build self-control, and self-control is important for avoiding substance use, self-regulatory capacities fostered through involvement in religious institutions may, at least partially, explain why institutional S/R may influence adolescents' decisions surrounding substance use (McCullough & Willoughby, 2009).

Limitations and Conclusions

The most significant limitation of this study was the reliance on self-report surveys. It would have been beneficial to have multiple informants (e.g., parent report, teacher report, student records), particularly for the domains of parent-child relationships and academic orientation. Further, the population from which the sample was drawn also was fairly homogenous in terms of religion/ethnicity. Also, because students' religious affiliations were not known, differences in the results by religious affiliation could not be examined. Finally, given that standardized path coefficients of .10 are typically seen as small effects in the social sciences, the coefficients that were significant in the present study were all small to medium in magnitude. The overall variance explained by the overall models was also low. However, these effect sizes are common, particularly in cross-lagged models with high stability coefficients between adjacent waves of data. In this case, small effects would be expected. However, small effects are not necessarily trivial effects, and the magnitude of effects is consistent with the other studies that have used similar models (e.g., Mason & Windle, 2002).

Despite these limitations, the present study offers an important contribution to the body of knowledge on the association between S/R and psychosocial adjustment in adolescence. It was the first study of which the authors are aware that assess the unique and joint associations between personal and institutional S/R and a wide range of psychosocial adjustment domains, and to have also considered the direction of effects in these associations. Given the differential associations of personal and institutional S/R with psychosocial adjustment, as well the interactive associations between the two dimensions and some domains of adjustment, it is clear that researchers should adopt a more nuanced approach to measuring S/R; in particular, an approach that allows for the identification of interactions between personal S/R and various aspects of institutional S/R would be beneficial. Further, including a longitudinal assessment of the association between S/R and adjustment allowed us to identify substance use and permissive risk attitudes as being domains in which S/R may have a particularly significant impact.

Chapter 5: Stability and Change in Adolescent Spirituality/Religiosity: A Person-Centered Approach

A version of this chapter has been published. Good, M., Willoughby, T. & Busseri, M.A. (2011). Stability and change in adolescent spirituality/religiosity: A person-centered approach. *Developmental Psychology*, 47, 538-550. Used with permission.

Although the field of developmental psychology has often neglected topics related to spirituality and religion, the past decade has seen a surge of interest in these domains (Roehlkepartain, Benson, King, & Wagener, 2006). This increased interest may be partially due to the recent attention that spirituality and religion have received within the Positive Youth Development framework (PYD; Lerner, Roeser, & Phelps, 2008). The PYD perspective, which has come to the foreground of developmental psychology in the past 10 years (see Lerner, Phelps, Forman, & Bowers, 2009), places priority on understanding and promoting positive developmental features. In this framework, spirituality and religiosity have been studied as individual and community-level assets that promote thriving (e.g., Dowling et al., 2004). While, historically, religion has been of some interest to psychologists as a factor that may protect against delinquency (Jessor & Jessor, 1977) or promote identity formation (Erikson, 1968), it has been within the PYD framework that researchers have explicitly called for attention to be devoted to understanding the role of spirituality and religiosity in development (Benson, 2004).

Much of the recent research on spirituality and religiosity has focused on adolescent populations. This is perhaps not surprising, as adolescence has been recognized as a period of life when a great deal of change may occur in spiritual and/or religious domains (Good & Willoughby, 2008). A considerable amount of progress has been made in understanding spirituality and religiosity in terms of their relations with

many commonly-studied domains of adolescent development, such as health risk behaviors and internalizing disorders (see Cotton, Zebracki, Rosenthal, Tsevat, & Drotar, 2006). Within the PYD framework, researchers have focused on studying how spirituality and religion may promote positive features of development such as healthy identity formation, civic engagement, and purpose (e.g., Dowling et al., 2004; Lerner et al., 2008). Much less is known, however, about spirituality and religiosity as domains of development *in their own right*. The present study, therefore, represents an effort to improve our knowledge of how the dimensions of spirituality and religion are configured within individual adolescents and develop over time using a person-centered approach.

Spirituality/Religiosity: A Multidimensional Construct

Although definitions of spirituality and religiosity vary across studies (e.g., Hill et al., 2000), spirituality is often defined as the search for sacred, divine, or nonmaterial aspects of life, whereas religiosity is conceptualized as behavior and beliefs associated with organized religion. Despite this apparent separation between the concepts of spirituality and religion, for many individuals, the search for the sacred takes place within faith institutions (Zinnbauer & Pargament, 2005). Rather than defining spirituality and religiosity as separate constructs, therefore, it may be more useful to conceptualize a single construct of spirituality/religiosity (S/R) encompassing multiple dimensions that include both institutional and non-institutional (i.e., personal) forms of connection with the sacred.

From this perspective, S/R could be defined as feelings and behaviors involving the search for the sacred, occurring both within and outside of institutionalized religion. Following Cornwall, Albrecht, Cunningham, and Pitcher (1986), S/R would thus include

two modes (institutional vs. personal) and two components (behavioral vs. affective) – the cross-classification of which results in four dimensions: institutional behavior (e.g., involvement in religious activities, prayer and/or meditation occurring within formal religious services), institutional affect (e.g., feelings or attitudes about one's religious institution), personal behavior (e.g., wondering about spiritual issues, solitary prayer and/or meditation), and personal affect (e.g., feelings and perceptions about one's experience with or connection to the sacred and/or divine). Together, these four dimensions comprise a multidimensional S/R construct.

Stability and Change in Multiple Dimensions of Spirituality/Religiosity

Because the dimensions of S/R are correlated, items and subscales assessing multiple dimensions are regularly combined in composite scales (e.g., King & Furrow, 2004; Koenig, McGue, & Iacono, 2008). The combination of dimensions is effective from a psychometric perspective (e.g., increasing reliability) and is useful if the researcher's goal is to attain a general measure of S/R. However, the use of such composite scores precludes inferences about individuals' development in each of the multiple dimensions of S/R.

When researchers have attempted to differentiate dimensions of S/R, they have primarily done so by examining religious service attendance separately from more "personal" aspects of religious faith (e.g., Stoppa & Lefkowitz, 2010). Studies have consistently found that attendance at religious services declines over the course of adolescence (e.g., Steinman & Zimmerman, 2004). In contrast, mixed results have been found with respect to change over time in the personal aspects of S/R, with some studies reporting stability over the course of adolescence (e.g., Kerestes, Youniss, & Metz,

2004), and others reporting decline (e.g., Koenig et al., 2008). Scales assessing personal features of S/R, however, often encompass multiple dimensions, such as institutional affect and personal behavior (e.g., Kerestes et al., 2004; King & Furrow, 2004). The mixed results concerning change over time, therefore, may be due to the inclusion of multiple dimensions of S/R within the same composite scale.

A smaller body of literature has exclusively examined what is labeled as “spirituality”, that is, feelings and/or attitudes towards and experiences with the sacred without any reference to religious faith. These studies typically have not reported age-related changes or longitudinal trends, as their focus has been on the association of spirituality with other variables (e.g., Perez, Little, & Henrich, 2009). Some researchers, however, have suggested that spirituality may be stable over short periods of time (e.g., French, Eisenberg, Vaughan, Purwono, & Suryanti, 2008) and across age more generally (e.g., Desrosiers and Miller, 2007).

A Person-Centered Approach to Spirituality/Religiosity

Although existing studies provide useful information on change and stability in various dimensions of S/R over time, an important limitation exists. Specifically, because researchers have nearly exclusively utilized variable-oriented approaches, very little is known about how dimensions of S/R are configured within individual adolescents. Variable-centered approaches consider the variable, rather than the person, as the main unit of interest (Bergman & Magnusson, 1997), and do not allow for the exploration of complex configurations of variables within individuals (Bergman & Trost, 2006). For example, if on a hypothetical scale there were three items that assessed institutional S/R and three that assessed personal S/R, an individual who scored low on each institutional

item but high on each personal item would receive the same composite score as another individual who scored high on the institutional items and low on the personal items.

Person-centered approaches, in contrast, focus on the ways in which multiple variables are configured within individuals, rather than the relative standing of individuals on multiple variables (Caspi & Silva, 1995). One of the main assumptions of developmental systems theory (upon which PYD is based) is that there is diversity in the combinations of variables across the levels of the system being studied (Lerner et al., 2009). Applying this framework to the development of S/R, it is essential to consider how the multiple dimensions of S/R are configured within individuals. There may be complex (e.g., nonlinear or incongruent) configurations of the dimensions of S/R at the level of the individual which cannot be captured in variable-oriented studies examining dimensions of S/R in isolation or in combination.

For instance, one of the outcomes of the growing decline in religious service attendance in Western society (e.g., Clark, 2003; Dogan, 2003) has been the rejection of institutionalized religion and embracing of personal spirituality (Zinnbauer et al., 1997). Results from a Canadian nationally representative survey indicated that, although only 21% of teens attended religious services weekly and 13% said that religious involvement was very important to them, over 75% reported that they often wondered about ultimate questions such as what happens after death and the purpose of life (Bibby, 2009; see Lippman & Keith, 2006 for similar trends in Europe). Further, we hypothesize that some adolescents can be characterized by incongruence between their affective and behavioral experiences of S/R. For example, some teens may dislike attending religious services, but attend frequently out of family obligation; others may desire to be involved in religious

groups, but familial or social factors prevent them from reaching such a goal. Although infrequently applied by S/R researchers, an important feature of a person-centered approach is the ability to identify adolescents characterized by these (and other) nonlinear configurations of S/R dimensions, and to examine change in these configurations over time.

Stability and Change in Configurations of Spirituality/Religiosity

In addition to identifying configurations of variables within individuals, a major strength of person-oriented analyses is the ability to distinguish between structural (sample-level) and intra-individual (individual-level) stability and change (Bergman, Magnusson, & El-Khoury, 2003). Assessing intra-individual stability and change allows researchers to determine whether individuals stay in and/or move out of particular configurations over time, and assessing structural stability and change allows researchers to observe whether new configurations of variables within individuals emerge over time and/or prior configurations dissolve.

Exploring these two forms of person-centered stability and change highlights facets of development that have been overlooked in variable-oriented analyses of S/R. A few studies on S/R have been conducted using person-centered approaches, wherein participants were classified into groups based on whether they increased, decreased, or remained stable on S/R variables (e.g., King, Elder, & Whitbeck, 1997; Koenig et al., 2008; Stoppa and Lefkowitz, 2010). Results from these studies demonstrated that, regardless of the mean-level change in S/R dimensions over time, there is typically a great deal of variability in individual-level trajectories. For example, although religious attendance declines on average, many adolescents increase or remain stable. These

studies were limited, however, in that simultaneous change in spiritual/religious dimensions was not examined, and the dimensions of S/R assessed were institutional-based (i.e., religious attendance, personal importance of religion, strength of religious beliefs). Although these studies effectively illustrated how mean-level trends may obscure distinct patterns of individuals' development with respect to individual dimensions of S/R, at present, little is known about the diverse configurations of S/R that may exist for a given sample of adolescents, the degree to which the sample-level structure of such configurations is stable (or changes) over time, and how within-individual S/R configurations develop over time.

The Present Study

To address these questions, in the current study we undertook a longitudinal, person-centered analysis of multiple dimensions of S/R using a sample of Canadian adolescents surveyed at the end of grade 11 and again at the end of grade 12. It was expected that some development in S/R may occur during these two time points because throughout this period students transition from a homeostatic high school existence to which they have been accustomed since grade 9, to having to decide on a career or a college major, and, for many adolescents, being on the cusp of leaving home for the first time. This transition may prompt identity exploration, particularly with respect to career-related matters, which often involves the examination of spiritual/religious issues (Kroger, 1996). Further, some researchers have suggested that individuals consider their career to be an extension of their spiritual/religious values, wherein the spiritually or religiously-motivated desire to serve others or treat others with kindness and compassion

is fulfilled, in part, through a vocation (e.g., Duffy, 2006). Therefore, in this period of exploration, development in S/R may also take place.

At both time points, we assessed six aspects of S/R reflecting various dimensions of S/R, namely, religious activity involvement (reflecting *institutional behavior*), enjoyment of religious activity involvement (*institutional affect*), wondering about spiritual issues (*personal behavior*), perceived psychological effects and/or feelings about one's experiences and connections with the sacred (*personal affect*), frequency of prayer, and frequency of meditation. Because prayer and meditation could reflect either personal or institutional behavior, we did not classify these constructs a priori, but rather, consistent with a person-oriented approach, derived meaning from them as they occurred in the context of the other variables (Magnusson, 2003).

The main goal of the present study was to describe configurations of S/R over time using a person-centered approach by identifying subgroups of individuals in each grade characterized by reliable and distinct patterns of the S/R dimensions. Three specific research questions were addressed. First, for the sample as a whole, what was the structure of the S/R configurations at each grade? Second, was the structure of these configurations consistent at each grade, or did it change over time? Third, concerning intra-individual development, were individuals characterized by the same S/R configuration at both time points, indicating intra-individual stability, or were they classified into different S/R configurations over time, indicating intra-individual change?

Method

Participants

Students from eight high schools encompassing a school district in southern Ontario, Canada took part in the study. This study was part of a larger longitudinal-sequential project examining youth lifestyle choices across the high school years (e.g., see Willoughby & Hamza, 2010). In the larger study, surveys were completed several times between 2003 and 2008, with some students starting the study in 2003 and others joining the study in subsequent years. The present study is based on 803 students (52% female) who completed the survey in May 2007 when they were in grade 11 (M age = 16.42) and again in May 2008 when they were in grade 12 (M age = 17.36), as questions regarding S/R were only included in the surveys conducted in 2007 and 2008.

The overall participation rate for eligible students (i.e., students who were registered in a course during the period when the survey was conducted) was 83% in 2007 and 85% in 2008; nonparticipation was due to student absenteeism (15%, 14%), parental refusal (.04%, .01%), or student refusal (2%, 1%) in 2007 and 2008, respectively. There were no significant differences on any of the six S/R variables (described below) between longitudinal participants and those who completed the survey at only one time point. There were slightly more girls than boys in the longitudinal sample (52% girls) than in the non-longitudinal sample (49% girls) and parental education level was slightly higher for longitudinal participants ($p < .001$), but the magnitude of this difference was small ($X_{diff} = .21$, $\eta^2 = .01$).

Consistent with the broader Canadian population (Statistics Canada, 2001b), 92% of the participants were born in Canada and the most common ethnic backgrounds reported other than Canadian were Italian (31%), French (18%), British (15%), and German (12%) (information on language(s) spoken in the home was not available). Data

on socioeconomic status indicated mean parental levels of education falling between “some college, university or apprenticeship program” and “completed a college/apprenticeship/technical diploma.” Furthermore, 70% of the respondents reported living with both birth parents, 12% with one birth parent and a stepparent, 15% with one birth parent (mother or father only), and the remainder with neither parent (e.g., other relatives, foster parents, etc.). The school board did not permit the release of students’ religious affiliations; however, the board was publicly funded (i.e., the schools were not private) and the religious affiliation of the population in this region is predominantly Christian (79% Catholic/Protestant), with 14% reporting no religion, and 17% reporting “other” affiliations (e.g., Muslim, Hindu, Jewish) (Statistics Canada, 2001c).

Procedure

Active informed assent was obtained from the adolescent participants. Parents were provided with written correspondence mailed to each student’s home prior to the survey administration outlining the study; this letter indicated that parents could request that their adolescent not participate in the study. An automated phone message about the study also was left at each student’s home phone number. This procedure was approved by the participating school board and the University Research Ethics Board. At all time periods, the questionnaire was administered to students in classrooms by trained research staff. Students were informed that their responses were completely confidential.

Measures. Six variables reflecting various dimensions of S/R were measured in both 2007 and 2008. First, *involvement in religious activities* was measured by an average of two items [(“In the past month, how often have you gone to church/temple/synagogue?”; “How often in the last month have you gone to

religious/spiritual meetings other than church/synagogue/ temple (e.g., youth groups)?”]. Both questions were responded to on a 5-point scale: 1 (*never*); 2 (*once or twice a month*), 3 (*once a week*), 4 (*several times a week*), 5 (*every day*). Second, *enjoyment of religious activities* was assessed by the item “I enjoy attending activities held by my religious/spiritual group” and responded to on a 4-point scale from 1=*I don’t attend or I never or almost never enjoy these activities* to 4=*I always or almost always enjoy these activities*. Third, *wondering about spiritual issues* was assessed by one item [“I often wonder about spiritual issues (i.e., life after death, the existence of a higher power, etc)”] responded to on a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Fourth, seven items adapted from the Spiritual Transcendence Index (STI; Seidlitz et al., 2002) assessed *perceived psychological effects/feelings about one’s experiences/connection with the sacred*. Items (e.g., “My spirituality gives me a feeling of fulfillment”; “Even when I experience problems, I can find a spiritual peace inside”) were responded to on a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Cronbach’s alpha was .96 in 2007 and .97 in 2008. Fifth, frequency of *prayer* was assessed by one item (“In the past month, how often have you prayed”) responded to on a 5-point scale: 1 (*never*); 2 (*once or twice a month*), 3 (*once a week*), 4 (*several times a week*), 5 (*every day*). Finally, frequency of *meditation* was assessed by one item (“In the past month, how often have you meditated”) responded to on a 5-point scale: 1 (*never*); 2 (*once or twice a month*), 3(*once a week*), 4(*several times a week*), 5 (*every day*)¹⁰.

¹⁰ Skewness and kurtosis statistics indicated that the distributions of the STI, pray, and wonder were normal at both grades (i.e., skewness and kurtosis <2). The shape of the distribution for religious service attendance, meditation, and enjoyment of religious activities were slightly positively skewed and leptokurtic (religious activity involvement: grade 11 skewness/kurtosis = 1.52/2.45, grade 12=1.8/4.28; meditation: grade 11 skewness/kurtosis=2.37/5.11, grade 12=2.64/6.47; enjoyment of religious activities: grade 11 skewness/kurtosis=1.87/2.82; grade 12=2.02/3.78). However, cluster analysis is robust to

Outliers. Because cluster analysis is sensitive to extreme cases, multivariate outliers on the six S/R variables (Mahalanobis' distance scores significant at $p < .001$) at either wave were removed ($n = 10$, 1% of the sample), as well as a small number of cases ($n = 37$, 5% of the sample) where data screening revealed that these participants did not take the questionnaire seriously¹¹. The final analysis sample comprised 756 participants (53% female, M age in grade 11=16.41, grade 12=17.36).

Missing data. To counterbalance missing data due to survey length, we included 3 versions of the survey at each time so that the same scales were not always near the end of the survey. For multi-item scales, composite scores were computed for participants who responded to at least 50% of the items. For respondents who did not give a sufficient number of responses within a multi-item scale, or did not provide a response to a single-item measure, missing values within each wave were imputed using the EM (expectation-maximization) algorithm. EM is an iterative maximum-likelihood (ML) procedure in which a cycle of calculating means and covariances followed by data imputation is repeated until a stable set of estimated missing values is reached. Methodological research has demonstrated that ML estimation is preferable to more common methods such as pair-wise deletion, list-wise deletion, or means substitution (Schafer & Graham, 2002). In total, 4% of the data were imputed in both 2007 and 2008.

Results

violations of normality, and non-normality is less problematic in cluster analysis than in other analyses because there are no standard errors/significance tests calculated in cluster analysis.

¹¹ In order to determine which students did not take the questionnaire seriously (in particular, the questions relating to S/R), I examined all participants' responses to an open-ended question which asked "Have you ever had a spiritual experience that changed your life?". Participants who entered clearly inappropriate responses were deleted from analyses. Also, participants' responses to the S/R items were examined, and individuals whose pattern of responses were suspicious at either grade (i.e., reported engaging in all of the S/R activities "every day" but also reported very low scores on the STT) were deleted.

Descriptive statistics and intercorrelations between measures are reported in Table 4.1. As shown by the correlations between corresponding measures over time, a moderate degree of stability was observed for each of the six S/R dimensions. Further, analysis of mean-level change indicated that for four of these dimensions (religious activity involvement, wondering, prayer, and meditation), mean scores decreased significantly between grade 11 and grade 12; mean changes in enjoyment of religious activities and STI over time were non-significant.

Identifying S/R Configurations within Grade

At each grade, the six S/R variables were entered into a multi-step cluster analysis using SPSS version 17, based on previous person-oriented research (e.g., Asendorpf, Borkeneau, Ostendorf, & Van Aken, 2001; Bergman, 1998). First, variables were standardized (within grade) to normalize variances across measures (Bergman, 1998). Second, an agglomerative hierarchical cluster analysis using Ward's method was performed using squared Euclidean distance (SED) as the dissimilarity measure. In this procedure, cases that are most similar in terms of their SED are combined until the number of clusters specified by the researcher has been reached. Solutions ranging from 2 to 10 clusters were estimated. Third, the cluster centers from these hierarchical solutions were used as start values for a series of *k*-means cluster analyses ranging from 2 to 10 clusters. Unlike the hierarchical procedure, *k*-means cluster analysis allows cases to be reassigned to an alternate cluster if doing so either decreases the average SED within clusters and/or increases the average distance between clusters, thereby minimizing within-cluster and maximizing between-cluster differences (Aldenderfer & Blashfield, 1984).

Table 4.1

Intercorrelations, means, and standard deviations

Measure	1	2	3	4	5	6
1. Religious Activity Involvement	.56***	.59***	.20***	.39***	.43***	.20***
2. Enjoyment of Religious Activities	.54***	.55***	.31***	.47***	.38***	.08*
3. Wonder	.21***	.26***	.42***	.55***	.33***	.05
4. Spiritual Transcendence Index (STI)	.40***	.43***	.52***	.71***	.57***	.09*
5. Prayer	.34***	.33***	.33***	.55***	.61***	.09*
6. Meditation	.05	-.01	.10**	.05	.06	.37***
Grade 11 Mean (SD)	1.38 (.53)	1.38 (.71)	3.66 (1.09)	3.08 (1.02)	2.49 (1.57)	1.44 (0.92)
Grade 12 Mean (SD)	1.34 (.52)	1.37 (.70)	3.53 (1.11)	3.03 (1.05)	2.18 (1.50)	1.35 (0.84)
Gr12-Gr11Difference (η^2)	-0.04** (.01)	-0.01 (.000)	-0.13** (.01)	-0.05 (.003)	-0.31*** (.05)	-0.09** (.01)

Note. Intercorrelations for grade 12 are presented above the diagonal, and intercorrelations for grade 11 are presented below the diagonal. Across-time (stability) correlations are presented in bold on the diagonal. Scale ranges for religious activity involvement (1=never to 5=every day); enjoy religious activities (1=I don't attend or I never or almost never enjoy these activities to 4=I always or almost always enjoy these activities); wonder (1=strongly disagree to 5=strongly agree); STI (1=strong disagree to 5=strongly agree); pray (1=never to 5=every day); meditate (1=never to 5=every day). * $p < .05$. ** $p < .01$. *** $p < .001$.

The fourth step involved assessing the reliability of the cluster assignments by estimating the replicability of the assignments from the k -means cluster solutions. Five randomly-selected sub-samples were created, each comprising approximately two-thirds of the participants. The first three steps of the multi-stage cluster analysis described above were conducted within each of these random sub-samples. The assignment of cases to clusters within each sub-sample based on these sample-specific cluster analyses were then cross-tabulated with the cluster assignments obtained from the full sample cluster analysis. Agreement was estimated using the kappa coefficient within each sub-sample, and the median kappa was calculated across the five sub-samples. The extent to which the sub-sample cluster configurations matched the configurations from the full sample cluster analysis also was examined in each of the 2 through 10 cluster solutions. A sub-sample cluster was considered a match if the magnitude and direction of the cluster centroids (i.e., the cluster mean for each standardized variable) was similar to the full sample for each of the six clustering variables. The number of matches between the sub-sample and full sample clusters for each cluster solution was calculated for each of the five sub-samples, and averaged across these subsamples. The Average Squared Euclidean Distances (ASED) associated with these matches was also calculated (i.e., mean ASED across subsamples).

To determine the best cluster solution for each grade, the cluster solutions estimated in the above analyses were compared based on several criteria. First, a well-fitting cluster solution was expected to explain a sizeable proportion of variance in the S/R variables (Bergman et al., 2003). Second, the optimal cluster solution was expected to be reliably reproduced within the random sub-samples, as evidenced by high kappa

coefficients (Asendorpf et al., 2001 advise a median kappa $> .60$, with greater kappa values indicating a more reliable/stronger solution) and a high degree of cluster matches between the five sub-samples and the full sample. Third, cluster homogeneity (i.e., the average similarity between individual cases in the same cluster) should be high in a well-fitting solution. To assess cluster homogeneity, the average sum of all squared deviations from the cluster centroids across the six clustering variables was calculated for each participant in each cluster; this sum was then divided by the number of participants in a cluster to index the average cluster homogeneity (Bergman, 1998), where smaller values indicate more homogenous clusters (i.e., the *homogeneity coefficient*, Bergman et al., 2003). Mean cluster homogeneity was calculated for each cluster solution, and smaller values were considered to represent stronger solutions.

In both grades, results converged on a 5-cluster solution. As reported in Table 4.2, the total explained variance asymptoted at the 5-cluster solution; that is, it increased steeply from the 2- to the 5-cluster solution, and very gradually thereafter. Cluster homogeneity also asymptoted at the 5-cluster solution; that is, the homogeneity coefficient decreased sharply from the 2- to 5- cluster solution, and only slightly thereafter. With respect to reliability, the median kappa for the 5-cluster solution was among the highest of all solutions. Solutions comprising fewer than 5 clusters showed substantially less explained variance and homogeneity, despite small improvements in reliability in some cases. Further, solutions comprising more than 5 clusters showed minimal gains in explained variance and cluster homogeneity, in combination with lower reliability. The 5-cluster solution also had the highest average cluster matches between the sub-samples and the full sample. Further, the mean ASED associated with these

Table 4.2

Results from Estimated Cluster Solutions: Variance, Cluster Homogeneity, and Replicability

<i>Solution</i>	<i>Explained variance (%)</i>	<i>Incremental variance (%)</i>	<i>Mean cluster homogeneity</i>	<i>Incremental decrease in mean homogeneity</i>	<i>Median kappa</i>	<i>Average cluster match between subsamples and full sample</i>	<i>Mean ASED across random samples between matching clusters (range)</i>
<i>Grade 11</i>							
2 clusters	28.3	28.3	1.29		.98	2/2 (100%)	.01(0-.05)
3 clusters	39.5	11.2	.64	.64	.99	2.8/3 (93%)	.10(.001-.43)
4 clusters	50.9	11.4	.55	.09	.92	3.6/4 (90%)	.03(.001-.07)
5 clusters	58.1	7.2	.47	.08	.97	5/5 (100%)	.005(.003-.006)
6 clusters	61.4	3.3	.45	.02	.90	5/6 (83%)	.04(.007-.08)
7 clusters	63.6	2.2	.41	.03	.78	5.4/7 (77%)	.16(.02-.36)
8 clusters	65.8	2.1	.42	.01	.72	5.8/8 (73%)	.19(.03-.24)
9 clusters	67.5	1.7	.39	.03	.68	6.6/9 (73%)	.29(.01-.69)
10 clusters	69.1	1.6	.38	.01	.66	7.4/10 (74%)	.29(.01-.49)
<i>Grade 12</i>							
2 clusters	31.4	31.4	1.41		.99	2/2 (100%)	.002(0-.004)
3 clusters	41.5	10.0	.77	.65	.84	2.4/3 (80%)	.32(.002-.77)
4 clusters	50.3	8.8	.67	.09	.42	3.4/4 (85%)	.22(.003-.39)
5 clusters	58.1	7.8	.56	.11	.96	5/5 (100%)	.009(.002-.02)
6 clusters	61.7	3.6	.52	.04	.92	5.4/6 (90%)	.02(.003-.08)
7 clusters	64.7	3.0	.46	.06	.73	4.4/7 (62.86)	.53(.02-.92)
8 clusters	66.6	1.8	.48	.02	.76	6.2/8 (78%)	.28(.19-.55)
9 clusters	68.8	2.2	.44	.04	.70	7/9 (78%)	.34(.17-.85)
10 clusters	71.0	2.2	.42	.02	.78	9/10 (90%)	.31(.10-.64)

matches in grade 11 was .005 in the 5-cluster solution (grade 12 = .009), compared to .03 in the 4-cluster solution (grade 12 = .22) and .04 in the 6-cluster solution (grade 12 = .02). Therefore, at both grades, the 5-cluster solution was deemed optimal.

Structure of the five S/R configurations within grade. Descriptive statistics for the 5-cluster solutions, including standardized and unstandardized means and standard deviations of the six S/R variables, are presented in Table 4.3 for both grades. In Figure 4.1, the centroids for each grade 11 cluster are plotted against the centroids for its corresponding grade 12 cluster for each variable; sample averages for each grade also are shown. An inspection of the standardized and unstandardized cluster centroids revealed that the structure of the five clusters was similar at both grades, as each grade 11 cluster had a clear and distinct conceptual match in grade 12.

Cluster 1, labeled “*Aspiritual/Irreligious*” was characterized by extremely low standardized means on each of the six variables, and comprised 14% of the students in grade 11 (57% boys) and 13% in grade 12 (56% boys). Raw mean scores indicated that this group of students nearly never engaged in any of the S/R behaviors (religious activities, wondering, prayer, meditation), and they scored between “strongly disagree” and “disagree” on the STI. Cluster 2, labeled “*Disconnected Wonderers*”, was the largest of the clusters in both grades, comprising 36% of participants (52% boys) in grade 11, and 45% of participants (49% boys) in grade 12. This cluster, like the *Aspiritual/Irreligious* group, reported almost nonexistent involvement in religious activities, prayer, and meditation. The mean raw score on the STI, however, was close to “neither agree nor disagree”, suggesting a profile of indifference as opposed to negativity towards S/R. It is important to note that their average score for wondering about spiritual

Table 4.3

Cluster Descriptives by Grade

Cluster Label	Religious Activity Involvement	Enjoy Religious Activities	Wonder	Spiritual Transcendence Index	Prayer	Meditation	Size
<i>Grade 11</i>							
1. Aspiritual/Irreligious	1.10 (.25)	1.07 (.28)	1.72(.70)	1.65 (.69)	1.20 (.65)	1.17 (.50)	107
	<i>-.54 (.47)</i>	<i>-.45 (.39)</i>	<i>-1.78 (.64)</i>	<i>-1.39 (.68)</i>	<i>-.82 (.42)</i>	<i>-.29 (.55)</i>	(14.2%)
2.Disconnected Wonderers	1.17 (.31)	1.09 (.30)	3.85 (.72)	2.82 (.78)	1.34 (.52)	1.13 (.34)	271
	<i>-.41 (.59)</i>	<i>-.41 (.42)</i>	<i>.17 (.66)</i>	<i>-.25 (.76)</i>	<i>-.73 (.33)</i>	<i>-.33 (.37)</i>	(35.8%)
3. High Institutional and Personal	2.17 (.54)	2.63 (.73)	4.23 (.71)	3.97 (.70)	3.56 (1.32)	1.42 (.70)	126
	<i>1.51 (1.04)</i>	<i>1.75 (1.03)</i>	<i>.52 (.65)</i>	<i>.87 (.69)</i>	<i>.69 (.85)</i>	<i>-.02 (.76)</i>	(16.7%)
4. Primarily Personal	1.36 (.39)	1.22 (.41)	4.02 (.76)	3.63 (.65)	4.15 (.90)	1.15 (.36)	184
	<i>-.04 (.73)</i>	<i>-.23 (.58)</i>	<i>.33 (.69)</i>	<i>.54 (.64)</i>	<i>1.06 (.57)</i>	<i>-.31 (.39)</i>	(24.3%)
5. Meditators	1.28 (.41)	1.18 (.42)	3.94 (.96)	3.18 (.80)	2.57 (1.62)	3.87 (.81)	68
	<i>-.20 (.78)</i>	<i>-.29 (.59)</i>	<i>.26 (.88)</i>	<i>.10 (.78)</i>	<i>.06 (1.04)</i>	<i>2.65 (.88)</i>	(9.0%)
Raw Sample Mean (SD)	1.38 (.53)	1.38 (.71)	3.66 (1.09)	3.08 (1.02)	2.49 (1.57)	1.44 (.92)	
<i>Grade 12</i>							
1. Aspiritual/Irreligious	1.13 (.32)	1.02 (.14)	1.62 (.68)	1.53 (.57)	1.19 (.69)	1.10 (.36)	101
	<i>-.39 (.60)</i>	<i>-.51 (.20)</i>	<i>-1.72 (.61)</i>	<i>-1.44 (.55)</i>	<i>-.66 (.46)</i>	<i>-.30 (.43)</i>	(13.4%)
2. Disconnected Wonderers	1.11 (.25)	1.10 (.32)	3.63 (.75)	2.79 (.71)	1.23 (.51)	1.08 (.28)	337
	<i>-.44 (.49)</i>	<i>-.39 (.45)</i>	<i>.09 (.68)</i>	<i>-.23 (.67)</i>	<i>-.63 (.34)</i>	<i>-.32 (.33)</i>	(44.6%)
3. High Institutional and Personal	2.34 (.73)	3.14 (.67)	4.37 (.73)	4.29 (.68)	3.63 (1.38)	1.56 (.98)	63
	<i>1.91 (1.40)</i>	<i>2.54 (.96)</i>	<i>.75 (.65)</i>	<i>1.20 (.65)</i>	<i>.97 (.92)</i>	<i>.25 (1.17)</i>	(8.3%)
4. Primarily Personal	1.50 (.42)	1.48 (.50)	4.04 (.78)	3.78 (.65)	3.82 (1.15)	1.14 (.35)	195
	<i>.31 (.81)</i>	<i>.15 (.72)</i>	<i>.46 (.70)</i>	<i>.71 (.62)</i>	<i>1.09 (.77)</i>	<i>-.25 (.41)</i>	(25.8%)
5. Meditators	1.40 (.51)	1.28 (.56)	3.65 (1.13)	3.18 (.99)	2.32 (1.47)	3.72 (.69)	60
	<i>.12 (.98)</i>	<i>-.13 (.80)</i>	<i>.11 (1.02)</i>	<i>.14 (.94)</i>	<i>.09 (.98)</i>	<i>2.83 (.83)</i>	(7.9%)
Raw Sample Mean (SD)	1.34 (.52)	1.37 (.70)	3.53 (1.11)	3.03 (1.05)	2.18 (1.50)	1.35 (.84)	

Notes. Standardized and unstandardized means (standard deviations) are reported, standardized scores are italicized. Scale ranges for religious activity involvement (1=never to 5=every day); enjoy religious activities (1=I don't attend or I never or almost never enjoy these activities to 4=I always or almost always enjoy these activities); wonder (1=strongly disagree to 5=strongly agree); STI (1=strong disagree to 5=strongly agree); pray (1=never to 5=every day); meditate (1=never to 5=every day).

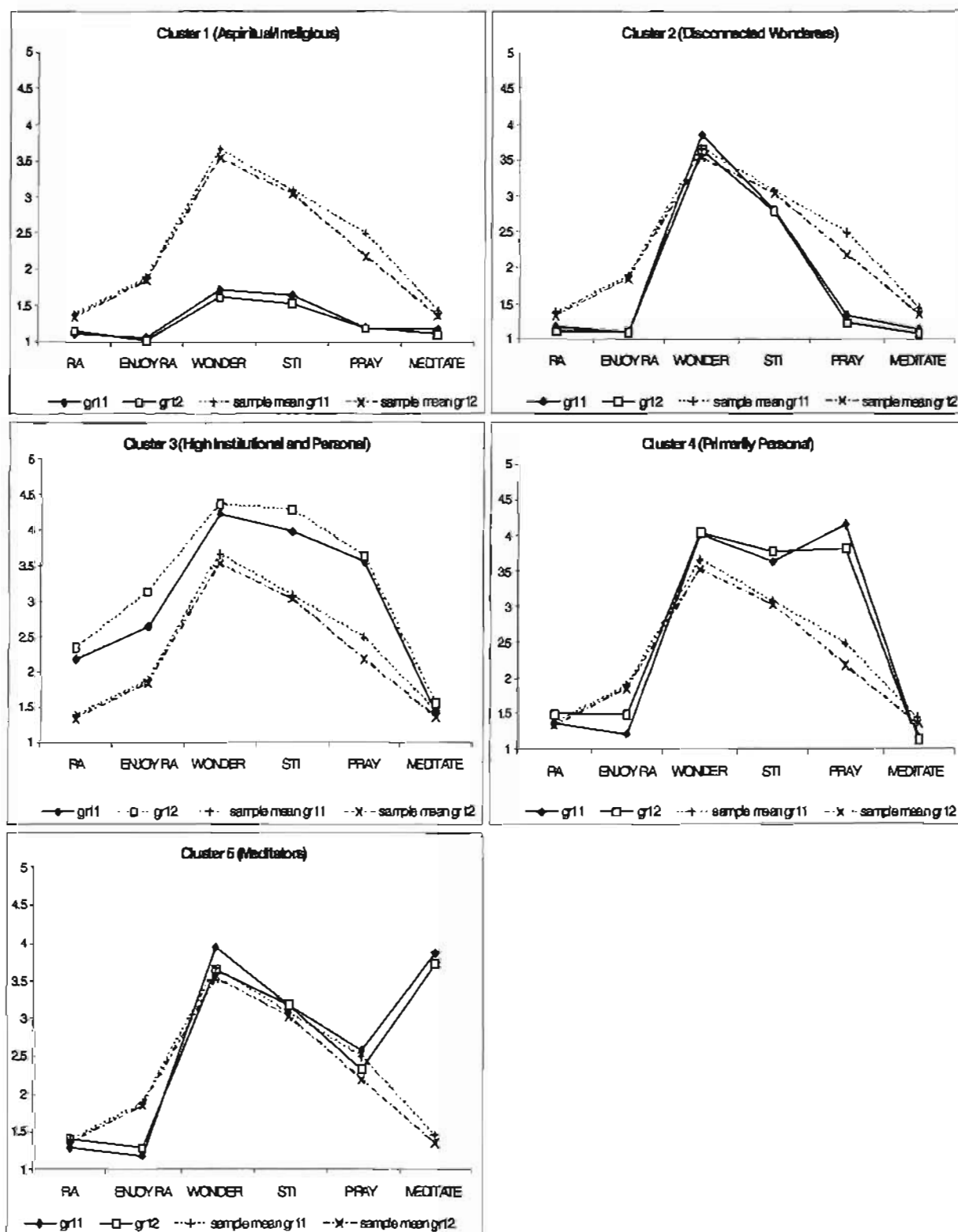


Figure 4.1. Unstandardized cluster centroids at grade 11 and grade 12 for the five-cluster solution.

RA=Religious Activities. STI=Spiritual Transcendence Index. Scale ranges for RA (1=never to 5=every day); enjoy RA (1=I don't attend or I never or almost never enjoy these activities to 4=I always or almost always enjoy these activities); wonder (1=strongly disagree to 5=strongly agree); STI (1=strong disagree to 5=strongly agree); pray (1=never to 5=every day); meditate (1=never to 5=every day).

issues indicated that many of these individuals thought about issues related to spirituality. Overall, then, this group indicated being disconnected from (i.e., not engaged in) institutional and personal S/R, but they believed spirituality may play some small role in their lives, and often wondered about spiritual issues.

Cluster 3, labeled “*High Institutional and Personal*” (*High I/P*), was characterized by scores that were well above the sample average on all variables (other than meditation, where the centroid was near the sample average). This cluster comprised 17% of participants in grade 11 (45% boys) and 8% in grade 12 (41% boys). Cluster 4 was labeled “*Primarily Personal*”, and comprised 24% of the sample in grade 11 (39% boys), and 26% of the sample in grade 12 (35% boys). Adolescents in this cluster were characterized by above-average scores on the spiritual wondering and STI measures, very frequent prayer (averaging between several times a week and every day), and low scores on meditation, religious activity involvement, and enjoyment of religious activities. Thus, their profile consisted primarily of personal S/R behaviors and attitudes. Cluster 5, labeled “*Meditators*”, comprised 9% of participants in grade 11 (41% boys), and 8% of participants in grade 12 (61% boys). Students in this cluster were characterized primarily by very high frequency of meditation, with the raw mean falling between “once a week” and “a few times a week”. For the other S/R variables, centroids were near the sample means.

Structural stability of the five S/R configurations across grade. From an examination of the cluster centroids shown in Table 4.3 and Figure 4.1, it appeared that the configurations of S/R that emerged in grade 11 also emerged in grade 12. To assess the structural stability of these configurations more formally, the average squared

Euclidean distance (ASED) between centroids was calculated for each grade 11 cluster and its matching grade 12 cluster, across the six clustering variables (Bergman et al., 2003). Because the clusters were created from standardized variables, the ASED values can be interpreted as standardized effect sizes for the average between-grade centroid dissimilarity. Results revealed that cluster 2 (*Disconnected Wonderers*) was the most structurally stable (ASED = .003), followed by cluster 1 (*Aspiritual/Irreligious*, ASED = .01), cluster 5 (*Meditators*, ASED = .03), cluster 4 (*Primarily Personal*, ASED = .05), and finally, cluster 3 (*High I/P*, ASED=.18). Using effect size guidelines (e.g., Cohen, 1988), these structural differences between matching clusters across grade were small, with the exception of cluster 3 (*High I/P*), for which there was a moderate amount of structural dissimilarity between grade 11 and 12 configurations.

Examination of the SED for the individual variables within the *High I/P* cluster revealed that the grade 11 and 12 clusters differed primarily with regard to two of the six clustering variables: enjoyment of religious activities (SED = .62) and religious activity involvement (SED = .16); cluster centroids for both of these variables were higher in the grade 12 cluster than in the grade 11 cluster. For the remaining four variables in cluster 3, the SEDs ranged from .05 to .11 (higher scores in grade 12 on all variables). In grade 12, then, the *High I/P* cluster was characterized by stronger overall commitment, particularly with regard to institutional S/R.

Intraindividual stability in S/R configurations across grade. To assess intra-individual stability in S/R configurations, cluster membership in grade 11 was cross-tabulated with cluster membership in grade 12 (Bergman et al., 2003). Results are shown in Table 4.4. There was a significant association between grade 11 and grade 12 cluster Table 4.4

Table 4.4

Stability and Change in Cluster Membership Across Grade

<i>Grade 11 Clusters</i>	<i>Grade 12 Clusters</i>					Total
	Aspiritual/ Irreligious	Disconnected Wonderers	High Institutional and Personal	Primarily Personal	Meditators	
Aspiritual/ Irreligious	51 (47.7%) <i>11.3</i>	48 (44.9%) <i>0.1</i>	3 (2.8%) <i>-2.2</i>	1 (.9%) <i>-6.3</i>	4 (3.7%) <i>-1.7</i>	107
Disconnected Wonderers	40 (14.8%) <i>0.8</i>	183 (67.5%) <i>9.5</i>	6 (2.2%) <i>-4.6</i>	26 (9.6%) <i>-7.6</i>	16 (5.9%) <i>-1.5</i>	271
High Institutional and Personal	3 (2.4%) <i>-4.0</i>	16 (12.7%) <i>-7.9</i>	45 (35.7%) <i>12.2</i>	55 (43.7%) <i>5.0</i>	7 (5.6%) <i>-1.1</i>	126
Primarily Personal	6 (3.3%) <i>-4.6</i>	62 (33.7%) <i>-3.4</i>	5 (2.7%) <i>-3.2</i>	100 (54.3%) <i>10.2</i>	11 (6.0%) <i>-1.1</i>	184
Meditators	1 (1.5%) <i>-3.0</i>	28 (41.2%) <i>-0.6</i>	4 (5.9%) <i>-0.8</i>	13 (19.1%) <i>-1.3</i>	22 (32.4%) <i>7.8</i>	68
Total	101	337	63	195	60	756

Note. Number in each cell indicates number of participants. Percent value in each cell represents the percent of individuals within the grade 11 cluster who were classified into the grade 12 cluster. Numbers in italics are the adjusted standardized residual values for the cell.

assignments; $\chi^2(16, N=756) = 514.76, p < .001$. For each of the five clusters, intra-individual stability between grade 11 and grade 12 (i.e., assignment to the same clusters at grade 11 and grade 12) was significantly greater than would be expected due to chance alone, as indicated by significant adjusted standardized residual (ASR) values greater than $|1.96|$. It is important to note that because there was some structural change in the *High I/P* cluster between grade 11 and 12, youth who were classified as *High I/P* in both grades may not have reported stability in their *absolute* scores on the clustering variables. To assess this possibility, repeated-measures ANOVAs were conducted to evaluate mean differences over time on the six S/R variables. Results revealed that individuals classified as *High I/P* in both grades ($n=45$) reported significantly higher scores on enjoyment of religious activities in grade 12 than they did in grade 11 ($M_s = 2.89$ vs. 3.22 for grades 11 and 12 respectively, $p = .006, \eta^2 = .16$), with no differences across grades on the other 5 variables.

Apart from significant cluster stability, the only other significant positive ASR value was found for students assigned to the *High I/P* cluster in grade 11, among whom a significantly greater number than would be expected by chance alone moved to the *Primarily Personal* cluster in grade 12. Repeated-measures ANOVAs revealed that participants who moved from *High I/P* in grade 11 to *Primarily Personal* in grade 12 ($n=55$) reported significantly lower scores in grade 12 than they did in grade 11 on religious activity involvement ($M_s = 2.01$ vs. 1.72 for grades 11 and 12, respectively, $p < .001, \eta^2 = .26$), enjoyment of religious activities ($M_s = 2.58$ vs. $1.60, p < .001, \eta^2 = .59$), and wondering about spiritual issues ($M_s = 4.40$ vs. $4.09, p = .01, \eta^2 = .12$).

Discussion

In the present work, we employed a person-centered approach to identify the diverse ways in which the dimensions of S/R may be organized within adolescents, and to illustrate how a person-oriented approach provides valuable information about the development of adolescent S/R. Below we consider the implications of the cluster configurations and their associated patterns of development.

Structure of Adolescent S/R Configurations within Grade

The first issue we examined was the sample-level structure of S/R configurations at grade 11 and 12. Results supported a five-cluster solution at both grades. Adolescents in the first cluster, *High Institutional and Personal (High I/P)*, were highly engaged, both affectively and behaviorally, with institutional and personal forms of S/R (with the exception of meditation). In contrast, adolescents in the *Aspiritual/Irreligious* cluster reported that their S/R behavior was largely nonexistent, and that they had strong feelings that a connection with the sacred or divine did *not* have any positive effects on their lives. These clusters represent opposing patterns (i.e., high versus low) of S/R-related feelings and behavior. As such, of the five configurations we identified, individuals in the *High I/P* and *Aspiritual/Irreligious* clusters may be best represented in typical variable-centered research on adolescent S/R. Beyond the apparent opposing nature of these two configurations, a person-centered approach also draws attention to possible similarities between these groups. Namely, these were the only clusters characterized by *strong* congruent experiences across all S/R dimensions. Inzlicht and Tullett (2010) hypothesized that holding strong spiritual/religious beliefs – regardless of whether they are positive or negative – may be related to experiencing less anxiety. If so, adolescents who feel strongly that they are not spiritual/religious (i.e., those in the

Aspiritual/Irreligious cluster) may experience some of the benefits traditionally associated with strong religious faith, such as lower anxiety and more certainty about one's identity (e.g., Hunsberger, Pratt, & Pancer, 2001). Adolescents who strongly believe that they are not spiritual/religious, however, may not experience the benefits to adolescent adjustment thought to operate either through religious moral proscriptions, such as lower substance use and sexual activity (e.g., Cotton et al., 2006), or through involvement in faith institutions, such as greater social capital (King & Furrow, 2004). In any case, the emergence of the *Aspiritual/Irreligious* cluster highlights a group of individuals who have been understudied in the literature (D'Andrea & Sprenger, 2007), and draws attention to the importance of appreciating the *strength* of adolescents' beliefs, rather than conceptualizing these youth as simply having "low" S/R.

The other three S/R configurations identified in the present work – *Primarily Personal*, *Disconnected Wonderers*, and *Meditators* – were characterized by less congruence across S/R dimensions, in particular, low levels of institutional S/R and varying levels of personal behavior and affect. The *Primarily Personal* cluster was distinctive in terms of near-total incongruence between low institutional and high personal modes – in particular, very high levels of prayer. While prayer may be a component of institutional S/R for some youth, the low levels of religious activity involvement reported by the *Primarily Personal* cluster implies that they used prayer primarily as a personal means of connection with the sacred. The *Disconnected Wonderers* were unique in the combination of low religious activity involvement, prayer, and meditation; neutral /indifferent attitudes about how a connection with the sacred affected their lives; and frequent wondering about spiritual issues. This cluster contained

the largest percentage of participants in both grade 11 (36%) and 12 (45%), which may be reflective of Canadians' general indifference towards formal religion combined with their tendency to be interested in the spiritual side of life (Bibby, 2009). Finally, the *Meditators* represented a group whose very high scores on meditation contrasted with their scores around or below the sample average on all other variables. It is pertinent to note that the prevalence of meditation among these Canadian adolescents (i.e., 9% reporting high frequency of meditation) is consistent with meditation prevalence rates among US adolescents (Smith & Denton, 2005). Although meditation is an important aspect of S/R within many faith traditions, because participants in the *Meditators* cluster reported very low levels of institutional S/R, meditation may have represented a personal form of S/R for these youth. It is also possible that some participants in this cluster did not use meditation to connect with the sacred, as meditation can be used as a secular technique for reducing negative emotions (e.g., Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008), or as part of exercise programs such as yoga.

Identification of these three S/R configurations highlights an important strength of a person-centered approach. Given the incongruencies noted above within each of the three clusters, adolescents in *Primarily Personal*, *Disconnected Wonderers*, and *Meditators* clusters would not be identified in a typical variable-centered analysis. Indeed, without allowing for potentially complex configurations across multiple dimensions occurring within individuals, the richness in S/R experiences represented by these clusters would have been obscured. It is clear from these incongruent cluster configurations that various forms of unreligious (i.e., non-institutional) spirituality may exist among adolescents.

One valuable extension of the present approach would be to examine how adolescents in the incongruent clusters are similar to or different from the congruent clusters in terms of psychosocial functioning. For example, this approach would inform how personal S/R, in the absence of institutional S/R, may be linked to psychosocial functioning, relative to adolescents reporting uniformly high or low institutional and personal S/R. While some researchers have hypothesized that personal S/R in the absence of institutional S/R may not be associated with the most optimal outcomes (King, 2008), others have suggested that there may be unique benefits and deficits associated with each mode. McCullough and Willoughby (2009), for instance, found that spirituality was positively associated with the personality trait of openness but negatively associated with self-control and conscientiousness, while religiosity was negatively correlated with openness and positively correlated with conscientiousness and self-control.

In addition to comparing between congruent and incongruent S/R configurations, contrasting among incongruent clusters also would be valuable. Such an approach would allow us to evaluate whether there are certain types of personal S/R behavior and attitudes most closely linked with positive adjustment. This may be an important empirical question, particularly in nations such as Canada, where few adolescents are involved in religious institutions but interest in non-institutional S/R remains (Bibby, 2009). For example, as meditation is often used for reducing stress or anxiety (e.g., Fredrickson et al., 2008), *Meditators* may report high emotional well-being. In addition, the *Primarily Personal* cluster may report some benefits typically associated with involvement in faith institutions, such as low substance use (Steinman & Zimmerman, 2004) and high social capital (King & Furrow, 2004), as results suggested these

individuals may have had previous experience with institutional S/R [i.e., they reported high levels of prayer, which is often taught in religious communities (Francis & Brown, 1991), and the movement from *High I/P* to *Primarily Personal* was a significant intra-individual trajectory].

Sample-Level Stability and Change in the Structure of Adolescent S/R

Configurations

All five S/R configurations observed at grade 11 were also present at grade 12, indicating a high degree of sample-level stability in the structure of adolescents' spiritual/religious experiences. The structural stability could be explained by the fact that participants' environments (e.g., schools, friends, home) would have remained largely stable between grade 11 and 12. Structural change in S/R configurations – as would be indicated, for example, by the emergence of new types of S/R configurations – may be best observed across periods characterized by greater change in individuals' physical and social environments, such as the transition from high school to college (Arnett, 2000).

There was, however, one structural change in this sample. The *High I/P* cluster in grade 12 was characterized by higher levels of religious activities and enjoyment of religious activities compared to the grade 11 configuration. For the 45 adolescents classified as *High I/P* in both grade 11 and 12, this structural change may have represented a process of crystallization (Bergman, von Eye, & Magnusson, 2006), wherein participants reporting high S/R engagement at grade 11 became even more committed to their respective faith institutions over time. Given that 71% of individuals classified as *High I/P* in grade 12 were also classified as *High I/P* in grade 11, crystallization was perhaps the most likely mechanism behind this structural change.

Crystallization of strong S/R commitments may be explained, at least partially, by increases in identity commitments that occur over the course of adolescence (e.g., Crocetti, Klimstra, Keijsers, Hale, & Meeus, 2009). Given that it is not typical for adolescents to report high, sustained levels of spiritual/religious commitment (Smith & Denton, 2005), individuals who become more highly committed to S/R in late high school may also be distinctive in other important ways. For example, some of these youth could represent what King, Clardy, and Ramos (2010) have referred to as ‘spiritual exemplars’, that is, particularly well-adjusted adolescents who are very committed to S/R at the personal and institutional level.

Stability/Change in Within-Individual Structure of Adolescent S/R Configurations

The most common pattern of intra-individual development was stability in S/R configuration. Within-individual stability may indicate commitment to a specific integration of spiritual/religious behaviors and/or attitudes, and, as such, stable individuals may reap greater benefits associated with those experiences than individuals whose configurations change over time (e.g., see Kerestes et al, 2004). Alternatively, within-individual stability in S/R configurations could reflect a lack of identity exploration (e.g., Hunsberger et al., 2001), and thus indicate either identity diffusion or foreclosure (Marcia, 1993). Previous studies examining correlates of individual-level stability in S/R have not considered stability across multiple dimensions of S/R simultaneously (e.g., King et al., 1997). Thus, further research using the person-oriented approach should be used to evaluate whether positive adjustment is associated with intra-individual stability in S/R configurations, and whether this association differs by configuration.

Only one significant pattern of within-individual change in S/R configuration was observed, wherein individuals who were characterized by the *High I/P* configuration in grade 11 were more likely than chance to be characterized by the *Primarily Personal* configuration in grade 12. Individuals following this transition in S/R configuration decreased their scores between grade 11 and 12 on religious activities, enjoyment of religious activities, and wondering about spiritual issues. It is this sub-group of individuals, therefore, who best embody the sample-level trend towards reduced S/R engagement. Consistent with developmental systems theory, in which changes in one ecological domain are expected to impact on and be impacted by changes in other domains, these adolescents may be especially likely to report changes in psychosocial functioning over time, particularly in domains that are related to decreases in institutional S/R (e.g., risk taking; Steinman & Zimmerman, 2004).

Limitations

Although present results suggested stability in adolescents' S/R configurations over time, one year may not be enough time to capture significant changes in S/R profiles within this age group. Furthermore, the present study explored S/R at only one developmental period (late high school). To attain a more complete understanding of development in S/R, it will be necessary to study multiple transitions throughout the lifespan, over both the short-term and long-term. The use of a larger sample size may have resulted in identification of an optimal cluster solution comprising more than five clusters. Further, one-item S/R measures were used to assess prayer, meditation, spiritual wondering, and enjoyment of religious activities; confidence in the results would be increased if multi-item scales were employed instead. Also with respect to measurement,

we were not able to determine whether students who did not attend religious services might have enjoyed these services if they were able to attend.

The population from which the sample was drawn was fairly homogenous in terms of religion/ethnicity, and results therefore may not be generalizable to adolescents from different religious and/or ethnic backgrounds. Because students' religious affiliations were not known, cluster differences by religious affiliation could not be examined. Furthermore, although Canadians are less religious than Americans on average, there are regions where religiosity is high (Clark, 2003). Present results, therefore, may generalize primarily to Caucasian adolescents with European ancestry, and living in regions where religiosity is low and religious institutions play minor roles in public life (e.g., U.S. Pacific Northwest; Silk, 2008).

Conclusions

The Positive Youth Development framework recognizes S/R as an asset that promotes thriving (Lerner et al., 2008), however, very little attention has been given to understanding the complexity with which S/R develops as a multidimensional domain. The present study was the first to explore how multiple dimensions of S/R – spanning personal and institutional modes, as well as affect and behavior – may be configured within adolescents over time. We identified 5 distinct configurations of S/R in both grades 11 and 12. Whereas there was an average trend toward declining S/R between grade 11 and 12, analyses of sample-level (structural) stability indicated that the organization of the 5 S/R configurations did not change systematically over time (with one exception). Analyses of individual-level development revealed stability in within-individual configurations between grades, but also identified a significant pattern of

change among a subset of adolescents towards lower institutional S/R over time. These analyses allowed us to gain a more nuanced understanding of spiritual/religious development than has been provided in past studies, and point to novel directions for future research. The present study, therefore, represents an important step forward in the process of S/R taking its place as a “core developmental process” in psychology (Benson, 2004, p.50).

Chapter 6: General Discussion

The overarching purpose of this dissertation was to examine how the domain of spirituality/religiosity (S/R), as both an institutional and personal phenomenon, developed in adolescence, and how the institutional and personal components of S/R were uniquely linked with psychosocial adjustment over time. The results of the four studies that comprised this dissertation revealed many complexities and nuances with regard to both the development and unique correlates of personal and institutional S/R across adolescence. The purpose of the general discussion that follows, however, is not to restate the specific findings from each of the four studies in detail, but rather to provide the reader with a sense of the major themes and issues that have emerged from this program of research, and to integrate these findings into a broader picture of the development and psychosocial correlates of S/R in the sample of adolescents who participated in these studies. The themes are organized specifically around the two major topics addressed in this dissertation, namely, the *development of S/R in adolescence*, and the *psychosocial correlates of S/R across adolescence*. The discussion and integration of major themes will be followed by a section outlining directions for future research that should be conducted in order to further expand the body of knowledge of adolescent S/R.

The Development of S/R across Adolescence

As discussed in the general introduction and at length in study four, the body of literature on S/R has largely neglected the issue of how S/R develops (i.e., changes and remains stable) over time. This oversight is significant, as it represents the neglect by researchers of the scientific goal of *description*. Magnusson (1992; 2003) makes a compelling argument that the systematic description of psychological phenomena has

been long-neglected by researchers in favor of a focus on hypothesis testing and prediction, to the detriment of the discipline. More specifically, Magnusson (1992) states that “the appropriate use of theory, method, and statistics in psychological research must be based on, and refer to, careful, systematic analysis and description of the phenomenon. If this rule is not maintained, we will go on producing data but the contribution to our understanding of why individuals think, feel, and react as they do in real life will be much less than it could or should be” (p.2). For the purposes of the present dissertation, therefore, it is critically important to have a clear understanding of the descriptive properties of S/R, as it will foster a clearer interpretation of possible meanings behind and explanations for the major themes that emerged with regard to the unique prediction of psychosocial adjustment by institutional and personal S/R. The studies that comprise this dissertation offer a unique opportunity to gain information on the development of various aspects of S/R over time, as longitudinal studies on this topic are rare (King & Roeser, 2009).

Although the description of the development of S/R in adolescence was of primary focus only in study four, information regarding the development of S/R across high school within this sample of adolescents also can be gained from studies one, two, and three. The most salient aspect of developmental change that was clear in the results of all four studies is that institutional forms of S/R (i.e., attendance at religious services) decline across the course of high school. It is also important to note, however, that descriptive statistics from studies one and two indicate that, although there was a decline over time, the average starting level of religious service attendance was relatively low to begin with. As reported in studies one and two, mean religious service attendance at

grade nine was less than once or twice a month. To complement these findings, a more person-centered approach to looking at change and stability in religious service attendance across high school in study one revealed that a large proportion of adolescents (39%) decreased their attendance at religious services between grade nine and 12, compared to only 9.4% who increased their attendance. The mean-level and person-centered patterns of findings were unique to religious service attendance (i.e., these findings could not be attributed to a general decline in structured activity involvement across high school), as, for non-religious activities, only 28% of participants reported a decline over time, and 29% increased their involvement.

These patterns of results imply that, for this sample of adolescents, institutional S/R was not a very salient aspect of life at the start of high school, and became even less relevant over time. This idea is corroborated by the finding in study four that, even among those individuals who were classified into the *“High Personal and Institutional”* cluster, religious activity involvement was still low in the absolute sense (i.e., means for this cluster for religious activity involvement fell between once or twice a month and once a week) and enjoyment of religious activities was not extremely high (i.e., means for this cluster in grade 11 fell between “sometimes” and “often”) - and many of the adolescents in this cluster declined in their religious activity involvement between grade 11 and 12.

These findings may be at least partially attributable to the possibility that high-quality, youth-focussed spiritual/religious groups or activities were not widely available to the participants in these studies. Given the low levels of participation in religious service attendance and spiritual/religious youth groups, and the low level of enjoyment of

involvement in spiritual/religious activities (even for the cluster of individuals who were attending religious activities frequently), it may be that the religious organizations in the communities in which these youth lived did not have the resources to build programs that would attract large numbers of youth (or they did not choose to use their resources in this way). Although we were not able to assess the denominational affiliations of the participants in our studies, Smith and Denton (2005) suggested that there are wide differences between religious denominations in terms of the quality of youth programming that is typically provided in congregations. For example, they found that the Catholic churches tend, on average, to invest fewer resources into youth ministry than other Christian denominations (e.g., only 21% of Catholic teens surveyed were part of a church that employed a full-time youth minister, compared to 37-44% of teens from other Christian denominations). As reported in all studies in this dissertation, there was a fairly large proportion of individuals reporting a Catholic religious affiliation (37%) in the geographic region in which the participating high schools were located; while we could not directly assess such a hypothesis, these denominational factors may partially explain why institutional S/R was low in this sample.

Although the personal dimension of S/R was measured only in studies three and four (and only data from grades 11 and 12 were available in these studies), the descriptive statistics reported in these studies indicated that most aspects of personal S/R were more prevalent than institutional S/R. In studies three and four, mean grade 11 levels of prayer (in the past month), for example, fell between “once or twice a month” and “once a week”, and on average, adolescents in this sample reported scores between the anchors “neither agree nor disagree” and “agree” with the statement “I often wonder about

spiritual issues such as life after death or the existence of a higher power”. The sample average for the personal affective dimension of S/R (as measured by the Spiritual Transcendence index) indicated that, on average, adolescents in this sample were somewhat indifferent about their sense of spirituality/connection with the sacred. Prayer and wondering about spiritual issues declined significantly between grades 11 and 12 (although the range still fell between the same scale anchors in grade 11 and 12), however, the average STI score did not significantly decline between grades 11 and 12. Undoubtedly, then, personal S/R (particularly prayer) played a more salient role than did institutional S/R in the lives of the adolescents in this sample. The person-centered perspective employed in study four, however, revealed that the most common profile of S/R, by far, was the disconnected wonderers – i.e., individuals who reported relative indifference towards the role of spirituality/connection with a higher power in their lives and low levels of all S/R behaviors - with the exception of wondering about spiritual issues.

The “average” profile of S/R within this sample may perhaps be reflective of the fact that it is likely that the adolescents in this sample had not yet made solid commitments to any kind of spiritual/religious ideology, and many, as part of their identity exploration process, may be experiencing high (and perhaps increasing) levels of religious doubt. Indeed, adolescence may be more of a time of identity *explorations* than identity *commitments* (e.g., Kroger, Martinussen, & Marcia, 2010), and identity exploration has been found to be positively associated with doubt/questioning about religious teachings (e.g. Hunsberger, Pratt, & Pancer, 2001). In a community/cultural context where religious involvement is fairly low and the majority of one’s peers are

rather indifferent about fostering a sense of connection with the sacred, however, it is perhaps not surprising that the adolescents in this sample would be unsure or indifferent about the role that S/R plays in their lives. Only one very small group [i.e., those who were classified in the *High Personal and Institutional* cluster in grade 11 and 12 ($n=45$, which represented 6% of the sample)], reported a notably different pattern from the overall sample in terms of their high - and increasing - participation in religious activities and involvement in personal S/R. This group of adolescents may be a unique group in the sense that they likely had made firm identity commitments regarding S/R.

Although it was proposed in the general introduction that adolescence may be a stage of the lifespan during which individuals may be particularly likely to explore spiritual/religious ideas and make spiritual/religious conversions or commitments, the results from the present studies revealed that spiritual/religious exploration and commitment were not overly common in this sample. It may be that adolescence is an important period for the development of S/R only in social/cultural contexts where young people are frequently exposed to environmental stimulation of a spiritual/religious nature (i.e., it is an “experience expectant” phenomenon; Alcorn, 2006). Given that adolescents in the current sample did not frequently attend religious activities, they may not have had many *opportunities* to engage in spiritual/religious exploration and/or make spiritual/religious commitments. This may be particularly true for adolescents whose parents also have little interest in S/R and do not participate in religious groups – which may have been the case for many of the participants in the current sample. As Bibby (2010) points out, the “Boomer” generation (the youngest of whom likely would include many of the parents of the adolescents in this sample) are the first generation in Canada

to not regularly attend religious services (i.e., in the 1950s, 60% of Canadians attended religious services weekly; in 2000 that figure had dropped to 30%). In different social/historical contexts (e.g., previous generations in Canada, Middle Eastern countries, the Southern U.S), frequent exposure to spiritual/religious institutions and regular contact with other people (e.g., parents, peers) who hold strong beliefs, could result in an interaction with the developmental characteristics of adolescence such that teens may be particularly likely to develop in the domain of S/R in these social environments.

An understanding of the themes surrounding the description/development of S/R in the current sample is important to consider, because, as mentioned, description of a phenomenon is an important goal of scientific research in and of itself (Magnusson, 1992; 2003). Second, however, having a knowledge of the description/development of S/R in this sample will help to inform our interpretations of the ways in which personal and institutional S/R was found to be (and not to be) linked to psychosocial adjustment.

Unique Psychosocial Correlates of Institutional and Personal S/R Across Adolescence

The dominant integrative theme running throughout studies one, two, and three, was the importance of considering the *unique* aspects of both institutional and personal S/R in terms of their associations with psychosocial adjustment. For instance, it was argued in studies one and two that while there are likely some characteristics of the experiences gained from involvement in institutional S/R (i.e., religious service attendance) that would be common to involvement in other types of structured activities, there also are potentially unique experiences gained from involvement in religious activities that would not be gained in other structured activities. It was proposed that by

comparing the correlates of religious service attendance with the correlates of non-religious activity involvement, some of these unique aspects of religious as compared to non-religious activity involvement would be elucidated. Further, in study three it was argued that, although institutional and personal S/R are correlated, there are unique characteristics and experiences inherent within each dimension, and therefore the correlates of personal versus institutional S/R should differ.

Perhaps the most common recurring finding across the three studies was that institutional S/R was uniquely associated with less substance use. In study one, higher attendance at religious services uniquely predicted lower substance use at each grade across high school, and more sustained religious service attendance predicted slower average increases in substance use over time. Studies two and three provided further evidence corroborating the strength of this association, as in both studies, the *socialization* hypothesis was supported for the association between religious service attendance and substance use (i.e., lower religious service attendance predicted greater increases in subsequent substance use than higher religious service attendance). This finding is even more notable when considering that this association was consistent across all grades of high school, even though religious service attendance declined across the course of high school. Theoretically, the strength of the association between religious service attendance and an individual's behavior may be expected to decline as religiosity becomes less and less common within a given population (e.g., Regnerus, 2003; Stark, 1996). Yet, study two demonstrated the socialization effect of religious services on substance use to be significant across all grades. Further, this longitudinal association was still significant when controlling for several individual-, peer-, and family-level variables.

In study three, it was demonstrated that this effect could not be attributed to the more “personal” aspects of S/R, as the socialization hypothesis for the association between institutional S/R and substance use was significant after controlling for personal S/R (and personal S/R was, in fact, not a significant longitudinal predictor of substance use). In addition, personal S/R was a significant longitudinal predictor of less permissive risk attitudes *only when institutional S/R was also high*. Overall, then, the combined results of studies one through three provide compelling evidence that involvement in religious activities may independently be associated with adolescents’ substance use behaviour and attitudes. Possible mechanisms of this link include self-regulation, social support, and coping strategies (e.g., George, Larson, Koenig, & McCullough, 2000; McCullough & Willoughby, 2009), although little empirical research (particularly of a longitudinal nature) has been conducted examining mechanisms in link between religion and risk-taking behaviors and attitudes.

In contrast to the findings for substance use, the combined results from studies one, two, and three imply that the link that has been found in the previous studies between involvement in religious activities and academic success (e.g., Loury, 2004; Regnerus & Elder, 2003) may have been spurious and/or may have not represented a directional effect from religious involvement to subsequent academic success. Although we found religious service attendance was linked with higher academic marks in study one when controlling for non-religious club involvement (and a greater degree of sustained involvement predicted higher marks), study two revealed that after including individual, peer, and family-level covariates in the model, religious service attendance at one grade did not predict higher subsequent academic success. Analyses of the direction

of effects in study three also did not reveal an across-time link between institutional S/R and academic success.

Interestingly, in study three, zero-order correlations indicated that institutional S/R was significantly associated with more positive academic orientation, but when placed in a model with personal S/R, it was not a significant predictor of academic orientation. This finding implies that the results in study one, which suggested religious service attendance was linked to higher academic marks concurrently, may have actually been due to shared variance between religious service attendance and personal aspects of S/R that was not accounted for. Thus, the specific aspects of S/R that may have been responsible for the link between S/R and doing well in school may have been behaviors that facilitate a sense of connection with the sacred. As mentioned in the discussion of study three, “spirituality” (i.e., spiritual seeking, independent of institutional S/R) predicts openness to experience (e.g., McCullough & Willoughby, 2009), and a key component of the “openness to experience” construct is intellectual curiosity - a factor which may invariably predict academic success (Costa & McCrae, 1995).

Alternatively, recall from study four that individuals who reported high levels of personal S/R may have been frequently involved in S/R groups or activities in the past (i.e., many individuals in the grade 11 High Personal and Institutional cluster were classified into the grade 12 Primarily Personal cluster). These person-centered findings compliment variable-centered findings reported in other studies (e.g., French et al., 2008; Lefkowitz, 2005; Lee, 2002; Steinman & Zimmerman, 2004) which have shown that, on average, there is a decline in religious activity participation across adolescence, but mean levels of personal importance of religious beliefs and daily sense of connection to the

sacred/higher power are more stable. It is possible that many of the young people who reported high levels of personal S/R in grades 11 and 12 were more highly involved in religious/spiritual groups as children or young adolescents, and the school-specific benefits of being involved in religious activities (e.g., social capital, self-control; King, 2003; McCullough & Willoughby, 2009; Smith, 2003a) may have been carried over to the high school years - even though these adolescents may have decreased (or stopped) their involvement in religious activities.

This hypothesis also may be true for the other domains of adjustment for which a link was found with personal - but not institutional - S/R. At the late adolescent stage of development, the “remnants” of previous (i.e., childhood/early adolescent) religious activity participation may be a sense of connection with the sacred, frequent prayer, and interest in spiritual issues. For example, in study three, prior exposure to religious services may have taught these adolescents - as children - unique coping strategies for dealing with stress (e.g., prayer, meditation). These coping strategies, in turn, may be linked to positive intrapersonal well-being (e.g., Ano & Vasconcelles, 2005). Further, family bonds that may have been enhanced through time spent together in the past engaged in religious activities, and this may be linked to good parent-child relationships in adolescence.

Another consistent finding with regard to institutional S/R was its *negative* association with intrapersonal well-being in late high school (i.e., grade 12). In study one, it was hypothesized that this relation might have been attributed to two possible factors. First, it was possible that individuals who were frequently attending religious services at a time in life when it is not typical to do so (i.e., late high school) may be going through a

hard time and turning to religion for comfort (e.g., Kox et al., 1991; Zinnbauer & Pargament, 1998). Second, it was suggested that some individuals who were frequently attending religious services late in adolescence may be struggling with autonomy-related issues and parents who forced them to attend religious services. Findings from study three suggest that it is the latter, rather than the former, explanation that may be relevant in this sample. If it was the case that individuals who were going through difficult times were turning to spiritual/religious beliefs and behavior for comfort, it would be expected that personal S/R would be negatively linked to intrapersonal well-being. Instead, in study three, we saw that personal S/R predicted greater well-being. Interestingly, it was the variance in institutional S/R that was *not* shared with personal S/R that was linked to slightly less positive well-being in grade 12 [i.e., when personal S/R was included in the model, institutional S/R became a stronger (negative) predictor of well-being], and the variance in personal S/R that was not shared with institutional S/R that was linked to slightly more positive well-being [i.e., when institutional S/R was included in the model, personal S/R became a stronger (positive) predictor of well-being]. It may be that the unique variance associated with participation in religious activities is linked with less positive well-being, while the variance in personal S/R that is not shared with institutional S/R is linked with more positive well-being. Given the consistency of this finding in the studies in this dissertation, as well as a similar finding by Kelley and Miller (2007), it may be that adolescents who attend religious activities but do not have an interest in attaining a personal connection with the sacred or a higher power, may be experiencing some unique difficulties.

It is important to also note that a main theme throughout studies one, two, and three was that the effects sizes in the associations between S/R and all domains of adjustment (even substance use) were small in magnitude (and, in some cases, significant associations were not found). This was particularly true for religious activity involvement, as in study three it was evident that personal S/R was more strongly linked with psychosocial adjustment than institutional S/R. These small effects may not be surprising, however, given the spiritual/religious context in which these adolescents were embedded. Namely, as discussed above, in general, adolescents in this sample were not highly involved in religious groups/activities, and were relatively indifferent about the role that spirituality or a connection with the sacred played in their lives – although high levels of prayer and wondering about spiritual issues were not uncommon.

Sociologist Rodney Stark proposed that, without a “critical mass” of other people in an individual’s social network who share his/her spiritual/religious beliefs and practices (i.e., in contexts where the average level of S/R is high), the strength of the association between an individual’s religiosity and one’s behavior will be weak (Regnerus, 2003). Stark (1996; Stark & Bainbridge, 1996; Stark, Kent, & Doyle, 1982), for instance, reported that the relation between religiosity and delinquency was strong in high schools with large numbers of religious students (e.g., in the Southern U.S), but absent for adolescents who attended high schools where religiosity was low (e.g., the U.S. West Coast). It may be, therefore, that the relatively small effect sizes found in the series of studies that comprised this dissertation may be partially explained by the overall low levels of S/R (and declining across time) among the participants in the studies. In light of Stark’s theory, it is interesting that the mean level of personal S/R for the sample

was higher than the mean level of institutional S/R, and that the association between personal S/R and adjustment was stronger (at the concurrent level) than the association between institutional S/R and adjustment. Given these findings, and extending upon Stark's theory, perhaps part of the reason for which personal S/R was more strongly concurrently associated with psychosocial adjustment than institutional S/R could be that there were more people in this sample who engaged in behaviors related to personal S/R than institutional S/R.

Another sample-level characteristic that could (at least partially) explain why the effect sizes for the association between S/R and adjustment were small, was that the participants in these studies represented a relatively low-risk population. It has been suggested (Regnerus & Elder, 2003) that the association between religious activity involvement and academic and social competence may be stronger for youth in high-risk, as compared to low-risk environments, because religious communities may provide social capital-related resources to which youth in high-risk environments may not otherwise have access. In low-risk communities, conversely, religious groups are just one of the many functional, social capital-building communities (e.g., schools, structured activities) to which youth have access. In support of their hypothesis, Regnerus and Elder found that the association between religious activity involvement and academic competence – both concurrently and longitudinally - was stronger for adolescents living in neighborhoods with a high proportion of individuals living in poverty than adolescents from neighborhoods with a low proportion of individuals living in poverty, even after controlling for individual- (e.g., school attachment) and family-level (e.g., intact family status) variables.

It also is possible that S/R may be more strongly associated with psychosocial adjustment in emerging adulthood than in adolescence. Some researchers (e.g., Arnett, 2000; Cote, 2004) have suggested that it is now emerging adulthood, rather than adolescence, where the majority of serious identity-related exploration happens, and issues related to spirituality and religion have been shown to be an important component involved in identity exploration and commitment (e.g., Arnett & Jensen, 2002). In emerging adulthood, as identity commitments increase (Kroger et al., 2010), these strong belief systems may exert more of an impact upon one's behavior than the more tentative/explorative beliefs held in adolescence.

On the other hand, many researchers have noted that religious activity involvement decreases even further from adolescence to emerging adulthood (e.g., Stoppa & Lefkowitz, 2010), which, from Stark's (1996) perspective, should weaken the association between religious beliefs and behavior. Perhaps the association between *personal* S/R and behavior would be stronger in emerging adulthood than in adolescence, as personal aspects of S/R beliefs tend not to decline and questioning about S/R may in fact, increase; e.g., Koenig et al., 2008; Arnett & Jensen, 2002). For instance, Bryant, Choi, and Yasuno (2003) reported that students' commitment to integrate spirituality into their lives increased, on average, from the start to the end of their freshman year of college. It is also possible that, for many individuals in the current sample, S/R will never be a salient aspect of their lives. As discussed above, many of these adolescents may be very infrequently exposed to environments which would cause them to explore spiritual or religious issues, or make a commitment to a particular set of religious beliefs. It may be unlikely for these individuals to suddenly start wondering about S/R in emerging

adulthood, unless they experienced significant environmental change that would prompt such exploration (e.g., becoming good friends with someone who has strong beliefs about S/R, exposure to new philosophies in a world religions class, the death of a close friend or family member, etc).

Directions for Future Research

The major themes and issues discussed in the previous section point to several areas for future research. Most notably, in combination with a limited number of other studies (e.g., Mason & Windle, 2002; Steinman & Zimmerman, 2004; Walker, Ainette, Wills, & Mendoza, 2007), evidence is converging on the possibility that there is something about S/R that may be associated with adolescents' decisions regarding substance use. The program of research in the present dissertation, in particular, suggests it may be something about institutional S/R (i.e., being involved in religious activities), rather than the more personal aspects of S/R, *per se*, that may be related to substance use. An important area of future inquiry, therefore, will be possible mechanisms of the link between institutional S/R and substance use.

One particularly promising avenue of inquiry for future research is the hypothesis that religious activities may be linked with lower levels of substance use because involvement in religious activities builds self-regulatory strength. Muraven and Baumeister (2000) liken self-regulation to a muscle that can be strengthened by repeated use. Results from several studies (e.g., Muraven, Baumeister, & Tice, 1999; Oaten & Cheng, 2006) have indicated that engaging in *any* behavior that requires self-control (e.g., practicing good posture, creating and sticking to a study schedule) builds one's capacities to enact self-regulation in many other domains (e.g., avoiding the temptation to eat

unhealthy food). Engaging in religious activities, therefore may build self-regulatory strength that may help individuals abstain from substance use (McCullough & Willoughby, 2010). At the most basic level, simply getting up in the morning to attend religious services and sitting through a service that adolescents may find uninteresting requires the use of self-control. Further, certain religious rituals that may be performed during religious services and activities (e.g., prayer, meditation, self-examination rituals such as confession) may also require some amount of self-control. In addition, being exposed to some religious teachings (e.g., a higher power is watching one's every move) is thought to increase self-monitoring (Baldwin, Carrell, & Lopez, 1990; Wenger, 2007), which builds self-control.

Support for this hypothesis comes from studies that have found religiosity is positively associated with dispositional self-control (i.e., individuals' perceptions of their abilities to inhibit immediately pleasurable responses that are not beneficial in the long-term; Chan & Woollacott, 2007; Walker et al., 2007) and cognitive control (i.e., the ability to inhibit dominant responses in order to meet a goal; Inzlicht, McGregor, Hirsh, & Nash, 2009; Inzlicht & Tullett, 2010). Five studies have been conducted that tested the hypothesis that dispositional self-control mediates the relation between religiosity and various forms of risk-taking (e.g., McCulloch & Willoughby, 2009; Walker et al., 2007; Welch, Tittle, & Grasmick, 2006), and the hypothesis was supported in four of these studies.

As McCulloch and Willoughby (2009) point out, however, studies examining the relation between religion and self-regulation have been based entirely on cross-sectional, correlational data, and most have relied exclusively on self-report measures (as opposed

to behavioral/cognitive tests). It will be important for researchers to conduct experiments that will be able to establish whether there is a causal link between S/R and self-regulatory capacities. Although it is not possible to experimentally manipulate an individuals' S/R, per se, it would be possible to manipulate the *salience* of S/R in an individual's mind. For instance, in order to examine the effect that thinking about one's religious beliefs had on performance on a Stroop test, Inzlicht and Tullett (2010) used a manipulation where participants were randomly assigned to either an experimental condition where they wrote a paragraph describing what their religion meant to them or a control condition where they wrote about their favorite season. Using this type of manipulation, an experiment could be conducted that assessed the effect of thinking about one's religious beliefs (or, perhaps, thinking about one's experiences attending religious services) on behavioral measures of self-control

It also would be interesting to compare the self-regulatory strength that is built from participation in religious activities, to the self-regulatory strength that is built from participating in non-religious structured activities. Although results from the present dissertation did not find that non-religious structured activities were linked with lower substance use, other studies have found such an effect (e.g., Abbey, Jacques, Hayman, & Sobeck, 2003), and it has also been found that adolescents report learning skills related to self-regulation within these activities (e.g., Larson, Hansen, & Moneta, 2006). It would be interesting to examine whether non-structured activities promote self-regulation to the same extent as religious activities, and whether self-regulation mediates the association between involvement in non-religious activities and lower substance use.

It will also be critically important for future research to examine whether *opportunities* for risk-taking may partially explain the association between involvement in religious activities and substance use, as a competing explanation for the self-regulation hypothesis. Rather than adolescents who attend religious services gaining greater self-regulatory control, it could simply be that these adolescents live in contexts where there are fewer opportunities to drink alcohol and smoke marijuana. For example, the peer groups of individuals who regularly attend religious services may be more likely than the peer groups of adolescents who do not attend religious services, to be comprised of individuals who do not drink alcohol and/or whose parents do not drink alcohol (Walker et al., 2007). Therefore, there may be fewer contexts in which religiously-involved adolescents have the opportunity to engage in substance use.

Gottfredson and Hirschi (1990) propose that risk-taking can only take place under two co-occurring conditions: if an individual has the opportunity to take a risk (which would be strongly linked to social factors such as parental control and peer deviance), and if the individual has a propensity for engaging in risk-taking after being given the opportunity (which would be related to individual-level factors such as impulsivity and self-regulatory capacities). Religious activity involvement may influence one or both of these conditions, and future research should assess how both self-regulatory strength and opportunities may explain the negative association between religious activity involvement and substance use. Further, in order to enhance our understanding of the way in which religious activities may not be “just another club” in which adolescents participate, non-religious and religious activities should be compared in these studies.

Much of the research that needs to be done in order to augment the current understanding of the role of S/R in the lives of adolescents is experimental in nature (i.e., does an awareness of one's religious beliefs cause self-regulation to increase?). However, there are many issues regarding the role of S/R in the lives of young people that cannot be examined using experiments, and must be assessed with methods such as surveys and interviews. Perhaps the most important step for future research using survey-based methodology includes the undertaking of cross-cultural longitudinal-sequential studies where a cohort of: (a) adolescents and (b) emerging adults, are studied simultaneously over a long period of time, and where multiple dimensions of S/R as well as multiple domains of psychosocial adjustment are assessed. It is only in using this methodology that we will be able to understand the development of S/R and the unique psychosocial correlates of institutional versus personal forms of S/R. This type of study also would allow us to examine whether the strength of the association between personal versus institutional S/R and adjustment is stronger in emerging adulthood than in adolescence, and whether the link between personal and institutional S/R is stronger in communities/cultures with differing average levels of S/R (in its personal and/or institutional forms), as well as in high- versus low-risk communities. Another issue that was mentioned above that could be examined within a long-term longitudinal-sequential study is the hypothesis that the benefits of being involved in religious activities in early adolescence/childhood could possibly "carry over" into late adolescence – even though individuals may not be participating in religious activities in late high school and/or college/university.

Summary

The scientific study of the role of S/R in the lives of adolescents, while long-neglected, has been resurfacing as an area of interest to psychologists in the past 10 years. The studies that comprised the program of research represented in the present dissertation are an important step towards addressing some of the limitations within the body of literature; namely, the uniqueness of religious activity involvement as a structured club, the differential link between institutional versus personal forms of S/R and psychosocial adjustment, the direction of effects in the associations between institutional versus personal S/R and various forms of adjustment, and the way in which different dimensions of S/R may be configured and develop within individual adolescents over time. The future of this body of research lies in the incorporation of experimental approaches for determining the causal mechanisms through which S/R may impact upon behavior (particularly substance use), as well as the use of longitudinal-sequential surveys that allow us to observe stability and change in multiple dimensions of S/R over longer periods of time, and the way in which lifespan stage (e.g., adolescence versus emerging adulthood) and culture (e.g., community settings with high as compared to low levels of S/R, and/or high versus low risk neighborhoods) may affect the strength of the associations between various domains of psychosocial adjustment and the various dimensions of S/R, both concurrently and over time.

References

- Abbey, A., Jacques, A.J., Hayman, L.W., & Sobeck, J. (2006). Predictors of early substance use among African American and Caucasian youth from urban and suburban communities. *Merrill-Palmer Quarterly*, 52, 305-326.
- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Albertsen, E.J., O'Connor, L., & Berry, J.W. (2006). Religion and interpersonal guilt: Variations across ethnicity and spirituality. *Mental Health, Religion, & Culture*, 9, 67-84.
- Alcota, C.S. (2006). Religion and the life course: Is adolescence an "experience expectant period for religious transmission? In P. McNamara (Ed.) *Where God and Science Meet* (pp. 55-80). Praeger Publishers: Westport, CA.
- Aldenderfer, M.S., & Blashfield, R.K. (1984). *Cluster analysis. Quantitative applications in the social sciences*. Beverly Hills: Sage.
- Anastasi, M.W., & Newberg, A.B. (2008). A preliminary study of the acute effects of religious ritual on anxiety. *The Journal of Alternative and Complementary Medicine*, 14, 163-165.
- Ano, G. G., & Vasconcelles, E. B. (2005). Religious coping and psychological adjustment to stress: A meta-analysis. *Journal of Clinical Psychology*, 61, 461-480.
- Armsden, G.C., & Greenberg, M.T. (1987). The inventory of parent and peer attachment: Individual differences and their relationship to psychological well-being in adolescence. *Journal of Youth and Adolescence*, 5, 427-453.

- Arnett, J.J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, 55, 469-480.
- Arnett, J.J., & Jensen, L.A. (2002). A congregation of one: Individualized religious beliefs among emerging adults. *Journal of Adolescent Research*, 17, 451-467.
- Asendorpf, J.B., Borkenau, P., Ostendorf, F., & Van Aken, M.A. (2001). Carving personality description at its joints: Confirmation of three replicable personality prototypes for both children and adults. *European Journal of Personality*, 15, 196-198.
- Baldwin, M.W., Carrell, S.E., & Lopez, D.F. (1990). Priming relationship schemas: My advisor and the Pope are watching me from the back of my mind. *Journal of Experimental Social Psychology*, 26, 435-454.
- Barber, B.L., Eccles, J.S., & Stone, M.R. (2001). Whatever happened to the jock, the brain, and the princess? Young adult pathways linked to adolescent activity involvement and social identity. *Journal of Adolescent Research*, 16, 429-455.
- Barnes, V.A., Treiber, F.A., & Johnson, M.H. (2004). Impact of transcendental meditation on ambulatory blood pressure in African-American adolescents. *American Journal of Hypertension*, 17, 366-369.
- Bartko, W.T., & Eccles, J.E. (2003). Adolescent participation in structured and unstructured activities: A person-centered analysis. *Journal of Youth & Adolescence*, 233-241.
- Beeghley, L., Van Velsor, E., & Bock, E.W. (1981). The correlates of religiosity among Black and White Americans. *Sociological Quarterly*, 22, 403-412.

- Beit-Hallahmi, B. (1974). Psychology of religion 1880-1930: The rise and fall of a psychological movement. *Journal of the History of the Behavioral Sciences*, 10, 84-90.
- Benda, B., & Corwyn, R.F. (1997). A test of a model with reciprocal effects between religiosity and various forms of delinquency using 2-stage least squares regression. *Journal of Social Service Research*, 22, 27-52.
- Benson, P.L. (2004). Emerging themes in adolescent spiritual and religious development. *Applied Developmental Science*, 8(1), 47-50.
- Bergman, L.R. (1998). A pattern-oriented approach to studying individual development: Snapshots and processes. In R.B. Cairns, L.R. Bergman, & J. Kagan (Eds.), *Methods and models for studying the individual* (pp. 83-122). Thousand Oaks, CA: Sage.
- Bergman, L.R. & Magnusson, D. (1997). A person-oriented approach in research on developmental psychopathology. *Development and Psychopathology*, 9, 291-319.
- Bergman, L.R., Magnusson, D., & El-Khoury, B.M. (2003). *Studying individual development in an interindividual context: A person-oriented approach*. Mahwah, NJ: Lawrence Erlbaum.
- Bergman, L.R. & Trost, K. (2006). The person-oriented versus the variable-oriented approach: Are they complementary, opposites, or exploring different worlds? *Merrill-Palmer Quarterly*, 52, 601-632.
- Bergman, L.R., von Eye, A., & Magnusson, D. (2006). Person-oriented research

- strategies in developmental psychopathology. In D. Cicchetti, & D. J. Cohen (Eds.), *Developmental psychopathology* (pp. 850-888). Hoboken, NJ: John Wiley & Sons.
- Bibby, R.W. (2010). *Beyond the gods and back*. Project Canada Books: Lethbridge, AB.
- Bibby, R.W. (2009). *The emerging millennials: How Canada's newest generation is responding to change and choice*. Project Canada Books: Lethbridge, AB.
- Bryant, A.N., Choi, J.Y., & Yasuno, M. (2003). Understanding the religious and spiritual dimensions of students' lives in the first year of college. *Journal of College Student Development*, 44, 723-745.
- Buford, R., Paloutzian, R., & Ellison, C. (1991). Norms for the spiritual well-being scale. *Journal of Psychology and Theology*, 19, 56-70.
- Burkett, S.R., & Warren, B.O. (1987). Religiosity, peer associations, and adolescent marijuana use: A panel study of underlying causal structures. *Criminology*, 25, 109-131.
- Busseri, M.A., Rose-Krasnor, L., Willoughby, T., & Chalmers, H. (2006). A longitudinal investigation of breadth and intensity of youth activity involvement and successful development. *Developmental Psychology*, 42, 1316-1326.
- Byrnes, J. P. (2003). Cognitive development during adolescence. In G. R. Adams & M. D. Berzonsky (Eds.), *Blackwell handbook of adolescence* (pp. 227-246). Oxford, UK: Blackwell.
- Caspi, A., & Silva, P.A. (1995). Temperamental qualities at age three predict personality traits in young adulthood: Longitudinal evidence from a birth cohort. *Child Development*, 66, 486-498.

- Chapell, M. S., & Overton, W. F. (1998). Development of logical reasoning in the context of parental style and test anxiety. *Merrill-Palmer Quarterly*, 44, 141-156.
- Chan, D., & Woollacott, M. (2007). Effect of level of meditation experience on attentional focus: Is the efficiency of executive or orientation network improved? *Journal of Alternative Complementary Medicine*, 13, 651-657.
- Clark, W. (2003). Pockets of belief: Religious attendance patterns in Canada. *Canadian Social Trends*, Spring, 1-5.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). NJ: Erlbaum.
- Coleman, J.S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, 94, S95-S120.
- Cook, K.V. (2000). "You have to have somebody watching your back, and if that's God, then that's mighty big": The church's role in the resilience of inner-city youth. *Adolescence*, 35, 717-730.
- Cornwall, M., Albrecht, S.L., Cunningham, P.H., & Pitcher, B.L. (1986). The dimensions of religiosity: A conceptual model with an empirical test. *Review of Religious Research*, 27, 226-244.
- Costa, F.M., Jessor, R., & Turbin, M.S. (1999). Transition into adolescent problem drinking: The role of psychosocial risk and protective factors. *Journal of Studies on Alcohol*, 60, 480-490.
- Costa, P.T., & McCrae, R.R. (1995). Domains and facets? Hierarchical personality assessment using the Revised NEO Personality Inventory. *Journal of Personality Assessment*, 64, 21-50.

- Cote, J. (2004). Emerging adulthood as an institutionalized moratorium: Risks and benefits to identity formation. In J. J. Arnett & J.L. Tanner (Eds.), *Emerging Adults in America: Coming of age in the 21st Century*. Washington, DC: American Psychological Association.
- Cotton, S., Kudel, Roberts, Palleria, Tsevat, J., Succop, P., & Yi, M. (2009). Spiritual well-being and mental health outcomes in adolescents with or without inflammatory bowel disease. *Journal of Adolescent Health, 44*, 485-492.
- Cotton, S., Zebracki, K., Rosenthal, S.L., Tsevat, J. & Drotar, D. (2006). Religion/spirituality and adolescent health outcomes: A review. *Journal of Adolescent Health, 38*, 472-480.
- Crocetti, E., Klimstra, T., Keijsers, L., Hale, W.W., & Meeus, W. (2009). Anxiety trajectories and identity development in adolescence: A five-wave longitudinal study. *Journal of Youth and Adolescence, 38*, 839-849.
- Crouter, A.C., MacDermid, S.M., McHale, S.M., & Perry-Jenkins, M. (1990). Parental monitoring and perceptions of children's school performance and conduct in dual- and single-earner families. *Developmental Psychology, 26*, 649-657.
- Csikszentmihalyi, M., Rathunde, K.R., Whalen, S., & Wong, M. (1993). *Talented teenagers: The roots of success and failure*. New York: Cambridge University Press.
- D'Andrea, L.M., & Sprenger, J. (2007). Atheism and nonspirituality as diversity issues in counseling. *Counseling and Values, 51*, 149-158.
- Dahl, R. D. (2004). Adolescent brain development: A period of vulnerabilities and opportunities. In R. E.Dahl & L. P.Spear (Eds.), *Annals of the New York Academy*

- of Sciences. Vol. 1021. Adolescent brain development: Vulnerabilities and opportunities (pp. 1–22). New York: New York Academy of Sciences.*
- Darling, N. (2005). Participation in extracurricular activities and adolescent adjustment: Cross-sectional and longitudinal findings. *Journal of Youth & Adolescence, 34*, 493-505.
- Desrosiers, A., Kelley, B.S., & Miller, L. (2010). Parent and peer relationships and relational spirituality in adolescents and young adults. *Psychology of Religion and Spirituality, 3*, 39-54.
- Desrosiers, A., & Miller, L. (2007). Relational spirituality and depression in adolescent girls. *Journal of Clinical Psychology, 63*, 1021-1038.
- Desrosiers, A., & Miller, L. (2008). Substance use versus anxiety in adolescents: Are some disorders more spiritual than others? *Research in the Scientific Study of Religion, 19*, 237-253.
- Dew, R.E., Daniel, S.S., Armstrong, T.D., Goldston, D.B., Triplett, M.F., & Koenig, H.G. (2008). Religion/spirituality and adolescent psychiatric symptoms: A review. *Child Psychiatry and Human Development, 39*, 381-398.
- Donovan, J.E., Jessor, R., & Costa, F.M. (1988). Syndrome of problem behavior in adolescence: A replication. *Journal of Consulting and Clinical Psychology, 56*, 762-765.
- Dogan, M. (2003). Religious beliefs in Europe: Factors of accelerated decline. *Research in the Social Scientific Study of Religion, 14*, 161-188.
- Donelson, E. (1999). Psychology of religion and adolescents in the United States: Past to present. *Journal of Adolescence, 22*, 187–204.

- Dotterer, A.M., McHale, S.M., & Crouter, A.C. (2007). Implications of out-of-school activities for school engagement in African American adolescents, *Journal of Youth and Adolescence*, 36, 391-401.
- Dowling, E.M., Gestsdottir, S., Anderson, P.M., von Eye, A., & Lerner, R.M. (2003). Spirituality, religiosity, and thriving among adolescents: Identification and confirmation of factor structures. *Applied Developmental Science*, 7, 253-260.
- Dowling, E.M., Gestsdottir, S., Anderson, P.M., von Eye, A., Almerigi, J., & Lerner, R.M. (2004). Structural relations among spirituality, religiosity, and thriving in adolescence. *Applied Developmental Science*, 8, 7-16.
- Duffy, R. D. (2006). Spirituality, religion, and career development: Current status and future directions. *Career Development Quarterly*, 55, 52-63.
- Dworkin, J.B., Larson, R., & Hansen, D. (2003). Adolescents' accounts of growth experiences in youth activities. *Journal of Youth and Adolescence*, 32, 17-26.
- Eccles, J.S., & Barber, B.L. (1999). Student council, volunteering, basketball, or marching band: What kind of extracurricular involvement matters? *Journal of Adolescent Research*, 14, 10-43.
- Erikson, E.H. (1964). *Insight and responsibility*. New York: W.W. Norton & Company.
- Erikson, E. H. (1965). Youth: fidelity and diversity. In E.H. Erikson (Ed.), *The challenge of youth*. New York: Anchor Books.
- Erikson, E.H. (1968). *Identity: Youth and crisis*. Oxford.
- Fauth, R.C., Roth, J.L., Brooks-Gunn, J. (2007). Does the neighborhood context alter the link between youth's after-school time activities and developmental outcomes? A multilevel analysis. *Developmental Psychology*, 43, 760-777.

- Feldman, B. J., Masyn, K. E., & Conger, R. D. (2009). New approaches to studying problem behaviors: A comparison of methods for modeling longitudinal, categorical adolescent drinking data. *Developmental Psychology, 45*, 652-676.
- Feldman, A.F., & Matjasko, J.L. (2007). Profiles and portfolios of adolescent school-based extracurricular activity participation. *Journal of Adolescence, 30*, 313-322.
- Fetzer Institute (1999). Multidimensional measurement of religiousness/spirituality for use in health research. Retrieved from:
<http://www.fetzer.org/images/stories/pdf/MultidimensionalBooklet.pdf> on August 29, 2009.
- Fletcher, A.C., Newsome, D., Nikerson, P., & Bazley, R. (2001). Social network closure and child adjustment. *Merrill-Palmer Quarterly, 47*, 500-529.
- Fletcher, A.C., Steinber, L., & Williams-Wheeler, M. (2004). Parental influences on adolescent problem behavior: Revisiting Stattin and Kerr. *Child Development, 75*, 781-796.
- Frankel, B.G., & Hewitt, W.E. (1994). Religion and well-being among Canadian university students: The role of faith groups on campus. *Journal for the Scientific Study of Religion, 33*, 62-73.
- Francis, L.J., & Brown, L.B. (1991). The influence of home, church and school on prayer among sixteen-year-old adolescents in England. *Review of Religious Research, 33*, 112-123.
- Fredricks, J.A., & Eccles, J.S. (2006). Extracurricular involvement and adolescent adjustment: Impact of duration, number of activities, and breadth of participation. *Applied Developmental Science, 10*, 132-146.

- Fredricks, J.A., & Eccles, J.S. (2008). Participation in extracurricular activities in the middle school years: Are there developmental benefits for African American and European American youth? *Journal of Youth and Adolescence*, 37, 1029-1043.
- Fredrickson, B.L., Cohn, M.A., Coffey, K.A., Pek, J., & Finkel, S.M. (2008). Open hearts build lives: Positive emotions, induced through loving-kindness meditation, build consequential personal resources, *Journal of Personality and Social Psychology*, 95, 1045-1062.
- French, D.C., Eisenberg, N., Vaughan, J., Purwono, U., & Suryanti, T.A. (2008). Religious involvement and the social competence and adjustment of Indonesian Muslim adolescents. *Developmental Psychology*, 44, 597-611.
- Gardner, M., Roth, J., & Brooks-Gunn, J. (2008). Adolescents' participation in organized activities and developmental success 2 and 8 years after high school: Do sponsorship, duration, and intensity matter? *Developmental Psychology*, 44, 814-830.
- George, L.K., Larson, D.B., Koenig, H.G., & McCullough, M.E. (2000). Spirituality and health: What we know, what we need to know. *Journal of Social and Clinical Psychology*, 19, 102-116.
- Giedd, J. N. (2004). Structural magnetic resonance imaging of the adolescent brain. In R. E.Dahl & L. P.Spear (Eds.), *Annals of the New York Academy of Sciences*. Vol. 1021. *Adolescent brain development: Vulnerabilities and opportunities* (pp. 77-85). New York: New York Academy of Sciences.

- Ginsburg, G., La Greca, A., & Silverman, W. (1998). Social anxiety in children with anxiety disorders: Relation with social and emotional functioning. *Journal of Abnormal Child Psychology*, 26, 175-185.
- Glanville, J., Sikkink, D., & Hernandez, E. (2008). Religious involvement and educational outcomes: The role of social capital and extracurricular participation. *The Sociological Quarterly*, 49, 105-137.
- Gottfredson, M. R., & Hirschi, T. (1990). *A general theory of crime*. Palo Alto, CA: Stanford University Press.
- Good, M., & Willoughby, T. (2006). The role of spirituality versus religiosity in adolescent psychosocial adjustment. *Journal of Youth and Adolescence*, 35, 41-55.
- Good, M., & Willoughby, T. (2007). The identity formation experiences of church-attending rural adolescents. *Journal of Adolescent Research*, 22, 387-412.
- Good, M. & Willoughby, T. (2008). Adolescence as a sensitive period for spiritual development. *Child Development Perspectives*, 2, 32-37.
- Good, M., & Willoughby, T. (In Press). Evaluating the direction of effects in the relation between religious versus non-religious activities, academic success, and substance use. *Journal of Youth and Adolescence*.
- Good, M., Willoughby, T., & Frijters, J. (2009). Just another club? The distinctiveness of the relation between religious service attendance and adolescent psychosocial adjustment. *Journal of Youth and Adolescence*, 38, 1153-1171.
- Galvan, A., Hare, T. A., Parra, C. E., Penn, J., Voss, K., Glover, G., *et al.* (2006). Earlier

- development of the accumbens relative to orbitofrontal cortex might underlie risk-taking behavior in adolescents. *Journal of Neuroscience*, 26, 6885–6892.
- Ginges, J., Hansen, I. G., & Norenzayan, A. (2009). Religion and support for suicide attacks. *Psychological Science*, 20, 224-230
- Granqvist, P., Ivarsson, T., Broberg, A., & Hagekull, B. (2007). Examining relations among attachment, religiosity, and new age spirituality using the Adult Attachment Interview. *Developmental Psychology*, 43, 590-601
- Gunnoe, M. L., Hetherington, E. M., & Reiss, D. (1999). Parental religiosity, parenting style, and adolescent social responsibility. *Journal of Early Adolescence*, 19, 199-225.
- Hansen, D.M., Larson, R. W., Dworkin, J.B. (2003). What adolescents learn in organized youth activities: A survey of self-reported developmental experiences. *Journal of Research on Adolescence*, 13, 25-55.
- Hall, G.S. (1904). *Adolescence: Its psychology and its relations to physiology, anthropology, sociology sex, crime, religion and education*. Appleton & Company: New York, NY.
- Hart, T. (2006). Spiritual experiences and capacities of children and youth. In E. C. Roehlkepartain, P.E. King, L. Wagener, & P.L. Benson (Eds.), *The handbook of spiritual development in childhood and adolescence* (pp.163-177). London: Sage.
- Hill, P.C., Pargament, K.I., Hood, R.W., McCullough, M.E., Swyers, J.P., Larson, D.B., & Zinnbauer, B.J. (2000). Conceptualizing religion and spirituality: Points of commonality, points of departure. *Journal for the Theory of Social Behavior*, 30, 51-77.

- Hoffman, J.P. (2006). Extracurricular activities, athletic participation, and adolescent alcohol use: Gender-differentiated and school-contextual effects. *Journal of Health and Social Behavior*, 47, 275-290.
- Hood, R.W., & Belzen, J.A. (2005). Research methods in the psychology of religion. In R.F. Paloutzian, & C.L. Park (Eds). *The handbook of the psychology of religion and spirituality* (pp. 62-79). New York: Guilford Press.
- Hooper, C. J., Luciana, M., Conklin, H. M., & Yarger, R. S. (2004). Adolescents' performance on the Iowa Gambling Task: Implications for the development of decision making and ventromedial prefrontal cortex. *Developmental Psychology*, 40, 1148-1158.
- Hu, L., & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1-55.
- Hunsberger, B., & Jackson, L.M. (2005). Religion, meaning, and prejudice. *Journal of Social Issues*, 61, 807-826.
- Hunsberger, B., Pratt, M., Pancer, S.M. (2001). Adolescent identity formation: Religious exploration and commitment. *Identity: An International Journal of Theory and Research*, 1, 356-386.
- Inhelder, B., & Piaget, J. (1958). *The growth of logical thinking from childhood to adolescence: An essay on the construction of formal operational structures*. New York: Basic Books.
- Inzlicht, M., McGregor, I., Hirsh, J. B., & Nash, K. (2009). Neural markers of religious conviction. *Psychological Science*, 20, 385-392.

- Inzlicht, M., & Tullett, A. M. (2010). Reflections on God: Religious affirmations can reduce neurophysiological response to errors. *Psychological Science*, 21, 1184-1190.
- James, W. (1902). *The varieties of religious experience*. New York: Longmans, Green, and Co.
- Jankowski, P.J., & Sandage, S.J. (2011, February 14). Meditative prayer, hope, adult attachment, and forgiveness: A proposed model. *Psychology of Religion and Spirituality*. Advance online publication. doi: 10.1037/a0021601
- Jessor, R., & Jessor, S.L. (1977). *Problem behavior and psychological development: A longitudinal study of youth*. New York: Academic Press.
- Kelley, B.S., & Miller, L. (2007). Life satisfaction and spirituality in adolescents. *Research in the Social Scientific Study of Religion*, 18, 233-261.
- Kerestes, M., Youniss, J., & Metz, E. (2004). Longitudinal patterns of religious perspective and civic integration. *Applied Developmental Science*, 8, 39-46.
- Kerr, M., & Stattin, H. (2000). What parents know, how they know it, and several forms of adolescent adjustment: Further support for a reinterpretation of monitoring. *Developmental Psychology*, 36, 366-380.
- King, P.E. (2008). Spirituality as fertile ground for positive youth development. In R.M. Lerner, R.W. Roeser, & E. Phelps (Eds.), *Positive youth development and spirituality: From theory to research* (pp. 55-73). West Conshohocken, PA: Templeton Foundation Press.
- King, P. E., Clardy, C. E., & Ramos, J. S. (2010). *Spiritual exemplars from around the*

- world: An exploratory study of spiritual development in adolescents.* Paper presented at the Biennial Meeting of the Society for Research on Adolescence, Philadelphia, PA.
- King, P. E., & Furrow, J.L. (2004). Religion as a resource for positive youth development: Religion, social capital, and moral outcomes. *Developmental Psychology, 40*, 703-713.
- King, V., Elder, G.H., & Whitbeck, L.B. (1997). Religious involvement among rural youth: An ecological and life-course perspective. *Journal of Research on Adolescence, 4*, 431-456.
- Kirkpatrick, L.A. (1998). God as a substitute attachment figure: A longitudinal study of adult attachment style and religious change in college students. *Personality and Social Psychology Bulletin, 24*, 961-973.
- Kirkpatrick, L.A., & Shaver, P.R. (1992). An attachment-theoretical approach to romantic love and religious beliefs. *Personality and Social Psychology Bulletin, 18*, 266-275.
- Kline, R.B. (2005). *Principles and practice of structural equation modeling* (2nd Ed.), New York, NY: Guilford.
- Koenig, H.G. (2008). Concerns about measuring “spirituality” in research. *The Journal of Nervous and Mental Disease, 196*, 349-355.
- Koenig, H.G., McCullough, M.E., & Larson, D.B. (2001). *Handbook of religion and health*. New York: Oxford University Press.
- Koenig, L.B., McGue, M. & Iacono, W.G. (2008). Stability and change in religiousness during emerging adulthood. *Developmental Psychology, 44*, 532-543.

- Kox, W., Meeus, W., & Hart, H. (1991). Religious conversion of adolescents: Testing the Lofland and Stark model of religious conversion. *Sociological Analysis*, 52, 227-240.
- Kroger, J. (1996). *Identity in adolescence*. New York: Routledge.
- Kroger, J., Martinussen, M., & Marcia, J.E. (2010). Identity status change during adolescence and young adulthood: A meta-analysis. *Journal of Adolescence*, 33, 638-698.
- Lambert, N.M., Fincham, F.D., Braithwaite, S.R., Graham, S.M., & Beach, S.R. (2009). Can prayer increase gratitude? *Psychology of Religion and Spirituality*, 1, 139-149.
- Larson, R.W., Hansen, D.M., & Moneta, G. (2006). Differing profiles of developmental experiences across types of organized youth activities. *Developmental Psychology*, 42, 849-863.
- Larson, R.W., Richards, M.H., Moneta, G., Holmbeck, G., & Duckett, E. (1996). Changes in adolescents' daily interactions with their families from ages 10 to 18: Disengagement and transformation. *Developmental Psychology*, 32, 744-754.
- Lee, J.J. (2002). Religion and college attendance: Change among students. *Review of Higher Education*, 25, 369-384.
- Lefkowitz, E.S. (2005). "Things have gotten better: Developmental changes among emerging adults after the transition to university. *Journal of Adolescent Research*, 20, 40-63.
- Lerner, J.V., Phelps, E., Forman, Y., & Bowers, E.P. (2009). Positive youth

- development. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology, Vol 1: Individual bases of adolescent development* (pp. 524-558). Hoboken, NJ: John Wiley & Sons.
- Lerner, R.M., & Castellino, D. (2002). Contemporary developmental systems theory and adolescence: Developmental systems and applied developmental science. *Journal of Adolescent Health, 31*, 122-135
- Lerner, R. M., Dowling, E. M., & Anderson, P. M. (2003). Positive youth development: Thriving as a basis of personhood and civil society. *Applied Developmental Science, 7*, 172-180.
- Lerner, R.M., Roeser, R.W., & Phelps, E. (2008). *Positive youth development and spirituality: From theory to research*. West Conshohocken: Templeton Foundation Press.
- Levenson, M.R., Aldwin, C.M., & D'Mello, M. (2005). Religious development from adolescence to middle adulthood. In R. F. Paloutzian & C. L. Park (Eds.), *Handbook of the psychology of religion and spirituality* (pp. 144-161). New York, NY: Guilford Press.
- Lippman, L.H., & Keith, L.M. (2006). The demographics of spirituality among youth: International perspectives. In E. C. Roehlkepartain, P.E. King, L. Wagener, & P.L. Benson (Eds.), *The handbook of spiritual development in childhood and adolescence* (pp.109-123). London: Sage.
- Little, R.J.A., & Rubin, D.B. (2002). *Statistical analysis with missing data* (2nd ed). Hoboken, NJ: Wiley and Sons.
- Little, T.D., Card, N.A., Preacher, K.J., & McConnell, E. (2009). Modeling longitudinal

- data from research on adolescence. In R.M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (pp. 15-54). Hoboken, NJ: John Wiley & Sons.
- Loury, L. (2004). Does church attendance really increase schooling? *Journal for the Scientific Study of Religion*, 43, 119-127.
- Luciana, M. (2006). Cognitive neuroscience and the prefrontal cortex: Normative development and vulnerability to psychopathology. In D.Cicchetti & D. J.Cohen (Eds.), *Developmental psychopathology: Vol. 2. Developmental neuroscience* (pp. 292-331). New York: Wiley.
- Magnusson, D. (1992). Back to the phenomenon: Theory, method, and statistics in psychological research. *European Journal of Personality*, 6, 1-14.
- Magnusson, D. (2003). The person-centered approach: Concepts, measurement models, and research strategy. *New Directions for Child and Adolescent Development*, 101, 3-23.
- Mahoney, A., Pendleton, S., & Ihrke, H. (2006). Religious coping by children and adolescents: Unexplored territory in the realm of spiritual development. In E. C. Roehlkepartain, P. E. Ebstyne, L. Wagener, & P. Benson (Eds.), *The handbook of spiritual development in childhood and adolescence* (pp. 341-354). Thousand Oaks, CA: Sage.
- Mahoney, J.L. (2000). School extracurricular activity participation as a moderator in the development of antisocial patterns. *Child Development*, 71, 502-516.
- Mahoney, J.L., & Cairns, R.B. (1997) Do extracurricular activities protect against early school dropout? *Developmental Psychology*, 33, 241-253.

- Mahoney, J.L., Cairns, B.D., & Farmer, T.W. (2003). Promoting interpersonal competence and educational success through extracurricular activity participation. *Journal of Educational Psychology, 95*, 409-418.
- Mahoney, J.L., Schweder, A.E., & Stattin, H. (2002). Structured after-school activities as a moderator of depressed mood for adolescents with detached relations to their parents. *Journal of Community Psychology, 30*(1), 69-89.
- Mahoney, J., & Stattin, H. (2000). Leisure activities and adolescent antisocial behavior: The role of structure and social context. *Journal of Adolescence, 23*, 113-127.
- Marcia, J.E. (1993). The relational roots of identity. In J. Kroger (Ed.), *Discussions on ego identity* (pp. 101-120). Hillsdale, NJ: Lawrence Erlbaum.
- Markstrom, C.A., Li, X., Blackshire, S.L., & Wilfong, J.J. (2005). Ego strength development of adolescents involved in adult-sponsored structured activities. *Journal of Youth and Adolescence, 34*, 85-95.
- Markstrom-Adams, C., Hofstra, G., & Dougher, K. (1994). The ego-virtue of fidelity: A case for the study of religion and identity formation in adolescence. *Journal of Youth and Adolescence, 23*, 453-469.
- Mason, W.A., & Windle, M. (2002). A longitudinal study of the effects of religiosity on adolescent alcohol use and alcohol-related problems. *Journal of Adolescent Research, 17*, 346-363.
- Maton, K.I., & Rappaport, J. (1984). Empowerment in a religious setting: A multivariate investigation, *Prevention in Human Services, 3*, 37-72.

- Maton, K.I., & Wells, E.A. (1995). Religion as a community resource for well-being. Prevention, healing, and empowerment pathways. *Journal of Social Issues, 51*, 177-193.
- McCullough, M.W., & Willoughby, B.L.B. (2009). Religion, self-regulation, and self-control: Associations, explanations, and implications. *Psychological Bulletin, 135*, 69-93.
- Meeus, W., Iedema, J., Maassen, G., & Engels. R. (2005). Separation-individual revisited: On the interplay between parent-adolescent relations, identity, and emotional adjustment in adolescence. *Journal of Adolescence, 28*, 89-106.
- Miller, A.S., & Hoffman, J.P. (1995). Risk and religion: An explanation of gender differences in religiosity. *Journal for the Scientific Study of Religion, 34*, 63-75.
- Moshman, D. (1998). Cognitive development beyond childhood. In W.Damon (Series Ed.) & D.Kuhn & R. S.Siegler (Vol. Eds.), *Handbook of child psychology. Vol. 2. Cognition, language, and perception* (pp. 947-978). New York: Wiley.
- Muller, C., & Ellison, C.G. (2001). Religious involvement, social capital, and adolescents' academic progress: Evidence from the National Education Longitudinal Study of 1988. *Sociological Focus, 34*, 155-183.
- Muraven, M., & Baumeister, R. F. (2000). Self-regulation and depletion of limited resources: Does self-control resemble a muscle? *Psychological Bulletin, 126*, 247-259.
- Muraven, M., Baumeister, R.F., & Tice, D.M. (1999). Longitudinal improvement of self-regulation through practice: Building self-control strength through repeated exercise. *Journal of Social Psychology, 139*, 446-457.

- Newberg, A.B., & Newberg, S. K. (2005). The neuropsychology of religious and spiritual experience. In R. F. Paloutzian and C. L. Park (Eds). *The psychology of religion and spirituality* (pp. 199-215). New York: Guilford Press.
- Newton, J.W., & Mann, L. (1980). Crowd size as a factor in the persuasion process: A study of religious crusade meetings. *Journal of Personality and Social Psychology*, 39, 874-883.
- Nonnemaker, J., McNeeley, C.A., & Blum, R.W. (2006). Public and private domains of religiosity and adolescent smoking transitions. *Social Science & Medicine*, 62, 3084-3095.
- Oaten, M., & Cheng, K. (2006). Improved self-control: The benefits of a regular program of academic study. *Basic and Applied Social Psychology*, 28, 1-16.
- Overton, W. F., Ward, S. L., Noveck, I. A., Black, J., & O'Brien, D. P. (1987). Form and content in the development of deductive reasoning. *Developmental Psychology*, 23, 22-30.
- Paus, R. (2005). Mapping brain maturation and cognitive development during adolescence. *Trends in Cognitive Science*, 9, 60-68.
- Pearce, M.J., Little, T.D., & Perez, J.E. (2003). Religiousness and depressive symptoms among adolescents. *Journal of Clinical Child and Adolescent Psychology*, 32, 267-276.
- Pendleton, S.M., Cavalli, K.S., Pargament, K.I., & Nasr, S.Z. (2002). Religious/spiritual coping in childhood cystic fibrosis: A qualitative study. *Pediatrics*, 109, 1-11.
- Perez, J.E., Little, T.D., & Henrich, C.C. (2009). Spirituality and depressive symptoms in a school-based sample of adolescents: A longitudinal examination of mediated

- and moderated effects. *Journal of Adolescent Health*, 44, 380-386.
- Persinger, M. A. (1993). Vectorial cerebral hemisphericity as differential sources for the sensed presence, mystical experiences and religious conversions. *Perceptual and Motor Skills*, 76, 915-930.
- Persinger, M. A. (1997). "I would kill in God's name": Role of sex, weekly church attendance, report of a religious experience and limbic lability. *Perceptual and Motor Skills*, 85, 128-130.
- Persson, A., Kerr, M., & Stattin, H. (2007). Staying in or moving away from structured activities: Explanations involving parents and peers. *Developmental Psychology*, 43, 197-207.
- Pettit, G.S., Laird, R.D., Dodge, K.A., Bates, J.E., & Criss, M.M. (2001). Adolescents and behaviour-problem outcomes of parental monitoring and psychological control in early adolescence. *Child Development*, 72, 583-598.
- Petts, R.J. (2009). Family and religious characteristics' influence on delinquency trajectories from adolescence to young adulthood. *American Sociological Review*, 74, 465-483.
- Possel, P., Martin, N.C., Garber, J., Banister, A.W., Pickering, N.K., & Hautzinger, M. (2011). Bidirectional relations of religious orientation and depressive symptoms in adolescents: A short-term longitudinal study. *Psychology of Religion and Spirituality*, 3, 24-38.
- Radloff, L. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385-401.

- Raudenbush, W. W., Bryk, A. S., & Congdon, R. T. (2005). *HLM6: Hierarchical linear and nonlinear modeling*. Lincolnwood, IL: Scientific Software International.
- Raymore, L.A., Barber, B.L., & Eccles, J.S., (2001). Leaving home, attending college, partnership and parenthood: The role of life transition events in leisure pattern stability from adolescence to young adulthood. *Journal of Youth and Adolescence*, 30, 197-223.
- Regnerus, M.D. (2000). Shaping schooling success: Religious socialization and educational outcomes in metropolitan public schools, *Journal for the Scientific Study of Religion*, 39, 363-370.
- Regnerus, M.D. (2003). Moral communities and adolescent delinquency: Religious contexts and community social control. *The Sociological Quarterly*, 44, 523-554.
- Regnerus, M.D., & Burdette, A. (2006). Religious change and adolescent family dynamics. *The Sociological Quarterly*, 47, 175-194.
- Regnerus, M.D., & Elder, G.H. (2003). Religion and vulnerability among low-risk adolescents, *Social Science Research*, 32, 633-658.
- Regnerus, M.D., & Smith, C. (2005). Selection effects in studies of religious influence. *Review of Religious Research*, 47, 23-50.
- Regnerus, M.D., & Uecker, J.E. (2006). Finding faith, losing faith: The prevalence and context of religious transformations during adolescence. *Review of Religious Research*, 47, 217-237.
- Rew, L., & Wong, Y.J. (2006). A systematic review of associations among religiosity/spirituality and adolescent health attitudes and behaviors. *Journal of Adolescent Health*, 38, 433-442.

- Ritt-Olson, A., et al (2004). The protective influence of spirituality and "health-as-a-value" against monthly substance use among adolescents varying in risk. *Journal of Adolescent Health, 34*, 192-199.
- Roehlkepartain, E.C., Benson, P.L., King, P.E., & Wagener, L.M. (2006). Spiritual development in childhood and adolescence: Moving to the scientific mainstream. In E. C. Roehlkepartain, P.E. King, L. Wagener, & P.L. Benson (Eds.) *The handbook of spiritual development in childhood and adolescence* (pp.1-15). London: Sage.
- Rosenberg, M. (1965). *Society and the adolescent self image*. Princeton, NJ: Princeton University Press.
- Ryan, R. M., & Deci, E.L. (2002). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*, 68-78.
- Ryan, M., Rigby, S., & King, K. (1993). Two types of religious internalization and their relations to religious orientations and mental health. *Journal of Personality and Social Psychology, 65*, 586-596.
- Sallquist, J., Eisenberg, N., French, D.C., Purwono, U., & Suryanti, T.A. (2010). Indonesian adolescents' spiritual and religious experiences and their longitudinal relations with socioemotional functioning. *Developmental Psychology, 46*, 699-716.
- Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods, 7*, 147-177.
- Schapman, A.M., & Inderbitzen-Nolan, H.M. (2002). The role of religious behavior in

- adolescent depressive and anxious symptomatology. *Journal of Adolescence*, 25, 631-643.
- Schwartz, S. J. (2001). The evolution of Eriksonian and neo-Eriksonian identity theory and research: A review and integration. *Identity*, 1, 7-58.
- Schwartz, K.D., Buwoski, W.M., & Aoki, W. (2006). Mentors, friends, and gurus: Peer and nonparent influences on spiritual development. In E. C. Roehlkepartain, P.E. King, L. Wagener, & P.L. Benson (Eds.), *The handbook of spiritual development in childhood and adolescence* (pp.310-323). London: Sage.
- Seidlitz, L., Abernathy, A.D., Duberstein, P.R., Evinger, J.S., Chang, T.H., & Lewis, B.L. (2002). Development of the Spiritual Transcendence Index. *Journal for the Scientific Study of Religion*, 41, 439-453.
- Sharp, S. (2010). How does prayer help manage emotions? *Social Psychology Quarterly*, 73, 417-437.
- Shoda, Y., Mischel, W., & Peake, P.K. (1990). Predicting adolescent cognitive and self-regulatory competencies from preschool delay of gratification: Identifying diagnostic conditions. *Developmental Psychology*, 26, 978-986.
- Silk, M. (2008). *One nation, divisible: How regional religious differences shape American politics*. New York: Rowman & Littlefield.
- Singer, J.D., & Willett, J.B. (2003). *Applied longitudinal data analysis*. New York: Oxford University Press.
- Smith, C. (2003a). Theorizing religious effects among American adolescents, *Journal for the Scientific Study of Religion*, 42, 17-30.

- Smith, C. (2003b). Religious participation and network closure among American adolescents, *Journal for the Scientific Study of Religion*, 42, 259-267.
- Smith, C., & Denton, M. L. (2005). *Soul searching: The religious and spiritual lives of American teenagers*. New York, NY: Oxford University Press.
- Smith, C., Denton, M.L., Faris, R., & Regnerus, M. (2002). Mapping American adolescent religious participation. *Journal for the Scientific Study of Religion*, 41, 597-612.
- Smith, T., McCullough, M., & Poll, J. (2003). Religiousness and depression: Evidence for a main effect and the moderating influence of stressful life events. *Psychological Bulletin*, 129, 614-636.
- Soenens, B., Vansteenkiste, M., Lens, W., Luyckx, K., Goossens, L., Bevers, W., et al. (2007). Conceptualizing parental autonomy support: Adolescent perceptions of promotion of independence versus promotion of volitional functioning. *Developmental Psychology*, 43, 633-646.
- Spika, B., Hood, R. W., Hunsberger, B., & Gorsuch, R. (2003). *The psychology of religion. An empirical approach* (3rd ed.). New York: Guilford Press.
- Starbuck, E.D. (1899). *The psychology of religion: An empirical study of the growth of religious consciousness*. W. Scott: London, UK.
- Stark, R. (1996). Religion as context: Hellfire and delinquency one more time. *Sociology of Religion*, 57, 163-173.
- Stark, R. (2002). Physiology and faith: Addressing the “universal” gender differences in religious commitment. *Journal for the Scientific Study of Religion*, 41, 495-507.

- Stark, R., & Bainbridge, W.S. (1996). *Religion, deviance, and social control*. New York: Routledge.
- Stark, R., Kent, L., & Doyle, D.P. (1982). Religion and delinquency: The ecology of a 'lost' relationship. *Journal of Research in Crime and Delinquency*, 19, 4-24.
- Statistics Canada (2001a, May 30). National longitudinal survey of children and youth: Participation in activities. *The Daily*. Retrieved July 3, 2008 from <http://www.statcan.ca/Daily/English/010530/d010530a.htm>
- Statistics Canada. (2001b). *Population by ethnic origin*. Retrieved April 6, 2003, <http://www12.statcan.ca>.
- Statistics Canada. (2001c). *Religion and sex for population*. Retrieved July 3, 2008, www12.statcan.ca.
- Stattin, H., & Kerr, M. (2000). Parental monitoring: A reinterpretation. *Child Development*, 71, 1072-1085.
- Steinberg, L. (2001). We know some things: Adolescent-parent relationships in retrospect and prospect. *Journal of Research on Adolescence*, 11, 1-20.
- Steinberg, L. (2007). Risk taking in adolescence: New perspectives from brain and behavioral science. *Current Directions in Psychological Science*, 16, 55-59.
- Steinberg, L. (2010). A dual-systems model of adolescent risk-taking. *Developmental Psychobiology*, 52, 216-224.
- Steinman, K.J., & Zimmerman, M.A. (2004). Religious activity and risk behavior among African American adolescents: Concurrent and developmental effects. *American Journal of Community Psychology*, 33, 151-161.

- Stoppa, T.M., & Lefkowitz, E.S. (2010). Religiosity during the transition to college. *Journal of Research on Adolescence, 20*, 23-38.
- Townsend, L., Flisher, A.J., & King, G. (2007). A systematic review of the relationship between high school dropout and substance use. *Clinical Child and Family Psychology Review, 10*, 295-372.
- Underwood, L.G., & Teresi, J.A. (2002). The daily spiritual experiences scale: Development, theoretical description, reliability, exploratory factor analysis and preliminary construct validity using health-related data. *Annals of Behavioral Medicine, 24*, 22-33.
- Walker, C., Ainette, M.G., Wills, T.A., & Mendoza, D. (2007). Religiosity and substance use: Test of an indirect-effect model in early and middle adolescence. *Psychology of Addictive Behaviors, 21*, 84-96.
- Ward, S. L., & Overton, W. F. (1990). Semantic familiarity, relevance, and the development of deductive reasoning. *Developmental Psychology, 26*, 488-493.
- Weinberger, D., Tublin, S., Fore, M., & Feldman, S. (1990). Preadolescents' social-emotional adjustment and selective attrition in family research. *Child Development, 61*, 1374-1386.
- Welch, M. R., Tittle, C. R., & Grasmick, H. G. (2006). Christian religiosity, self-control and conformity. *Social Forces, 84*, 1605-1623.
- Wenger, J.L. (2007). The implicit nature of intrinsic religious pursuit. *The International Journal for the Psychology of Religion, 17*, 47-60.
- Willoughby, T., Chalmers, H., & Busseri, M.A. (2004). Where is the syndrome?

- Examining co-occurrence among multiple problem behaviors in adolescence. *Journal of Consulting and Clinical Psychology*, 72, 1022-1037.
- Willoughby, T., & Hamza, C. (2010). A longitudinal examination of the bidirectional associations among perceived parenting behaviors, adolescent disclosure and problem behavior across the high school years. *Journal of Youth and Adolescence*. DOI 10.1007/s10964-010-9567-9.
- Wimberley, R.C., Hood, T.C., Lipsey, C.M., Clelland, D., & Hay, M. (1975). Conversion in a Billy Graham crusade: Spontaneous event or ritual performance? *The Sociological Quarterly*, 16, 162-170.
- Windle, M., & Lerner, R.M. (1986). Reassessing the dimensions of temperamental individuality across the life span: The Revised Dimensions of Temperament Survey (DOTS—R). *Journal of Adolescent Research*, 1, 213-229.
- Wood, D., Larson, R.W., & Brown, J.R. (2009). How adolescents come to see themselves as being more responsible through participation in youth programs. *Child Development*, 80, 295-309.
- Youniss, J., McLellan, J.A., Su, Y., & Yates, M. (1999). The role of community service in identity development: Normative, unconventional, and deviant orientations. *Journal of Adolescent Research*, 14, 248-261.
- Youniss, J., Yates, M., & Su, Y. (1997). Social integration: Community service and marijuana use in high school seniors. *Journal of Adolescent Research*, 12, 245-262.

- Zinnbauer, B.J., & Pargament, K.I. (1998). Spiritual conversion: A study of religious change among college students. *Journal for the Scientific Study of Religion*, 37, 161-180.
- Zinnbauer, B. J., & Pargament, K. I. (2005). Religiousness and spirituality. In R. F. Paloutzian & C. L. Park (Eds.), *The psychology of religion and spirituality* (pp.121–142). New York: Guilford Press.
- Zinnbauer, B. J., Pargament, K. I., Cole, B., Rye, M. S., Butter, E. M., Belavich, T. G., et al. (1997). Religion and spirituality: Unfuzzifying the fuzzy. *Journal for the Scientific Study of Religion*, 36, 549–564.

Appendix A: Cohorts

	02/03	03/04	04/05	05/06	06/07	200807/08
Cohort 1	Gr 9		Gr 11	Gr 12		
Cohort 2			Gr 10	Gr 11	Gr 12	
Cohort 3			Gr 9	Gr 10	Gr 11	Gr 12

Appendix B: Ethics Clearance Form

226

Appendix D: Research Ethics Approval



Brock University

Senate Research Ethics Board
B05/4315, Room C315

Extensions

FROM: David Butz, Chair
Senate Research Ethics Board (REB)

TO: Teena Willoughby, Child and Youth Studies

FILE: 00-116, WILLOUGHBY

The Brock University Research Ethics Board has reviewed the revised research proposal:

"Enhancement of youth resiliency and reduction of
harmful behaviours leading to healthy lifestyle choices"

The Research Ethics Board finds that your revised proposal conforms to the Brock University guidelines set out for ethical research.

* Accepted as clarified

Please note: Any Changes or Modifications to this approved research must be reviewed and approved by the committee. If so, please complete form #5 - *Request for Ethics Clearance of a Revision or Modification to an Ongoing application for Ethics Review of Research with Human Participants* and submit it to the Chair of the Research Ethics Board. You can download this form from the Office of Research Services or visit the web site:
<http://www.BrockU.CA/researchservices/mainethicsformpage.html>

DB/dvo

Appendix C: Consent Form

I understand that I am agreeing to participate in this study which will involve answering a series of questions concerning lifestyle choices and experiences. I understand that this study also will identify where gaps may exist in services available to youth in the Niagara Region, and as such, will be of benefit to me. This study is being conducted by the YLC-CURA (www.brocku.ca/cura).

- I understand that I will be asked to answer a number of questions about lifestyle choices and experiences (e.g., questions involving computer use, aggression, victimization, grades, school culture, substance use, daily hassles, family lifestyle, anxiety, friendship quality, etc.).
- I understand that my participation in this study is voluntary and that I may withdraw from the study at any time and for any reason without penalty. I understand that the questionnaire will take about 60 minutes to complete. Students who choose not to complete the questionnaire will have 60 minutes to complete an alternative educational activity.
- I understand that my responses to the questionnaire may be matched to previous year's questionnaires as part of this long-term study.
- I understand that there is no obligation to answer any question in the questionnaire that I consider invasive or inappropriate.
- I understand that my parents or guardians have been informed about the study and have consented to my participation, although this does not mean that I must participate.
- I understand that only the YLC-CURA researchers will have access to the data. I understand that all data will be kept confidential except in the case where I provide information that indicates that I am in danger of being abused.
- I understand that there are very minimal potential risks to my participation in this study. Based on the YLC-CURA's experience with youth filling in similar surveys in 2001, 2003, 2004, 2006, and 2007, I understand that I am not expected to experience any negative feelings about the survey. In case I have questions or concerns, however, I understand that the YLC-CURA research staff will be available in the classroom to answer questions and will provide all students with a bookmark that includes phone numbers of youth-serving agencies in the Niagara Region.
- I understand that only group data will be reported and no information about individual responses will ever be given to schools, teachers, or anyone else. The data, with identifying information removed, will be retained indefinitely and will be securely stored in a locked office in the research laboratory. Group data only may be published, presented at conferences, used to evaluate programs, or used for secondary data analyses by other researchers. Feedback and information about the results of this study will be posted on the YLC-CURA website (www.brocku.ca/cura) in September 2008.
- One of the most valuable parts of our research is that we are able to describe the ways in which young people change and stay the same as they get older. We know that the time between high school and young adulthood is a very unique time of life and we think that it is important to find out more about it. In order to see how people develop, we need to have future information from the same people who gave us information during high school - thus, no one can take your place in this study! We would like to ask you about your experiences again after you graduate, as well as provide you with ongoing feedback about the results of our study. If you would be willing for us to contact you in a year or two, we are going to ask you to provide us with your email address.
- Email addresses only will be used to send you information about the results of our study and to ask whether you would be interested in being part of our study in the future. Your email

address will be kept strictly confidential in a locked cabinet in our lab and no researcher other than the primary researcher will have access to that information.

Participant Signature _____ Date _____

This study has been reviewed and approved by the Brock Research Ethics Board (File # 00-116). If you have any questions or concerns about your participation in this study, you may contact Teena Willoughby at 905-688-5550, ext. 5474 (or by email at twilloug@brocku.ca), or the Research Ethics Officer at 905-688-5550, Ext. 3035. We also have a website, www.brocku.ca/cura, that you can access for more information. Please keep a copy of this form for your records.

Teena Willoughby, Ph.D.
Professor, twilloug@brocku.ca
905-688-5550, ext. 5474

Appendix D: Measures

1) Spirituality/religiosity

a. Religious service attendance

<i>How often in the LAST MONTH have you done the following?</i>	NEVER	ONCE OR TWICE A MONTH	ONCE A WEEK	SEVERAL TIMES A WEEK	NEVER
Gone to church/synagogue/temple etc.....	...○...	...○...	...○...○.....	...○...

b. Involvement in other spiritual/religious activities

<i>How often in the LAST MONTH have you done the following?</i>	NEVER	ONCE OR TWICE A MONTH	ONCE A WEEK	SEVERAL TIMES A WEEK	NEVER
Gone to religious/spiritual meetings other than church/synagogue/temple (e.g., youth groups)	...○...	...○...	...○...○.....	...○...

c. Prayer

<i>How often in the LAST MONTH have you done the following?</i>	NEVER	ONCE OR TWICE A MONTH	ONCE A WEEK	SEVERAL TIMES A WEEK	NEVER
Prayed	...○...	...○...	...○...○.....	...○...

d. Meditation

<i>How often in the LAST MONTH have you done the following?</i>	NEVER	ONCE OR TWICE A MONTH	ONCE A WEEK	SEVERAL TIMES A WEEK	NEVER
Meditated	...○...	...○...	...○...○.....	...○...

e. Wondering about spiritual issues

<i>Please answer the following</i>	STRONGLY DISAGREE	AGREE	NEITHER AGREE NOR DISAGREE/ NEVER THOUGHT ABOUT IT	SDISAGREE	STRONGLY DISAGREE
I often wonder about spiritual issues (life after death, God/higher power, etc)	...○...	...○...	...○...○.....	...○...

f. Enjoyment of religious/spiritual activities

I enjoy attending meetings held by my religious/spiritual group (e.g., church, temple, synagogue, youth group, retreats, conferences, etc.).

- Almost always or always ○ Often ○ Sometimes ○ Almost never or never
 ○ I don't attend

g. Spiritual Transcendence Index

<i>Please answer the following</i>	STRONGLY DISAGREE	AGREE	NEITHER AGREE NOR DISAGREE/ NEVER THOUGHT ABOUT IT	SDISAGREE	STRONGLY DISAGREE
1. My spirituality gives me a feeling of fulfilment	...○...	...○...	...○...○.....	...○...
2. God or a higher power is a part of my life	...○...	...○...	...○...○.....	...○...
3. Even when I experience problems, I can find a spiritual peace inside me	...○...	...○...	...○...○.....	...○...
4. Maintaining my spirituality is a priority for me	...○...	...○...	...○...○.....	...○...
5. God or a higher power helps me rise above my problems	...○...	...○...	...○...○.....	...○...
6. I have a close relationship with God or a higher power	...○...	...○...	...○...○.....	...○...
7. I feel a sense of inner strength or peace from my prayers or meditations	...○...	...○...	...○...○.....	...○...

2) Club involvement

<i>How often in the LAST MONTH have you done the following?</i>	NEVER	ONCE OR TWICE A MONTH	ONCE A WEEK	SEVERAL TIMES A WEEK	NEVER
1. Gone to school clubs (e.g., music, student council)	...○...	...○...	...○...○.....	...○...
2. Gone to clubs outside of school	...○...	...○...	...○...○.....	...○...

3) Intrapersonal well-being

a. Depression

<i>Fill in the answer that best describes how often you felt or behaved this way DURING THE PAST TWO WEEKS.</i>						
		NONE OF THE TIME (LESS THAN 1DAY)	RARELY (1-2 DAYS)	SOME OF THE TIME (3-5 DAYS)	OCCASIONA LLY (6-9 DAYS)	MOST OF THE TIME (10-14 DAYS)
1.	I was happy.	...○...	...○...	...○...	...○...	...○...
2.	I did not feel like eating; my appetite was poor	...○...	...○...	...○...	...○...	...○...
3.	I felt that I could not stop feeling sad, even with help from my family and friends	...○...	...○...	...○...	...○...	...○...
4.	I felt that I was just as good as other people	...○...	...○...	...○...	...○...	...○...
5.	I had trouble keeping my mind on what I was doing	...○...	...○...	...○...	...○...	...○...
6.	I felt depressed	...○...	...○...	...○...	...○...	...○...
7.	I felt that everything I did was an	...○...	...○...	...○...	...○...	...○...

	extra effort					
8.	I felt hopeful about the future	...O...	...O...	...O...	...O...	...O...
9.	I thought my life had been a failure	...O...	...O...	...O...	...O...	...O...
10.	I felt fearful	...O...	...O...	...O...	...O...	...O...
11.	My sleep was restless	...O...	...O...	...O...	...O...	...O...
12.	I was bothered by things that usually don't bother me	...O...	...O...	...O...	...O...	...O...
13.	I talked less than usual	...O...	...O...	...O...	...O...	...O...
14.	I felt lonely	...O...	...O...	...O...	...O...	...O...
15.	People were unfriendly	...O...	...O...	...O...	...O...	...O...
16.	I felt like doing nothing	...O...	...O...	...O...	...O...	...O...
17.	I had crying spells	...O...	...O...	...O...	...O...	...O...
18.	I felt sad	...O...	...O...	...O...	...O...	...O...
19.	I felt that people disliked me	...O...	...O...	...O...	...O...	...O...
20.	I enjoyed life	...O...	...O...	...O...	...O...	...O...

b. Social Anxiety

<i>In the chart below, fill in the answer that best suits you.</i>				
	ALMOST NEVER OR NEVER	SOMETIMES	OFTEN	ALMOST ALWAYS OR ALWAYS
1. I'm quiet when I'm with a group of other people my age	..O..	..O..	...O...	..O..
2. I only talk to other people my age that I know really well	..O..	..O..	..O..	..O..
3. I feel that other people my age talk about me behind my back	..O..	..O..	..O..	..O..
4. I worry about what other people my age think of me	..O..	..O..	..O..	..O..
5. I feel that other people my age are making fun of me	..O..	..O..	..O..	..O..
6. I'm afraid that other people my age will not like me	..O..	..O..	..O..	..O..
7. If I get into an argument with another person, I worry that he or she won't like me...	..O..	..O..	..O..	..O..
8. I worry about being teased	..O..	..O..	..O..	..O..
9. I feel shy with people my age that I don't know	..O..	..O..	..O..	..O..
10. I get nervous when I talk to people my age that I don't know very well	..O..	..O..	..O..	..O..
11. I worry about doing something new in front of other people my age	..O..	..O..	..O..	..O..
12. I feel shy even with other people my age I know well	..O..	..O..	..O..	..O..
13. It's hard for me to ask other people my age to hang out with me	..O..	..O..	..O..	..O..
14. I'm afraid to invite other people my age to my house because they might say no	..O..	..O..	..O..	..O..

c. Daily Hassles

<i>Below is a list of daily hassles that commonly bother students. Please indicate how often each one bothers you.</i>			
	ALMOST NEVER BOTHERS ME	SOMETIMES BOTHERS ME	OFTEN BOTHERS ME
1. Classroom is too noisy○.....○.....○.....
2. Not having enough time○.....○.....○.....
3. Not having enough money○.....○.....○.....
4. My weight○.....○.....○.....
5. Mean/strict teacher○.....○.....○.....
6. Having homework every day○.....○.....○.....
7. Not enough close friends○.....○.....○.....
8. Not enough time to talk with friends○.....○.....○.....
9. Too few dates○.....○.....○.....
10. How I look○.....○.....○.....
11. Problems with classmates○.....○.....○.....
12. Problems with friends○.....○.....○.....
13. Getting to class on time○.....○.....○.....
14. Problems with boyfriend/girlfriend○.....○.....○.....
15. Problems with my family○.....○.....○.....
16. Being lonely○.....○.....○.....
17. Others' opinions of me○.....○.....○.....
18. Not enough sleep○.....○.....○.....
19. Taking tests○.....○.....○.....
20. Household chores○.....○.....○.....
21. Trying to get good marks○.....○.....○.....

d. Self-Esteem

<i>Fill in the answer that best describes the way you feel.</i>					
	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
1. On the whole I am satisfied with my life○....○....	...○...○....○....
2. I feel that I have a number of good qualities○....○....	...○...○....○....
3. I am able to do things as well as most people○....○....	...○...○....○....
4. I feel I do not have much to be proud of○....○....	...○...○....○....
5. I feel useless at times○....○....	...○...○....○....
6. I feel that I am a person of worth, at least equal with others○....○....	...○...○....○....
7. I wish I could like myself more○....○....	...○...○....○....
8. All in all, I tend to feel that I am a failure○....○....	...○...○....○....
9. At times I think I am no good at all○....○....	...○...○....○....
10. I take a positive attitude toward myself○....○....	...○...○....○....

e. Satisfaction with life

<i>Fill in the circle that best describes you</i>	ALMOST ALWAYS OR ALWAYS	OFTEN	SOMETIMES	ALMOST NEVER OR NEVER
I am happy with my life	...○...	...○...	...○...○.....

4) Substance use

a. Alcohol use – frequency

How often do you go drinking or have a drink?

○ Never ○ less than once a month ○ 1-3 times a month ○ Once a week

○ 2 times a week ○ 3-4 times a week ○ 5-6 times a week ○ Every day

b. Alcohol use – quantity

On average, when you are drinking alcohol, about how many drinks do you have?

○ Less than 1 drink ○ 1 drink ○ 2-3 drinks

○ 4-6 drinks ○ 7-10 drinks ○ Over 10 drinks

c. Smoking

Have you EVER smoked a full cigarette? ○ Yes ○ No ➔ IF NO, SKIP TO NEXT SECTION

How many cigarettes do you usually smoke EACH DAY?

○ I no longer smoke ○ I don't smoke everyday ○ One ○ Less than 5

○ 6-10 ○ 11-16 ○ About a pack ○ More than a pack

d. Marijuana use

<i>In the past 12 MONTHS, how often did you use the following substances or engage in the following behaviours?</i>							
	SUBSTANCE	NEVER	ONCE	A FEW TIMES A YEAR	A FEW TIMES A MONTH	A FEW TIMES A WEEK	EVERY DAY
1.	Hash, marijuana (weed, joint)	...○..	...○..	...○..	...○..	...○..	..○..

5) Risk attitudes

How risky do you believe it is for **YOU** to be doing the following things?

		VERY HIGH	HIGH	MEDIUM	LOW	VERY LOW
1.	Drinking alcohol	...○...	...○...	...○...	...○...	...○...
2.	Smoking cigarettes	...○...	...○...	...○...	...○...	...○...

3.	Smoking marijuana(weed, joint	...○...	...○...	...○...	...○...	...○...
4.	Using other illegal drugs	...○...	...○...	...○...	...○...	...○...

6) Parental relationship

Think about your mother/stepmother (female guardian) whom you live with the MOST and answer these questions. If you have NO contact with your mother/stepmother or female guardian, please SKIP to PART J.

	ALMOST ALWAYS OR ALWAYS	OFTEN	SOMETIMES	ALMOST NEVER OR NEVER
1. My mother trusts my judgement	..○..	..○..○....	..○..
2. My mother accepts me as I am	..○..	..○..○....	..○..
3. I like to get my mother's point of view on things I'm concerned about	..○..	..○..○....	..○..
4. My mother can tell when I'm upset about something	..○..	..○..○....	..○..
5. Talking over my problems with my mother makes me feel ashamed or foolish	..○..	..○..○....	..○..
6. My mother expects too much from me	..○..	..○..○....	..○..
7. I get upset a lot more than my mother knows about	..○..	..○..○....	..○..
8. When we discuss things, my mother cares about my point of view	..○..	..○..○....	..○..
9. My mother has her own problems, so I don't bother her with mine	..○..	..○..○....	..○..
10. I tell my mother about my problems and troubles	..○..	..○..○....	..○..
11. I feel angry with my mother	..○..	..○..○....	..○..
12. My mother understands me	..○..	..○..○....	..○..
13. I trust my mother	..○..	..○..○....	..○..
14. My mother doesn't understand what I'm going through these days	..○..	..○..○....	..○..
15. I get upset easily around my mother	..○..	..○..○....	..○..
16. I don't get much attention from my mother	..○..	..○..○....	..○..
17. I can count on my mother when I need to get something off my chest	..○..	..○..○....	..○..

Think about your father/stepfather (male guardian) whom you live with the MOST and answer these questions. If you have no contact with your father/stepfather or male guardian please skip to Part K below.

	ALMOST ALWAYS OR ALWAYS	OFTEN	SOMETIMES	ALMOST NEVER OR NEVER
1. My father trusts my judgement	..○..	..○..○....	..○..
2. My father accepts me as I am	..○..	..○..○....	..○..
3. I like to get my father's point of view on things I'm concerned about	..○..	..○..○....	..○..
4. My father can tell when I'm upset about something	..○..	..○..○....	..○..
5. Talking over my problems with my father makes me feel ashamed or foolish	..○..	..○..○....	..○..
6. My father expects too much from me	..○..	..○..○....	..○..
7. I get upset a lot more than my father knows about	..○..	..○..○....	..○..
8. When we discuss things, my father cares about my point of view	..○..	..○..○....	..○..
9. My father has his own problems, so I don't bother him with mine	..○..	..○..○....	..○..
10. I tell my father about my problems and troubles	..○..	..○..○....	..○..
11. I feel angry with my father	..○..	..○..○....	..○..
12. My father understands me	..○..	..○..○....	..○..
13. I trust my father.....	..○..	..○..○....	..○..
14. My father doesn't understand what I'm going through these days	..○..	..○..○....	..○..
15. I get upset easily around my father	..○..	..○..○....	..○..

16. I don't get much attention from my father	..O..	..O..	....O.....	..O..
17. I can count on my father when I need to get something off my chest	..O..	..O..	....O.....	..O..

7) Parental control

	ALMOST ALWAYS OR ALWAYS	OFTEN	SOMETIMES	ALMOST NEVER OR NEVER
1. Do you need to have your parents' permission to stay out late on a weekday evening?	....O....	....O....	....O....	....O....
2. Do you need to ask your parents before you can decide with your friends what you will do on a Friday or Saturday evening?	....O....	....O....	....O....	....O....
3. If you have been out very late one night, do your parents require that you explain what you did and whom you were with?	....O....	....O....	....O....	....O....
4. Do your parents always require that you tell them where you are at night, who you are with, and what you do together?	....O....	....O....	....O....	....O....
5. Before you go out on a Friday or Saturday night, do your parents require you to tell them where you are going and with whom?	....O....	....O....	....O....	....O....

8) Friendship quality

Think about your FRIENDS and answer the following questions.					
		ALMOST ALWAYS OR ALWAYS	OFTEN	SOMETIMES	ALMOST NEVER OR NEVER
1.	I like to get my friends' points of view on things I'm concerned about	...○...	...○...	...○...	...○...
2.	My friends can tell when I'm upset about something	...○...	...○...	...○...	...○...
3.	When we discuss things, my friends care about my point of view	...○...	...○...	...○...	...○...
4.	Talking over my problems with my friends makes me feel ashamed and foolish.	...○...	...○...	...○...	...○...
5.	I wish I had different friends	...○...	...○...	...○...	...○...
6.	My friends understand me	...○...	...○...	...○...	...○...
7.	My friends accept me as I am	...○...	...○...	...○...	...○...
8.	My friends don't understand what I'm going through these days	...○...	...○...	...○...	...○...
9.	I feel alone or apart when I am with my friends	...○...	...○...	...○...	...○...
10.	My friends listen to what I have to say	...○...	...○...	...○...	...○...
11.	My friends are fairly easy to talk to	...○...	...○...	...○...	...○...
12.	My friends are concerned about my well being	...○...	...○...	...○...	...○...
13.	I feel angry with my friends	...○...	...○...	...○...	...○...
14.	I can count on my friends when I need to get something off my chest	...○...	...○...	...○...	...○...
15.	I trust my friends	...○...	...○...	...○...	...○...
16.	I get upset a lot more than my friends know about	...○...	...○...	...○...	...○...
17.	It seems as if my friends are irritated with me for	...○...	...○...	...○...	...○...

	no reason				
18.	I tell my friends about my problems and troubles	...○...	...○...	...○...	...○...
			...○...	...○...	...○...

9) Academics

a. Marks

What marks do you usually get in school?

- A (80%-100%) ○ B (70%-79%) ○ C (60%-69%) ○ D (50%-59%) ○ (BELOW 50%)

b. Importance of school

	VERY IMPORTANT	IMPORTANT	SOMEWHAT IMPORTANT	NOT AT ALL IMPORTANT
How important is it to you that you do well in school?○.....○.....○.....○.....

c. Educational aspirations

How far do you plan to go in school? (Choose only one answer.)

- Not finish high school
 ○ Finish high school
 ○ Take some college, university, or apprenticeship courses after high school, but may not get a degree
 ○ Complete a college/apprenticeship diploma (e.g., electrician) and/or technical diploma (e.g., graphic design, hair dressing)
 ○ Finish my undergraduate degree at a university
 ○ Obtain professional training (e.g. Masters, PhD., medical doctor, lawyer, etc.)

10) Task orientation temperament

	ALMOST ALWAYS OR ALWAYS	OFTEN	SOMETIMES	ALMOST NEVER OR NEVER
1. Once I start something, I finish it	...○...	...○...	...○...	...○...
2. If I am doing one thing, something else happening won't get me to stop	...○...	...○...	...○...	...○...
3. I stay with an activity for a long time	...○...	...○...	...○...	...○...
4. I persist at a task until it is finished	...○...	...○...	...○...	...○...
5. Once I am involved in a task nothing can distract me from it	...○...	...○...	...○...	...○...
6. I am hard to distract	...○...	...○...	...○...	...○...

11) Attitudinal tolerance of deviance

PART L How wrong do you think it is to do these things?				
	VERY WRONG	WRONG	A LITTLE BIT WRONG	NOT AT ALL WRONG
1. To take little things that don't belong to you	...○...	...○...	...○...	...○...
2. To give your teacher a fake excuse for being absent	...○...	...○...	...○...	...○...

3. To bother people in a movie theatre even if you have been asked to stop○....○.....	...○...○.....
4. To borrow \$5 or so from a friend without really expecting to pay it back○....○.....	...○...○.....
5. To cheat on a test○....○.....	...○...○.....
6. To skip school without a good excuse○....○.....	...○...○.....
7. To get into fist fights with other people○....○.....	...○...○.....
8. To break something that belongs to another person just to get even○....○.....	...○...○.....
9. To break into a place that is locked just to look around○....○.....	...○...○.....
10. To damage public or private property that does not belong to you just for fun○....○.....	...○...○.....
11. To threaten a teacher because you were angry about something at school○....○.....	...○...○.....

12) Friends' tolerance of substance use

How upset would your FRIENDS be if they found out that YOU were doing the following?

	VERY UPSET	UPSET	A LITTLE UPSET	NOT AT ALL
1. Drinking alcohol	...○...	...○...	...○...	...○...
2. Smoking cigarettes	...○...	...○...	...○...	...○...
3. Smoking marijuana (weed)	...○...	...○...	...○...	...○...
4. Using other illegal drugs	...○...	...○...	...○...	...○...

13) Friends' attitudes towards academic success

	VERY IMPORTANT	IMPORTANT	SOMEWHAT IMPORTANT	NOT AT ALL IMPORTANT
How important is it to your friends that you do well in school?○.....○.....○.....○.....