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J. N. Andrews Honors Program
Andrews University

HONS 497
Honors Thesis

The Role of Sabbath-Keeping, Christian Internalization, Need Satisfaction, and Parental
Environment in Well-Being

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Abstract

Identifying which specific religious practices promote religious internalization is crucial in understanding the relationship between religious practice and well-being. The current study employs surveys along with an episodic memory recall task to examine whether the relationship between Sabbath-keeping internalization and well-being is mediated by Christian religious internalization, parental environment, and basic need satisfaction as outlined in Self-Determination Theory. Our mediation analysis results demonstrate a large mediation effect size for daily basic needs satisfaction (autonomy, competence, and autonomy) on the relationship between internalization of Sabbath-keeping and well-being. Small to medium effect sizes were found for a general measure of Christian internalization and parental environment.

The Role of Sabbath-Keeping, Christian Internalization, Need Satisfaction, and Parental Environment in Well-Being

Human beings are endowed with the ability to initiate and regulate their behavior. At their best, they can be proactive and engaged agents that show considerable effort and commitment as they strive towards psychological growth and unity, or, alternatively, be passive and apathetic, expressing a lack of concern with responsibility and community. The fact that individuals express both constructive and indolent behavior regardless of cultural origin, age, and social status suggests that the psychological growth and overall well-being of individuals are not the result of mere biological cues or social-contextual dispositional differences. The wide range of reactions to social environments also tells us that social contexts catalyze both within and between-person differences in psychological growth, suggesting that there are particular social domains, cultures, and situations that result in people having higher-levels of motivation, integration, and well-being. Thus, research that seeks to identify the conditions that foster or undermine the persistence of behavioral quality and performance ought to have an approach that keeps these discrepancies at the forefront. Research driven by Self-Determination Theory is concerned precisely with these issues. The theory recognizes the intrinsic human tendency towards achieving a coherent view of the self as well as the extrinsic contingencies that lead to conditioned responses and fragmentation (Ryan & Deci, 2004).

Self-Determination Theory

Self-Determination Theory (SDT; Ryan, Kuhl, & Deci, 1997; Ryan & Deci, 2000; Deci & Ryan, 2008) is a theory of human motivation and behavior that construes human development and well-being as being sustained and energized by the fulfillment of three innate psychological needs: competence (White, 1959), autonomy (deCharms, 1968) and relatedness (Harlow, 1958). The concept of basic needs delineated in Self-Determination Theory includes 1) an emphasis on individual *psychological* rather than biological needs (e.g., hunger, thirst, sex) as was the case in the

early need theories 2) the view that these psychological needs are *innate*, thus being part of all individuals' inherent nature and remaining important throughout the life-span, and 3) that basic need satisfaction is essential for individuals' optimal functioning and wellness in the same way that the presence of water, minerals, and sunshine is crucial for plants to grow (Ryan, 1997; Hull, 1943).

Self-determination theory identifies the need for autonomy, competence, and relatedness as being essential for human growth and development—they are necessities rather than acquired motivations, regardless of whether or not the individual is conscious of them. Moreover, a large body of research shows that satisfaction of these three needs is associated with measures of purpose and meaning in life, emotional well-being, psychological adjustment, and well-being (Meyer, Enstrom, Harsveit, Bowles, & Beevers, 2007; Reis, Sheldon, Gable, Roscoe & Ryan, 2000; Sheldon, Ryan & Reis, 1996). When these needs are not being met, such as when the surrounding context of the individual is controlling, rejecting, or overly demanding, defensive or self-protective behaviors may be adopted that could lead to antisocial activities as well as withdrawn concern for the self, both of which may attenuate the level of subjective well-being of the person (Deci & Ryan, 2000).

Accordingly, STD is primarily concerned with motivation and figuring out the difference between individuals who choose to engage in activities and behaviors based on external factors such as rewards or punishment (extrinsic motivation) as opposed to individuals who are motivated from within, by reasons inherent in those activities and behaviors themselves (intrinsic motivation). Psychological theories concerned with these two types of motivation have proposed that they are additive or associated with a single source for motivation (Atkinson, 1964; Baumeister, & Vohs, 1997). However, in SDT, internal and external motivations are *not* additive—they often compete interactively for the control of human behavior. Moreover, SDT suggests that when rewards are contingent upon the behaviors in question or are perceived as externally controlling a particular behavior external, a decrease in internal motivation is observed (Deci, Koestner, & Ryan, 1999).

SDT also makes a distinction between controlled motivations perceived as external forces and autonomous motivations resulting from full volition (Deci & Ryan, 2000; Deci & Ryan, 2008). The theory proposes that when individuals personally identify with an externally-controlled behavior as being important, they move from controlled extrinsic motivation to autonomous extrinsic and intrinsic motivations and then integrate the behavior with other aspects of their selves (Deci & Ryan, 2008). This shift is much more likely to take place in a social context where relatedness and trusted feedback about competence are promoted. The resulting autonomous and internalized behaviors have been linked to increased overall subjective well-being (Deci & Ryan, 2000).

A Self-Determination Theory Model of Sabbath Keeping

A theoretical relationship between the practice of Sabbath keeping and well-being that places basic human needs at the forefront has been fleshed out within the framework of Self-Determination Theory (Diddams, et al., 2004). The researchers hypothesize that religious behaviors do not always hinder or improve well-being directly, what matters is how the behavior is being regulated. This means that even if two adherents perform the same religious behaviors, they may experience them differently depending on whether the regulations are more identified or introjected. With this in mind, Diddams and her colleagues (2004) propose three Sabbath-keeping models within the framework of SDT that lead to differences in well-being.

The first model is Life Segmentation, in which people actively segment their lives to create respite. This model places boundaries in time between work life and other important aspects of life such as family, worship, or spiritual activities. By creating boundaries from work and intentionally choosing to rest, individuals affirm that they are not slaves to what they do. Keeping the Sabbath, then, can be seen as an affirmation of freedom (autonomy) that allows individuals to declare themselves free from cultural conceptions of time and assert that they are more than just a tool to be used. The notion that work is a part, rather than the whole, of life also makes room for interpersonal

relationships to be attended to, thus helping adherents to gain a greater sense of belonging and preserve ethical boundaries (relatedness). Lastly, the Sabbath is not just a day reserved for spiritual exercises but also as a time to reflect over the work accomplished during the week and rest with the contentment that what we have created is good. These acts of mindfulness occurring at an individual level coupled with received supportive feedback from a supportive social community fosters a sense of competence and encourages the habit of self-affirming thoughts. Thus, adherents to this model of Sabbath keeping should also find an increase in feelings of competence and in their ability to meet the challenges of the week. Adherents who are unsuccessful in their segmentation of time, however, run the danger of experiencing continued stressful rumination despite physical detachment (Cropley & Purvis, 2003), or may ultimately view Sabbath practice as a new set of rules and regulations to be adhered to (Diddams, et al., 2004).

The second model of Sabbath keeping, prescribed meaning, involves prescribing positive and religious meaning to life segmentation but only as a means to an end (Diddams, et al., 2004). In this model, personal importance is consciously placed on behavioral outcomes, but the behavior is not completely internalized, thereby modeling identified regulation in SDT (Deci & Ryan, 2000). Adherents who follow this model reflect on counter-cultural habits of time keeping, thereby imputing positive personal meaning to undervalued aspects of life. Basic needs are met by viewing the behavioral changes that take place during the Sabbath as being personally significant, a means by which soul renewal and transformation takes place. Consequently, adherents find that keeping the Sabbath reduces their stress, helps them redefine what is important, and serves as an opportunity to reconnect with the people they love and care about. However, because identified regulation limits integration of behaviors with the self, the major threat to this model results from a self-perception of hypocrisy leading to increased levels of guilt and shame, where Sabbath keeping occurs only as a means of personal importance (time for family and self-improvement) rather than as a joyful

remembrance of God's covenant with humankind (Diddams, et al., 2004). Such means-ends reasoning could also lead to thwarted perceptions of competence in religious growth, thus reducing autonomy and well-being.

The third and final model of Sabbath keeping, *integrated Sabbath*, involves internalizing Sabbath keeping in such a way that the principles of Sabbath keeping are articulated in every aspect of the adherent's life (Diddams, et al., 2004). In this model Sabbath keeping is celebrated as an integrated belief system of daily rest, reflection and relationship development. There is a clear parallel in this model with integrated regulation and intrinsic regulation, both of which involve the complete assimilation of the behavior into individuals' core selves. This final model of Sabbath keeping integrates aspects of the other models two in the sense that people who follow an integrated model will segment their lives as well as identify the Sabbath with positive meanings. Moreover, an integrated model does not end with *mere* segmentation, it guides and informs all days of the week and gives meaning to work as well as to rest. When integrated Sabbath keepers feel that they are in acting in accordance with their best selves in keeping the Sabbath, we would expect low stress levels and increased well-being.

Based on the integrated Sabbath model, Diddams and her colleagues (2004) suggest that Sabbath keeping directly meets the three innate human needs identified by SDT (autonomy, competence, and relatedness). First, they assert that the act of resting is a statement of autonomy from external demands. Moreover, they suggest that a complete separation from the demands of work is a statement of competence. Perceived competence increases both because the Sabbath keeper is able to complete their given work without resorting to lessening their available time for rest and because Sabbath keeping without worry builds hope for the future and faith that God is in control without hampering feelings of personal control (Welton, Adkins, Ingle, & Dixon, 1996).

Finally, Sabbath-keeping in a relational context builds relatedness and increases the likelihood of adherents receiving positive feedback, leading to further internalization of Sabbath keeping. This last supposition is of particular interest for the current study, as it suggests that SDT models of Sabbath keeping cannot be properly tested in the absence of a community of Sabbath keepers. Because of the distinctive routine, social, and mindful aspects of Sabbath keeping, the relationship between internalization of Sabbath keeping may be stronger than the previously demonstrated relationships between other low-cost practices and well-being or between avoidance of secular activities and well-being (Superville, et al., 2013; Ryan, et al., 1993; Neyrinck, et al., 2006).

Internalization of Religion and Well-Being

Previous research examining the relationship between internalization of religious motivations and well-being has shown higher levels of well-being are reported when religious practices are perceived as autonomously regulated, congruent with personal goals, and inseparable from the self (Ryan, Rigby, & King, 1993; Neyrinck, Vansteenkiste, Lens, Duriez, & Hutsebart, 2006; Soenens, et al., 2012; Neyrinck, Lens & Vansteenkiste, 2005; Zeldman, 2006). Lower levels of well-being are commonly reported when religious practices are controlled by guilt, social pressure, fear, or shame (Mochon, et al., 2011; Ryan, et al., 1993; Neyrinck, et al., 2006; Dudley, 1978). These findings should come as no shock, given that thwarted human autonomy invariably leads to higher levels of stress and impairs well-being (Ratelle, Simard, & Guay, 2012; Weinstein & Ryan, 2011).

Sabbath-keeping and Well-Being among Seventh-Day Adventists

The only major study that demonstrates the relationship between Sabbath keeping and well-being among Seventh-day Adventists was conducted by Superville and his colleagues (2013). They found a small correlation ($r=.11$) between Sabbath-keeping and mental health, and no correlation between Sabbath-keeping and physical health. In a bootstrapped mediation analysis, the researchers found four variables—religious coping, religious support, diet, and exercise—that weakly mediate

the relationships between Sabbath-keeping and physical and mental health (nonexistent correlations but significant total effects are possible in bootstrapped mediation analyses). Given that the most substantial indirect effects of Sabbath keeping were from religious coping and support on mental health, it is feasible that distinctive religious practices might be a means by which religious belief translates to well-being. However, because the study is cross-sectional, this mediation cannot be interpreted causally; it is quite possible that Sabbath keeping practices might themselves be the means by which opportunities for coping and support are expressed and successfully met. Moreover, the authors note that some of the mediations are properly interpreted as shared variance and because Sabbath keeping was simply defined as avoidance of secular activities and not in terms of the psychological experience of Sabbath keeping, the relationship between Sabbath keeping beliefs and well-being remains untested in published studies. Nevertheless, the Superville study (2013) makes a strong case for the involvement of Sabbath-keeping internalization in the well-being of Seventh-day Adventists.

A study by Bailey and Emanuel (2013) found similar but stronger relationships in a sample of college students, as well as evidence for the role of internalization in well-being. Based on a theoretical model proposed by Diddams, Surdyk, & Daniels (2004), Bailey & Emanuel (2013) developed an instrument that measured internalization of Sabbath keeping, which was moderately positively correlated with well-being, participation in religious activities on the Sabbath, and a general measure of internalization of Christianity. Bailey and Emanuel (2013) also found that the relationship between internalization of Sabbath keeping and well-being was only weakly mediated by internalization of Christianity, suggesting unique contributions of Sabbath-keeping internalization to well-being above and beyond general internalization of religion.

What remains unclear from these studies is the mechanism by which Sabbath-keeping relates to well-being. It could be that Sabbath-keeping functions as means of exposing Seventh-day

Adventists to opportunities for coping, support, and instruction in well-being. However, it is also possible that internalization of Sabbath-keeping is a proximal mechanism of well-being for Seventh-day Adventists because it is an extremely effective means of meeting basic psychological needs. Such an effect would be consistent with other work showing moderate to strong effects of internalization of religion on mental and physical health (Neyrinck, Vansteenkiste, Lens, Duriez, & Hutsebaut, 2006; Ryan, Rigby, & King, 1993; Zeldman, 2006).

Parenting Style and Autobiographical Memories

Given the prominence of basic psychological needs throughout the lifespan, their need satisfaction representations should also be attached to parenting styles and to the deeper structures of our psyches, including autobiographical memories. Moreover, because parenting style and memory are both associated with well-being, both of these factors could have a mediating effect on the established moderate relationship between Sabbath-keeping and well-being.

Parental environments infused with meaningful and repeated rituals that communicate identity, involve enduring commitments, and persist across generations and have been shown to be associated with increased well-being as they (Fiese, et al, 2002; Fiese, Foley, & Spagnola, 2006). Social Learning Theory suggests that expectations, competencies, and attitudes developed within an attachment relationship are expected to influence children's orientation to peer relationships (Howes, et al., 1994). Furthermore, attachment theory suggests that emotional security within adult-child relationships is associated with children's peer relationships (relatedness). Negative interaction patterns, low levels of acceptance and support, as well as marital conflict have been correlated to low interpersonal competence levels in children while positive and warm interactions, secure attachment, and high quality parenting strategies predict high interpersonal competence (Isley et. al, 1999, Ladd & Golter, 1988). Attachment theory also leads to the suggestion that the supportive function of attachment relations may be most salient during early adolescent transitions. Given the overarching

role of parents in the development of their children, it makes sense for well-being and basic need satisfaction to be impacted by parental behavior.

People use autobiographical memories to achieve effectiveness, connectedness, and coherence. Thus, memories characterized by need satisfaction should also be indicative of opportunities for psychological growth and expansion of the self (Philippe, e. et al., 2011). Positive experiences of attachment, success, and self-expression have been shown to boost people's self-confidence and promote their self-growth (Deci & Ryan, 2000). Moreover, autobiographical memories serve many directive functions; they inspire, motivate, guide and inform the present choices, attitudes, and activities of the individual (Pillemer, 2003). Thus, autobiographical memory is an important source of information for the self and can have both an immediate and long-lasting effect on people's well-being. Self-defining memories, for example, are believed to play a crucial role in the identity and self-perception of individuals and are defined as being emotional, vivid, and repeatedly retrieved (Singer & Salovey, 1993). These types of memories are also linked people's enduring life concerns, thus making them a likely reference point for future action that may consequently impact well-being (Singer & Salovey, 1993).

Research has also shown that episodic memory components or themes were associated with well-being, even after controlling for common personality traits (Bauer et al., 2005). Philippe et al. (2011) found similar evidence with respect to need satisfaction. They showed that need satisfaction in memories remained associated with well-being, even after controlling for personality traits and self-determined orientation. Furthermore, satisfaction in memories was still significantly associated with well-being once need satisfaction in general was taken into account. Given these results and what we know about autobiographical memories, memories characterized by need satisfaction should signal possibilities for psychological growth, the opportunity to build and expand the self, and lead to higher levels of subjective well-being (Deci & Ryan, 2000; Hodgins & Knee, 2002).

Alternatively, memories where basic needs are thwarted should signal potential threats to the psychological growth of the individual and lead to self-closure strategies, thereby attenuating well-being (Deci & Ryan, 2000; Hodgins & Kneen, 2002). In short, the level of need satisfaction characterizing memories should have an important impact in people's well-being.

The Present Study

The present study examines the nature of Sabbath-keeping experiences among college students at Andrews University. Our aim is to examine whether the relationship between internalization of Sabbath-keeping and well-being is mediated by basic need satisfaction and perceived parenting style via surveys and an episodic memory recall technique (Philippe, et al., 2011). The internalization of religion is discussed using Self-Determination Theory-based models of Sabbath keeping proposed by Diddam, Surdyk, & Daniels (2004) and operationalized by Bailey and Emanuel (2013). Moreover, because life-long Adventists will have learned their Sabbath-keeping practices from their parents, we also intend to examine the relationships between Sabbath-keeping narratives, well-being, Sabbath-keeping internalization, need satisfaction, and perception of parents among life-long Adventists.

Specifically, we examined the following hypotheses: 1) Sabbath keeping narratives, after being coded for basic psychological needs being satisfied or thwarted (as in Philippe, Koestner, Beaulieu-Pelletier, & Lecours, 2011) will be positively related to well-being and internalization of Sabbath keeping. 2) For life-long Adventists, relationships to parents will be positively related to need satisfaction, well-being, and internalization of Sabbath keeping. 3) Need satisfaction and relationships to parents (for life-long Adventists) will mediate the relationship between Sabbath keeping and well-being.

Methods

Subjects

Data was collected from 191 subjects from the Behavioral Sciences Research Participation Pool at Andrews University. Andrews University is an educational institution of the Seventh-day Adventist Church with around 3,500 undergraduate and graduate students representing over 90 countries. The Seventh-day Adventist church holds many beliefs in common with Protestant evangelicals; however, they have advanced toward the classification as a denomination with distinctive and definitional religious practices (Lawson, 1995 & Knight, 2003). Students at Andrews encounter Saturday as a day of rest and worship, characterized by abstinence from work and secular activities, wholesome recreational and entertainment choices, and worship. The church also places an emphasis on healthy living, concern for others through local and global service, the care of dedicated staff and professors, and a hopeful view of the present and future as found in Jesus Christ (Andrews University, 2012). This community was selected as the model for Sabbath-keeping both out of convenience and because it provides a large community of Sabbath keepers that may engage in various different models of Sabbath keeping. Moreover, by focusing on a college population, we hoped to sample individuals with varying degrees of internalization, given that young adults are still in the process of developing their own religious identities and thereby exhibit Sabbath-keeping practices apart from those reinforced by the parental environment and religious community of their childhood (Arnett & Jensen, 2002).

Materials

All subjects completed the following questionnaire online via a lab-specific installation of LimeSurvey 2.00+ Build 130802. The installation was in a lab-controlled website and only the researchers had access to the data. Measures were presented in the order indicated in the following table:

Measure	Source	Number of Items
Sabbath Memory	Philippe, Koestner, Beaulieu-Pelletier, & Lecours, 2011	1
Sabbath-Keeping Internalization	Bailey & Emanuel, 2013	21
Christian Religious Internalization Scale	Ryan, Rigby, & King, 1993	12
Oxford Happiness Scale	Hills & Argyle, 2002	19
Parental Environment Questionnaire (Andrews University Version)	Eakins, McGue, Iacono, 1997; Caceres, Bailey, Baltazar, & McBride, 2013	12
Perception of Parents Scale	Niemiec, Lynch, Vansteenkiste, Bernstien, Deci, & Ryan, 2006	12
Basic Need Satisfaction	Gagné, 2003	25
Demographics	---	4

Sabbath Memory. Individuals often use memories of past events as a guide to making life choices and choosing attitudes (Pillemer, 2003). Autobiographical memories, especially self-defining memories, can dictate how the individual approaches situations and serve as a source of information about the self that goes beyond semantic knowledge. Accordingly, self-defining memories characterized by need satisfaction should signal possibilities for growth and promote well-being over time while self-defining memories characterized by need thwarting should signal a potential threat to the self and induce self-closure as well as lead to strategies that seek to protect the self, processes that would affect people's well-being negatively over time (Deci & Ryan, 200-; Hodgins & Knee, 2002). Because the satisfaction of the psychological needs of autonomy, competence, and relatedness has been shown to be a basic component characterizing self-defining autobiographical memories, we chose to employ an episodic memory recall technique to examine the relationship between internalization of Sabbath-keeping and well-being (Philippe, et. al, 2011). Subjects were asked to describe in detail

a personal memory that you have of a Sabbath that occurred at least one year ago that was significant (important) for you. This Sabbath memory should reflect your identity or who you are and should reveal something about how you perceive yourself generally. Choose a

memory that often comes to your mind. This memory can be either positive, negative, or both.

Thus, subjects were free to recall any type of memory and were not prompted to select a memory of a particular valence.

Sabbath-Keeping Internalization. To examine whether specific distinctive Christian communal practices, such as Sabbath keeping, serve as an important function in the internalization of religion and corresponding higher subjective well-being, we used the Sabbath-Keeping Internalization Scale (SKIS) to measure the internalization of Sabbath-Keeping (Bailey & Emanuel, 2013). Bailey and Emanuel (2013) developed the instrument using a cluster-factor approach and found that Sabbath-Keeping was moderately positively correlated with well-being, participation in religious activities on the Sabbath, and a general measure of internalization of Christianity. The authors also found that the relationship between internalization of Sabbath keeping and well-being is only weakly mediated by internalization of Christianity, suggesting unique contributions of Sabbath-keeping internalization to well-being above and beyond general internalization of religion. The instrument can be treated as a single scale consisting of 21 Sabbath-keeping items or three subscales (introjection, identification, integration). Items are rated on a 7-point Likert-like scale ranging from strongly disagree (1) to strongly agree (7).

Christian Religious Internalization. Subjects also completed the Christian Religious Internalization Scale (CRIS; Ryan, et al., 1993) which has two subscales: introjection and identification. Both subscales have been shown to correlate with subjective well-being (introjection negatively, and identification positively) in other Christian samples (Ryan, et al., 1993). The CRIS scale was included to examine whether a more general internalization of religion, rather than internalization of a specific practice mediates any relationship between internalization of distinctive practices and well-being.

Oxford Happiness Scale. Subjects' subjective well-being was measured using the 29 item Oxford Happiness Scale (OHS, Hills & Argyle, 2002). The questionnaire is comprised of 29 items that tap into self-esteem, sense of purpose, social interest and kindness, sense of humor, and aesthetic appreciation. The questionnaire is based on a uniform six-point Likert scale ranging from *strong disagree* to *strongly agree*.

Parental Environment Questionnaire. Parental environment was measured using The Parental Environment Questionnaire (PEQ), as based on Elkins, McGue, & Iacono (1997) modified by Bailey, Baltazar, & McBride (Bailey, Baltazar, & McBride, 2012). This version of the questionnaire has a total of 12 items and assesses two aspects of the parent-child relationship: Conflict and Parent Involvement. The Conflict Scale consists of six items which assess the extent to which the parent-child relationship is characterized by disagreement, tension, and anger (e.g., "My parent often criticizes me"). The remaining items make up the Parent Involvement Scale used to assess the extent to which the parent-child relationship is characterized by communication (e.g., "I prefer to talk about my personal problems with my parent") and closeness (e.g., "My parent and I do not do a lot of things together"). For each item, subjects provided two sets of PEQ ratings, one to describe their relationship with their mother and a second to describe their relationship with their father. Each item was answered on a 4-point scale (4 = *definitely false*, 3 = *probably false*, 2 = *probably true*, and 1 = *definitely true*).

Perception of Parents Scale. The Perceptions of Parents Scale (POPS; Robbins, 1994) assessed subjects' perceptions of their mothers' and fathers' provision of support for autonomy (six items; e.g., My father allows me to decide things for myself) and relatedness (six items; e.g., My mother finds time to talk to me). Responses were made on a 5-point Likert-scale, ranging from 1 (not at all true) to 5 (very true).

General Need Satisfaction Scale. This scale was adapted from a measure of need satisfaction at work (Ilardi, Leone, Kasser, & Ryan, 1993). Subjects indicated on a scale from 1 (not true at all) to 7 (definitely true) the extent to which the psychological needs of autonomy (7 items, $\alpha = .69$), relatedness (6 items, $\alpha = .86$), and competence (8 items, $\alpha = .71$) are generally satisfied in their life. Some of the statements included are, “I feel like I can decide for myself how to live my life” (autonomy), “I get along with the people I come into contact with” (relatedness), and “Most days I feel a sense of accomplishment from what I do” (competence). To test the model, the three subscales were averaged to form an index of general need satisfaction.

Procedure

The subject pool website was directly linked to the survey. Subjects were able to track their completion of the survey via a bar at the top of the screen. The Parental Environment Questionnaire and Perception of Parents Scale were presented for both mother and father. Subjects were asked if they grew up in a household with a mother or maternal figure (and father and paternal figure in a separate question). For those subjects that answered “no”, the corresponding questionnaires were not displayed. Once the subjects completed the survey, they were auto-forwarded by the survey site back to the subject pool website, which automatically stored credit for their participation. No unique identifying information about subjects was stored with their questionnaire data. Depending on how long subjects took to write about their Sabbath experience, the procedure took between 30 minutes to an hour.

Reliability & Validity

All of the included surveys have strong to excellent reliabilities ($\alpha > 0.7$ for all surveys except as noted earlier). In addition, each of the surveys has been extensively validated by the studies cited in the instruments table above. Our laboratory also checked (and revised when necessary) the factor structure of most of these questionnaires in previous studies as part of our data analysis protocol.

Results

Demographics

191 subjects completed on-line surveys of their subjective well-being, religious experiences, and Sabbath-keeping behaviors and. Fourteen of the subjects reported that they did not keep the Sabbath and were removed from further analysis giving us a total of 177 subjects (111 females and 66 males); all but five self-identified as Seventh-day Adventists Christian. The percentage of subjects who reported to have been baptized into the Seventh-day Adventist church was 88.7%. Students ranged in age from 17-51, with the large majority between the ages of 18-22 (90.96%).

Mediation Analysis

We conducted a mediation analysis using the function *mediation* in the *MBESS* 1.3.2 package in R 3.0.1 to test what factors (if any) mediate the relationship between the observed moderate (positive) relationship between Sabbath-keeping (SKIS) and well-being (OHS), $r = .352$, $p < .001$. We tested the significance of this indirect effect using bootstrapping procedures. Unstandardized indirect effects were computed for each of 10,000 bootstrapped samples, and the 95% confidence interval was computed by determining the indirect effects at the 2.5th and 97.5th percentiles.

We began by coding the Sabbath narratives for need satisfaction or thwarting using the guidelines used by Philippe and his colleagues (2011). Each memory was coded for the following three values of autonomy, competence, and relatedness (*any* of the following traits may be present, all are not necessary). The more traits that were present, the greater the satisfaction or thwartedness score. Throughout the coding process, the researchers referred back to the following rubric:

AUTONOMY

-3	-2	-1	0	+1	+2	+3
Thwarted: felt pressure and stress, feelings of being controlled by others or by something, contexts where the person feels like they are being evaluated, inability to decide between alternatives, feelings of guilt or shame				Satisfied: feelings of choice, self-determination or self-concordance (acting in accordance with your real or best self; being who you really are), self-initiative, self-expressiveness, feelings of self-control, feelings of freedom		

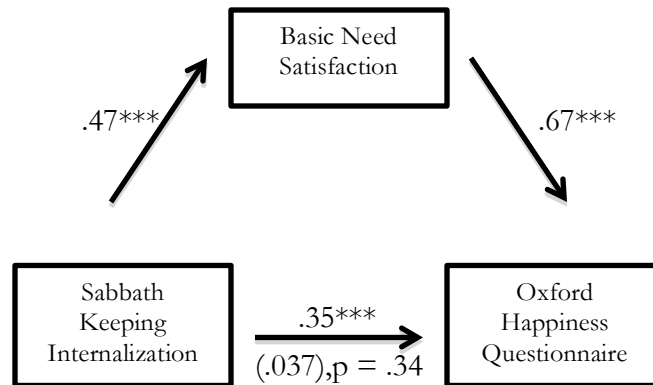
COMPETENCE

-3	-2	-1	0	+1	+2	+3
Thwarted: feelings of incompetence, failure, incapacity, envy of other's successes				Satisfied: feelings of intrinsic (enjoyable for its own sake) achievement, competency, taking on challenges, belief in one's capacity, feelings of working hard on something		

RELATEDNESS

-3	-2	-1	0	+1	+2	+3
Thwarted: loss of a significant other, interpersonal conflict, rejection, loneliness				Satisfied: connectedness and affiliation, being appreciated by others, sharing, taking care of someone		

The unstandardized regression coefficient between Sabbath-keeping internalization and this measure of basic need satisfaction in episodic recall was statistically significant ($\beta = 1.072$, $t = 4.178$, $p < .0001$); the unstandardized regression coefficient for basic need satisfaction and well-being (OHS) was not statistically significant ($\beta = .0206$, $t = 1.271$, $p = .205$). As a mediator, basic need satisfaction in episodic recall accounted for almost a fifth of the variance ($R^2 = .185$, 95% CI [.094, .301]); the unstandardized indirect effect was .02 and the mediation effect size was small ($\kappa^2 = .020$; bootstrapped 95% CI [.001, .079]). Our second measure for need satisfaction produced more potent results, the General Basic Need Satisfaction Scale generated strong, contrasting results illustrated in Figure 1. The mediation model using the General Basic Need Satisfaction as a mediator accounted for over half of the variance ($R^2 = .678$, 95% CI [.588, .747]); the mediation effect size was large ($\kappa^2 = .432$; bootstrapped 95% CI [.331, .533]) and the standardized indirect effect was $(.47)(.67) = .31$.

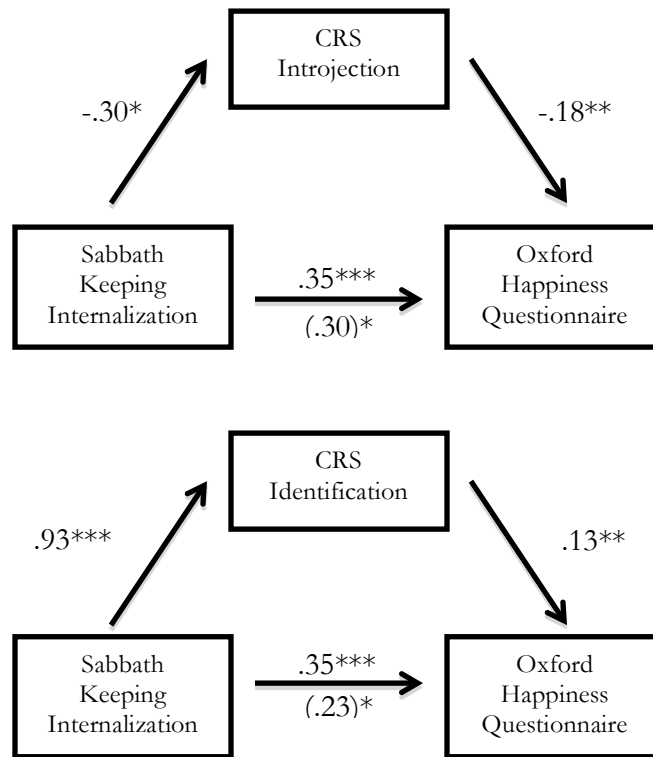


* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Figure 1(above). Unstandardized regression coefficients for the mediation of the relationship between Sabbath-keeping and well-being by the General Need Satisfaction Scale. The unstandardized regression coefficient for the relationship between Sabbath-keeping internalization and well-being when controlling for Basic Need Satisfaction is in parentheses.

Christian religious identification and introjection only weakly mediated the relationship between the Sabbath-keeping factor and well-being. The mediation model using CRIS introjection subscale as a mediator accounted for about a fourth of the variance ($R^2 = .253$, 95% CI [.142, .361]); the mediation effect size ($\kappa^2 = .069$; bootstrapped 95% CI [.023, .117]) was small-medium and the standardized indirect effect was $(-.30)(-.18) = .05$. The mediation model using CRIS identification as a mediator accounted for about a fifth of the variance ($R^2 = .209$, 95% CI [.105, .315]; the mediation effect size ($\kappa^2 = 0.114$; bootstrapped 95% CI [.009, .229]) was also small-medium and the standardized indirect effect was $(.93)(.13) = .12$.

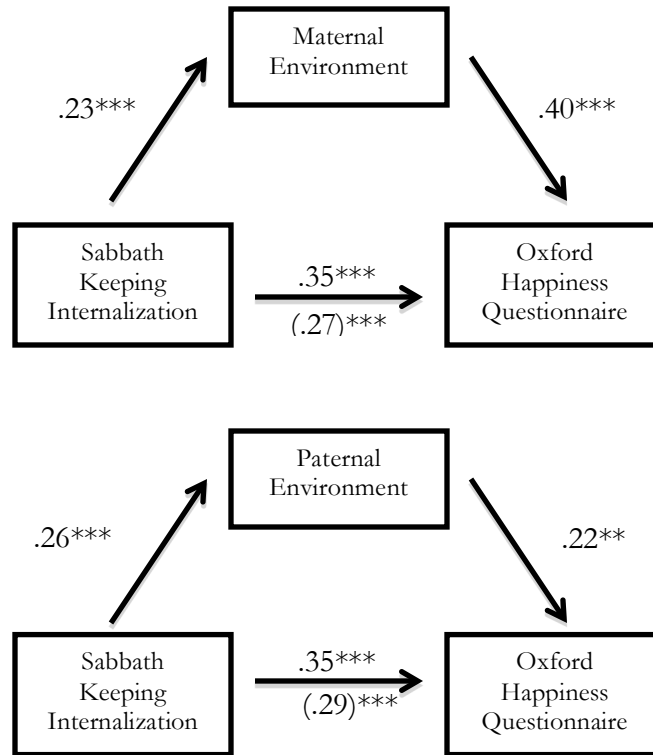
Figure 2 (below). Unstandardized regression coefficients for the mediation of the relationship between Sabbath-keeping (SKIS) and well-being (OHS) by subscales of the Christian Religious Internalization Scale (CRIS). The unstandardized regression coefficient for the relationship between Sabbath-keeping internalization and well-being when controlling for Christian internalization is in parentheses.



* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Parental environment weakly mediated the relationship between the Sabbath-keeping factor and well-being. A composite score for maternal environment ($\alpha = .97$, $\omega_b = .73$ $\beta = .84$) and paternal environment ($\alpha = .98$, $\omega_b = .78$ $\beta = .88$) was computed by combining the corresponding mother-ratings and father-ratings of the PEQ and POPS measures. The mediation model using maternal environment as a mediator accounted for almost a third the variance ($R^2 = .289$, 95% CI [.169,

.402]); the mediation effect size ($\kappa^2 = .117$; bootstrapped 95% CI [.048, .202]) was small-medium and the standardized indirect effect was $(.23)(.40) = .09$. The mediation model using paternal environment as a mediator accounted for about a fifth of the variance ($R^2 = .231$, 95% CI [.111, .352]; the standardized indirect effect was $(.26)(.22) = .06$ and the mediation effect size ($\kappa^2 = 0.072$; bootstrapped 95% CI [.016, .157]) was also small-medium.



* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Figure 3 (above). Unstandardized regression coefficients for the mediation of the relationship between Sabbath-keeping (SKIS) and well-being (OHS) by parental environment (composite scores for mother and father). The unstandardized regression coefficient for the relationship between Sabbath-keeping internalization and well-being when controlling for parental environment is in parentheses.

Multiple Mediation Analysis

A multiple mediation analysis using the R package *lavaan* in R 3.0.1 was conducted to examine distinctive mediating effects of subscales (autonomy, competence, relatedness) constituting the *General Need Satisfaction Scales* on the relationship between Sabbath-keeping internalization and well-being. Bootstrapped estimates of the individual indirect effect of the independent variable on the outcome was computed for each of the three mediators separately; the total indirect effect through all the mediators simultaneously was also computed to test the overall model. Results reveal a significant mediating effects for all three subscales scales.

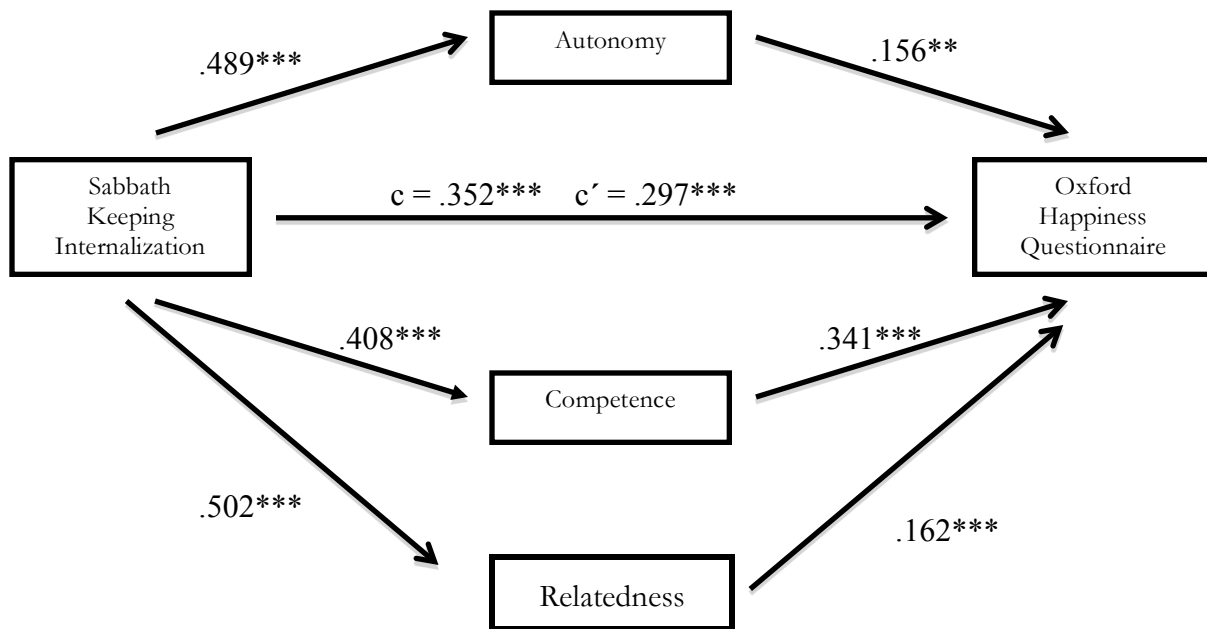


Figure 3. The mediating effects of the three General Basic Need Satisfaction Scale subscales for autonomy, competence, relatedness on the relationship the between Sabbath-keeping internalization (SKIS) and well-being (OHS). Regression coefficients are unstandardized.

Discussion

Previous studies have shown that self-defining memories coded for need satisfaction are associated with well-being, over and above other memory components such as sharing (Pasupathi, 2003), closure (King et al., 2000), and achievement (Bauer & McAdams, 2004) among others. In our study, basic need satisfaction in episodic recall was significantly related to Sabbath-keeping internalization ($\beta = 1.072$, $t = 4.178$, $p < .0001$) but there was no relationship between this measure of basic need satisfaction and well-being for both positive and negative memories ($\beta = .0206$, $t = 1.271$, $p = .205$). Thus, our study supports the notion that need satisfaction is a core psychological component of autobiographical memories, but it rejects the association between need satisfaction in self-defining memories and well-being. Furthermore, the trivial indirect effect and small effect size of basic need satisfaction in episodic recall on the relationship between Sabbath-keeping internalization and well-being suggests that the internalization of religious practices is mostly independent of previous Sabbath experiences and their corresponding memories. This means that an adherent's memory of previous Sabbath experiences is not a good predictor of their current level of internalization or their overall well-being.

The positive and significant relationship found between students' perceived parental environment (mother and father) and well-being found in our study provides further support for previous research showing that an affirming and involved parenting style boosts students' perceived control and competence, offers a sense of security and connectedness, and influences students' perceptions on the importance of psychological growth and learning (Grolnick & Ryan, 1989; Gonzalez-Dehass, et al., 2005; Merchant et al., 2001; Lynch & Cicchetti, 2002). In addition, we found that well-being is more strongly associated with maternal environment than paternal environment, suggesting that mother involvement is a better indicator of a child's self-esteem and positive peer relations than that of father involvement. Although parental environment did not

explain much of the variance between Sabbath-keeping internalization and well-being, the small-moderate mediating effect size suggests that parents do play an important role in creating a relational context where internalization of religious behaviors is either enhanced or attenuated.

The most important finding of the current research showed that daily basic needs satisfaction (BNS) almost fully mediates the relationship between Sabbath-keeping internalization and well-being. This result not only supports the use of Self-Determination Theory-based models to better understand internalization of religion (specifically, Seventh-day Adventist Christianity) it provides strong evidence to suggest that religion is better understood in respect to practices that directly involve autonomy, competence, and relatedness. Ultimately, our study confirms previous literature showing that religious belief and involvement are associated with higher levels of subjective well-being (Myers, 2000; Green & Elliott, 2008; Hackney & Sanders, 2003; Koenig & Larson, 2001) and provides further evidence suggesting that it is the strength and internalization of a belief system in a social context that is related to higher subjective well-being among religious adherents rather than the mere exposure to religion (Baumeister, Bauer, & Lloyd, 2010). Therefore, the Seventh-day Adventist church should emphasize the *internalization* of distinctive Adventist practices in order to nurture well-being and thereby improve retention. The community ought to offer opportunities for its adherents to be involved in positive social interactions, provide safe and trusted feedback regarding the aptitude of its adherents, and increase autonomy by passing on values and attitudes that facilitate autonomous internalization rather than forcing participation in religious ritual. Finally, because Sabbath-keeping in a relational context was found to foster relatedness, the church should also consider the degree to which Sabbath-Keeping practices at the community and family level either support or thwart autonomy, competence, and relatedness, thereby reducing well-being. The idea that SDT models of Sabbath keeping cannot be properly tested in the absence of a community of Sabbath keepers is also reinforced. In light of insignificant results between

autobiographical memories of the Sabbath and well-being, it is clear that it does not matter so much whether the adherent remembers Sabbath keeping in good or bad terms, what matters significantly more is how Sabbath-keeping is currently being perceived by the individual and whether opportunities for growth and need satisfaction are readily available.

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