

# **Spiritual Health, Locus of Control, and Perception of Stress Effects on College Students**

Maggie Rothenberg  
Psychology and Health & Wellness Promotion  
University of North Carolina Asheville  
Asheville, North Carolina 28804 USA

Faculty Advisor: Aubrey Mast

## **Abstract**

Spiritual beliefs may be associated with health behaviors and health outcomes. The present study examined the connection between locus of control, spirituality, and perception of stress among college students. The analyzed sample consisted of 36 participants: 27 women, 8 men, and 1 person identifying with other as their gender. These participants were split among 2 age groups: 28 young adults between the age range of 17 through 23 years old and 8 middle aged adults ranging from 23 or older. Younger and middle aged adults were recruited from the Psychology and/or Health and Wellness Departments at the University of North Carolina Asheville within a two week time period. Participants were asked to complete a cross sectional survey involving three scales of measurement: locus of control, spirituality, and perception of stress. Assessing results from Rotter's Locus of Control Scale revealed that 24 out of 36 participants responded using an external locus of control whereas 12 participants identified using an internal locus of control. The Spirituality Scale revealed high levels of agreeance with spiritual involvement; suggesting that individuals are more involved with their spirituality through intrapersonal practices such as solitary engagement with spirituality using silence and nature. The Perceived Stress Scale highlighted the overall levels of stress experienced by these participants. Seventy two percent of participants reported fairly or very often feeling nervous and "stressed" while fifty five percent of participants reported fairly or very often feeling they were "on top of things." Further qualitative analysis involving transcribed interviews may provide more concrete evidence for thematics around perception of stress in relation to locus of control and spirituality. Findings suggest that a majority of individuals within this sample, identified with an external locus of control and evidence of being self aware as it relates to connection with earth and others.

**Keywords:** *spirituality, locus of control, internal and external locus of control, stress*

## **1. Introduction**

Researchers have extensively explored locus of control in relation to spiritual practices and health behaviors. The term locus of control (LOC) refers to how strongly people believe they have control over events that influence their lives. Although LOC is referred to in literature as a single bipolar construct (Gore et. al, 2016), researchers also suggest two separate constructs involving an internal and an external component. Individuals who tend to perceive outcomes in life as within one's own control (i.e. internal locus of control) have been proven to have lower levels of stress and better health outcomes than those whose outcomes in life are determined by external factors such as chance and powerful others (i.e. external locus of control) (Reknes, 2019). Locus of control plays a role in analyzing stress reactions; it's how an individual conceptualizes their ability to control events and the importance of various events to the individual which may contribute to perceived stress and perceived control (Weissman, 1972). Along with locus of control and perceived stress, researchers are now expanding their studies to explore this existing relationship involving spirituality. This suggests that spiritual involvement is multidimensional; beliefs and behaviors operate in different ways via the spiritual-religious-health connection (Debnam, 2012). There is a "distinguishable yet overlapping"

distinction between the terms religiosity and spirituality (Miller, 2003) (Debnam, 2012). The present study acknowledges the use of these terms in previous literature and has chosen to utilize the multi dimensional construct of spirituality as “one's transcendent relationship to some form of higher power” (Roth, 1998). Research (Fiori, et al., 2006) suggests that spirituality is related to external locus of control while a lack of spirituality is related to internal locus of control. The present study aims to understand the various levels of spiritual involvement and the connection to one's levels of perceived stress and loci of control.

## **2. Locus of Control and Spirituality**

Previous research (Reknes, 2019) suggests that perceived control over outcomes in life (i.e., internal locus of control) has normally been related to good health and well-being, while relying on chance and/or powerful others (i.e., external locus of control) has been related to stress and poor health. Other findings propose the idea of a *spiritual health locus of control* which is defined as the extent to which an individual believes that a “higher power has control over one's health” (Holt, 2003). The spiritual health locus of control (LOC) has both an active and passive dimension; “In the active dimension, one works in partnership with a higher power to stay in good health whereas the passive dimension consists of a belief that because only a higher power is in control of health outcomes, there is no reason to engage in health behaviors” (Debnam, 2012). Although previous literature shows connections between an internal locus of control and positive wellbeing, these different dimensions of spiritual involvement are also correlated to an individual's locus of control and health behaviors. There is a growing body of knowledge whose studies present evidence supporting the relationship between an external locus of control and high levels of spirituality as they relate to stress or healthy behavior (Debnam, 2012) (Fiori et. al 2006) (Holt, 2003). This amount of evidence linking spirituality and external LOC to health behaviors and health outcomes serves as a critical consideration to health professionals when assessing interventions. As there are multiple dimensions to the term spirituality, the Spirituality Scale (Delaney, 2003) was chosen for this study to better understand a general dimension of spirituality through concepts of higher power/universal intelligence, self discovery, relationships, and eco awareness. Rather than addressing the active and passive dimensions of spirituality, the goal of this research was to gain a basic foundation of the intrapersonal (within oneself) and interpersonal (with others) relationships associated with spiritual involvement. Gaining a better understanding of spiritual involvement may outline the strengths and weaknesses of certain spiritual practices that could benefit the overall health and wellbeing of college students.

## **3. Locus of Control in Younger Populations**

The age of college students is a transformative period for personality development and a critical context for studying personality (Naik, 2015). The current study chose a target population of undergraduate college students, ages seventeen and up. The transition stage of college can be marked by complex changes in academic, person-emotional, and social adjustment. Locus of control may be a useful psychological construct to account for individual differences in the ability to adjust to university life (Jain, 2015). College students tend to experience stress at higher levels, especially those early in their college career. Previous research (Egan, 2011) suggests this stress may be due to adjusting factors such as academic and social demands, relationships, and changes in their environment. Adolescent and young adulthood are arguably the two most critical periods of development as relationships among peers and parents help shape an individual's total personality (Jain, 2015). Based on Rotter's social learning theory, locus of control is referred to as a personality construct, a person's attributional tendencies regarding the cause or control over an event (Rotter, 1954). In the context of education, college students who are adjusting to university life may perceive their success or failure in school as an internal or external attribute. It's evident that this period of development can affect an individual's overall health and wellbeing. This study emphasizes the need for further research in younger populations who are experiencing stress at rates higher than before due to academic, psychological, and lifestyle adjustment stressors (Song, 1999) (Jain, 2015). This research aims to gain an understanding of undergraduate's (young adults) locus of control and how this may contribute to perceived stress and spiritual involvement. Spiritual involvement practices may contribute to stress reduction, especially in the university setting.

#### **4. Locus of Control and Perceived Stress**

Perception of stress refers to an individual's sense of perceived control over life stressors (Cohen, Kamarack, Mermelstein, 1983). Academic examination stress has been associated with increased perceptions of stress and stress induced anxiety (Song, 1999). As college presents various forms of stressors and adjustments, previous research suggests that "student adjustment generally worsens across the first 2 years in the domains of psychological functioning (decreased self-esteem; increased depression, anxiety, and stress), cognitive-affective strategies (decreased active emotional coping, increased avoidant emotional coping), and social adjustment (decreased social support from friends)" (Conley, 2020). This experienced stress correlates directly to the underlying psychological components of locus of control. This correlation is found in previous research suggesting that placing the cause of an outcome upon others (i.e., external locus of control) has been related to avoidance coping, greater stress and poor health while internal locus of control, on the other hand, has been associated with help-seeking and positive thinking (Renekes, 2019; Gianakos, 2002; Gore et al., 2016). The experienced stress and relationship with locus of control may affect academic performance and college student's perception of stress. The present study's goal was to better understand the role locus of control may play in an individual's perception of stress and perceived control over stress. Spiritual involvement may also play a role in one's perceived control over stress which could provide grounds for future research assessing spiritual interventions to reduce stress in the college environment.

#### **5. The Present Study**

As previous studies have utilized the spiritual health locus of control, the present study addressed the general dimension of spiritual involvement in relation to locus of control and perceived stress. The target population for the present study involves undergraduate college students. Undergraduate college students frequently report experiencing higher levels of stress than others. While research reports more than two-thirds of college students experience some type of stress, 38% of female college students and 27% of males report that their stress level is so high that it negatively affects their academic performance (Egan, 2011). The present study addressed the interconnections between one's locus of control, spirituality states, and the overall perception of stress. These results give insight on how spirituality and mindfulness may be beneficial to reduce stress in the college environment. This research uses mean/average differences to assess the high and low levels of spirituality and perceived stress reported by participants. Spirituality was assessed based on a five point Likert scale ranging from one to five. Individuals were considered to report "higher than average levels" if the mean response was above three; while individuals were considered to report "lower than average levels" if the mean response was below three. Perception of stress was assessed based on a five point Likert scale ranging zero to four. Individuals were considered to report "higher than average levels" if the mean response was above two; while individuals were considered to report "lower than average levels" if the mean response was below two. Internal and external reinforcement were determined using the key provided by Rotter's Locus of Control Scale. This research hypothesized that at least half or more of the participants would indicate having an external locus of control and would report higher than average levels of spirituality. The researchers also hypothesized that individuals would report perceiving stress at higher than average levels.

#### **6. Methods**

The present study was approved by the University of North Carolina at Asheville's Institutional Review Board. The analyzed sample consisted of 36 participants: 27 women, eight men, and one person identifying with other as their gender. These participants were split among two age groups: 28 young adults between the age range of 17 and 23 years old and eight middle aged adults ranging from 23 or older. Younger and middle aged adults were all recruited from the Psychology and Health and Wellness Departments at the University of North Carolina Asheville within a two week time period in March of 2021. Recruitment was conducted via university email and within the psychology research participation Moodle shell. Attending the university was the only criteria regarding inclusion. The only exclusion criteria was being under seventeen years of age. The demographic makeup of this study was majority white females which will be further discussed in the limitation section of this review. 32 individuals identified as white, two individuals identified as Hispanic or Latino, one individual identified as Black or African American, and one

individual identified as some other race, ethnicity, or origin. Participants were offered “Psychology and Life” event participation credit, a requirement for most psychology classes at UNC Asheville. Participants who are taking a psychology course were given the opportunity to complete this study for credit. This is one of many research opportunities provided as a “PAL” credit via the University’s Psychology Department. This study does not hold a direct benefit to the individual but it does pose potential for a direct benefit to society based on scientific knowledge gained. Results from this study may lead to further exploration of these measures within other populations who are vulnerable to stress and/or stressful environments. This research may also be further applicable to populations who are closely involved with spirituality and religiosity. For recruitment, an introductory email was sent to all students in the Psychology and Health and Wellness Departments. Once participants responded to the interest email, they received an informed consent document to return back for participation in the study. Upon receiving informed consent, participants were given a direct link to the research survey. Qualtrics was the statistical program used to record, track, and analyze data. This study was presented to participants via an online Qualtrics survey link. Once the survey was completed by participants, participation in the research study was considered to be completed.

## 7. Measures

The present study sought to examine whether more individuals had an internal or external locus of control, higher or lower levels of spirituality, and higher or lower levels of perceived stress. Delaney’s 2003 Spirituality Scale (SS) was used to assess spiritual involvement among these participants. This study proposed there may be a pattern of interpersonal or intrapersonal trends among the self discovery or eco awareness dimensions of the spirituality scale. The SS involves “a holistic instrument that attempts to measure the beliefs, intuitions, lifestyle choices, practices, and rituals representative of the human spiritual dimension and is designed to guide spiritual interventions” (Delaney, 2005). This research does not target spirituality as a determining factor of health, rather the present study focuses on a general dimension of spiritual involvement and its relationship with nature and self discovery among interpersonal and intrapersonal levels. Rotter’s Locus Of Control Scale (Rotter, 1966) was used to assess internal and external loci of control as separate constructs. This scale will provide a general measure of locus of control whereas some studies using the spiritual health, multi dimensional locus of control scales have not been as consistent with Rotter’s definition and are often used in small cross sectional studies (Iles-Caven et. al, 2020). The Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983) was used to measure an individual’s perception of routine life stressors. The most general scales of measurement were used to assess these three variables in the attempt to better understand the overarching thematics associated with locus of control, spirituality, and perception of stress.

The Qualtrics research survey began with a demographics questionnaire assessing age, gender, and race/ethnic origin. The participants were then given the three different questionnaires, each ranging from ten-twenty questions; all variables were assessed in this online survey. All of this data was stored using the Qualtrics software as well as downloaded google sheets files to display and discuss the data analyses. There are anonymous functions within the Qualtrics survey form to ensure that the participant’s identity cannot be drawn back to their survey responses.

The first questionnaire was a shortened version of the Spirituality Scale (Delaney, 2003) measuring the individual’s spirituality on four levels: higher power/universal intelligence, self discovery, relationships, and eco awareness. Participants were given nineteen statements and asked to choose their level of agreeance to the statement based on a five point Likert scale (one = strongly disagree, five = strongly agree). An item example is “I find meaning in my life experiences”.

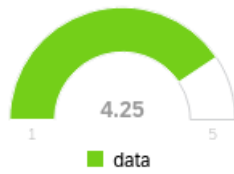
The second questionnaire was the Perceived Stress Scale which contained ten items measuring an individual's sense of control over routine life stressors. Participants were asked to address how they’ve felt during the past month by finishing the statement “In the last month, how often have you...” with each item. An item example would be “(In the last month, how often have you...) felt nervous and “stressed”. Participants responded based on a five point Likert scale from zero = never to four = very often.

The third and final questionnaire was a shortened version of the Rotter’s Locus of Control (LOC) Scale (Rotter, 1966) where an individual’s internal vs external reinforcement was determined through a series of nineteen statements. The participants were given an option between “a” or “b” when asked to select the statement which they agreed with the most. A score of one was given to each statement, Rotter’s LOC scale has an attached key for the statements which determine the total score of a participant. High scores indicate an external locus of control and low scores indicate an internal locus of control. In the present study, a score ranging from one through nine indicates an internal locus of control while a score ranging from 10-19 indicates an external locus of control.

## **8. Design/Analysis**

The present study is a cross sectional analysis assessing variation among each of the three scales of measurement: spirituality, locus of control and perceived stress. Mean differences were used to test the hypothesis and analyze the internal and external locus of control in relation to outcomes in spiritual involvement and perception of stress. The following figures will provide visualizations outlining the number averages received in response to the statements presented in the Spirituality Scale, Rotter's LOC Scale, and Perceived Stress Scale. Further analyses and interpretations of these mean trends are made in reference to specific statements shown in the visualizations. This research was conducted to form a basic foundation for future projects utilizing more advanced quantitative analyses and qualitative, transcribed interviews.

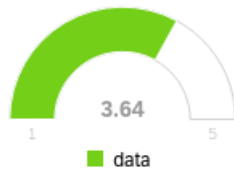
I find meaning in my life experiences



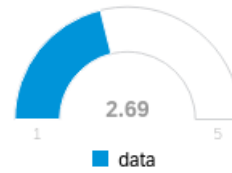
I have a sense of purpose



I see the sacredness in everyday life



I meditate to gain access to my inner spirit



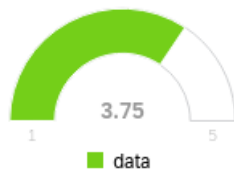
I live in harmony with nature



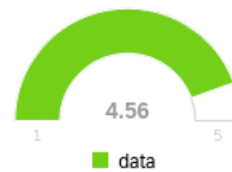
My life is a process of becoming



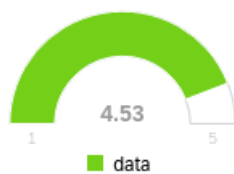
I believe in a Higher Power/Universal Intelligence



I believe that all living creatures deserve respect



The earth is sacred



I value maintaining and nurturing my relationships with others



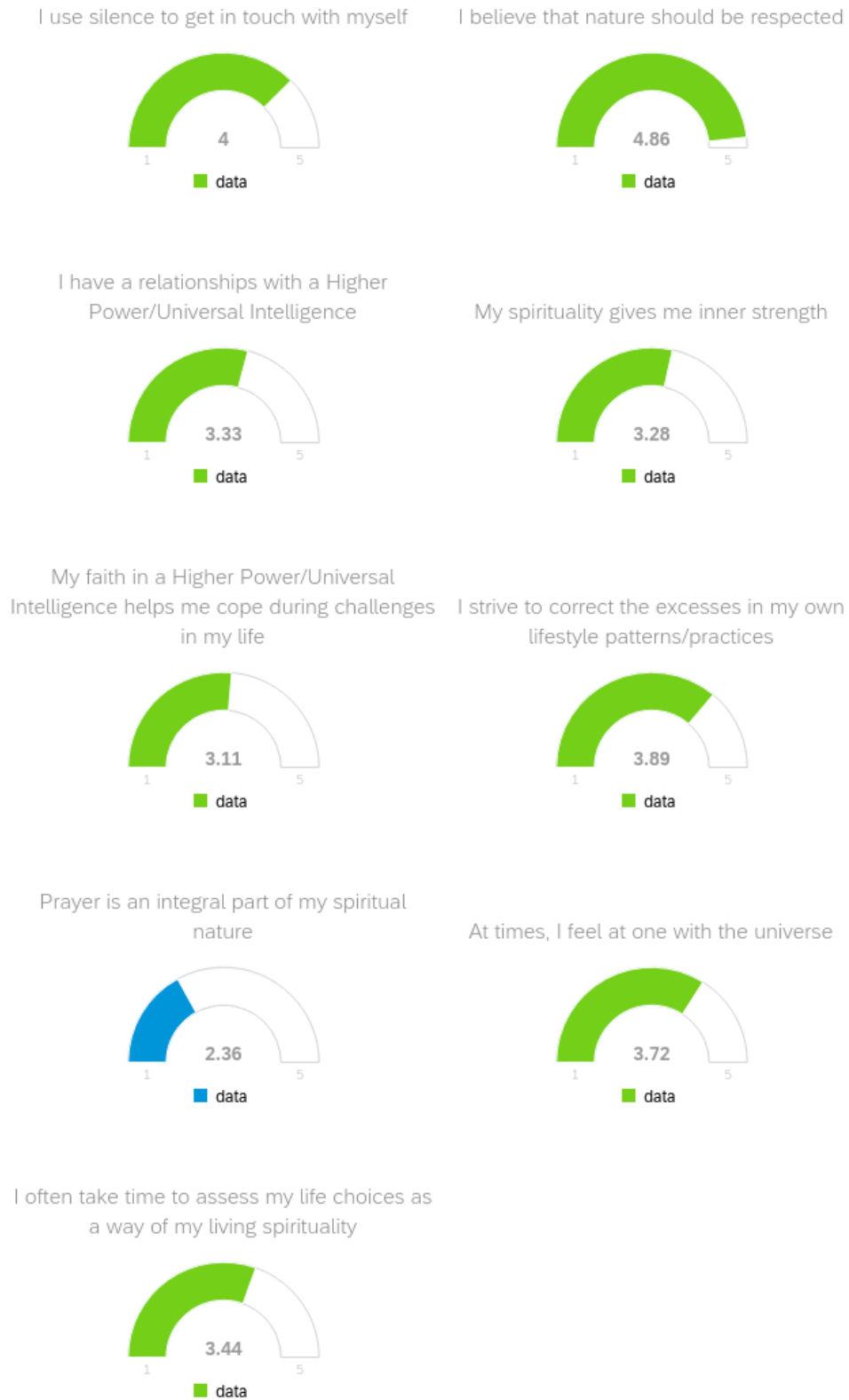


Figure 1. Spirituality Scale Mean Scores

Figure 1. provides the mean for each item answered on the Spirituality Scale (SS). Comparisons were made regarding the average response to each statement on the survey. Spirituality was assessed based on a five point Likert scale ranging from one to five. Individuals were considered to report “higher than average levels” if the mean response was above three; this data is highlighted in green. Individuals were considered to report “lower than average levels” if the mean response was below three; this data is highlighted in blue. The Spirituality Scale revealed high levels of agreement with spiritual involvement; suggesting higher than average levels of involvement with spirituality through intrapersonal practices such as solitary engagement with spirituality using silence and nature. This scale presents four interrelated aspects encompassing the multidimensional term of spirituality; higher power or universal intelligence, self-discovery, relationships, and eco-awareness (Delaney, 2005). The present study reveals a mean response of three or higher among seventeen out of nineteen statements. As participants were asked to choose their level of agreeance to each statement, the results acknowledged trends among three of the four interrelated aspects of this scale; higher power or universal intelligence, self discovery, and eco awareness.

Each statement regarding higher power or universal intelligence revealed a mean of three or higher. Higher power or universal intelligence is defined as a belief that may or may not include formal religious practices (Delaney, 2005); 83.3% of participants reported between three and five (either neutral, agree, or strongly agree) to the statement “I believe in a Higher Power/Universal Intelligence”. Findings also indicate that 66.6% of participants reported between three and five (either neutral, agree, or strongly agree) to the statement “I have a relationship with a Higher Power/Universal Intelligence”. 61.1% of participants reported between three and five (either neutral, agree, or strongly agree) to the statement “My faith in a Higher Power/Universal Intelligence helps me cope during challenges in my life”. These results revealed that participants in this study reported a higher than average level of involvement with a higher power or universal intelligence.

The statements regarding self discovery revealed a trend of solitary engagement such as silence used in spiritual practices. 97.22% of participants reported between three and five (either neutral, agree, or strongly agree) to the statement “I strive to correct the excesses in my own lifestyle patterns/practices”. 83.3% of participants also reported between three and five (either neutral, agree, or strongly agree) to the statement “I often take time to assess my life choices as a way of my living spirituality”. 94.4% of participants reported between three and five (either neutral, agree, strongly agree) to the statement “I use silence to get in touch with myself”. This was an interesting finding as 63.89% of participants reported either one or two (disagree or strongly disagree) to the statement “Prayer is an integral part of my spiritual nature”. Another conflicting result revealed that 52.78% of participants reported either one or two (disagree or strongly disagree) to the statement “I meditate to gain access to my inner spirit”. Through the self discovery statements, results show a trend in the direction of solitary engagement using silence and spirituality for inner reflection but conflicting reports of meditation and prayer further reflect the need for qualitative analyses.

Each statement regarding eco awareness revealed a mean of three or higher. Eco awareness was defined as “an integral connection to nature based on a deep respect and reverence for the environment and a belief that the Earth is sacred” (Delaney, 2005). 77.78% of participants reported between three and five (either neutral, agree, or strongly agree) to the statement “I live in harmony with nature”. 69.44% of participants reported between three and five (either neutral, agree, or strongly agree) to the statement “At times, I feel one with the universe”. As these responses revealed how closely participants connected with nature, the research also found that 97.22% of participants reported between three and five (either neutral, agree, or strongly agree) to the statement “The earth is scared”. While 88.89% of participants reported between three and five (either neutral, agree, or strongly agree) to the statement of “I see the sacredness in everyday life”. Eco awareness is evident to hold a strong association with spiritual involvement and self discovery as participants reported higher than average to all statements referencing properties of nature.



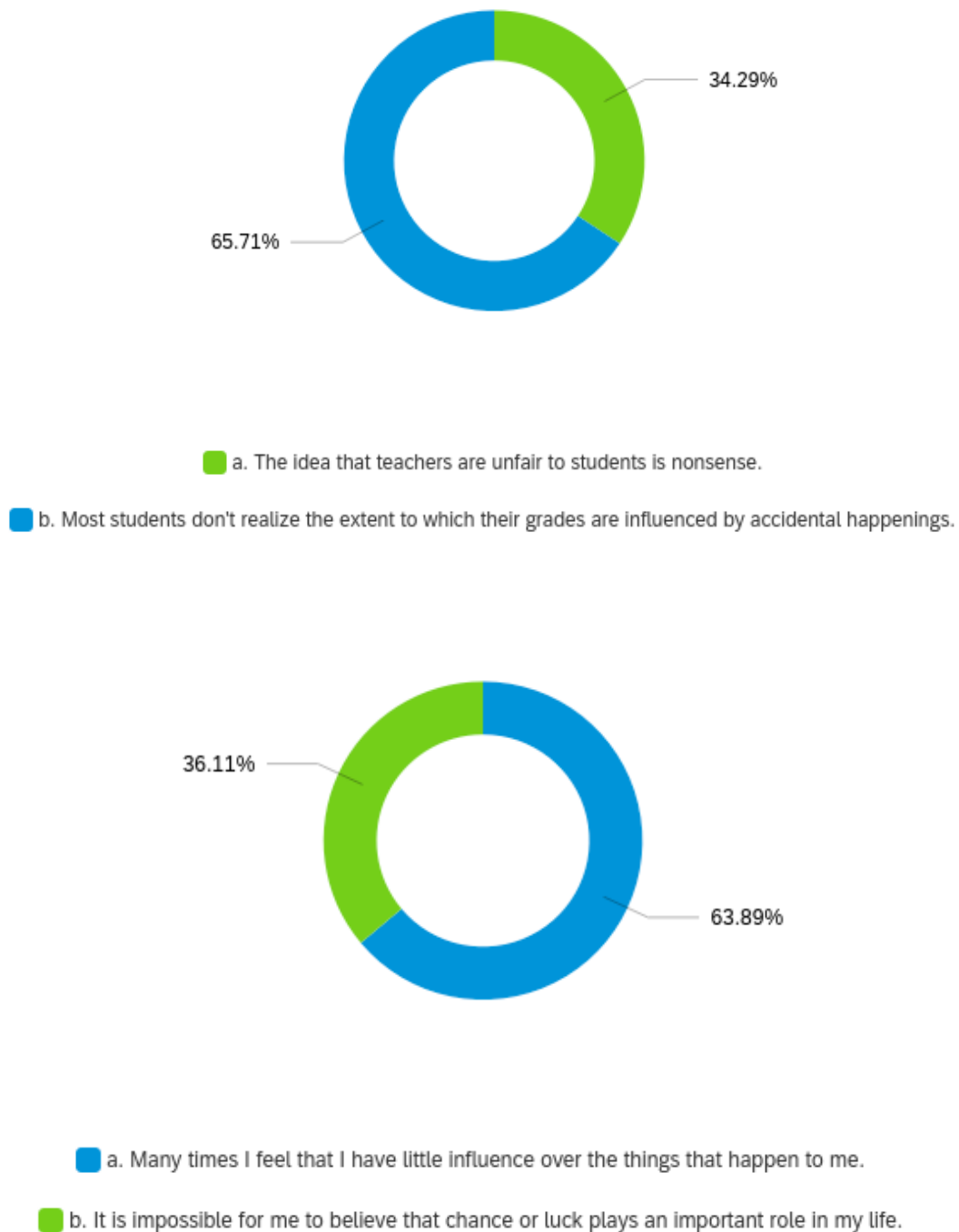


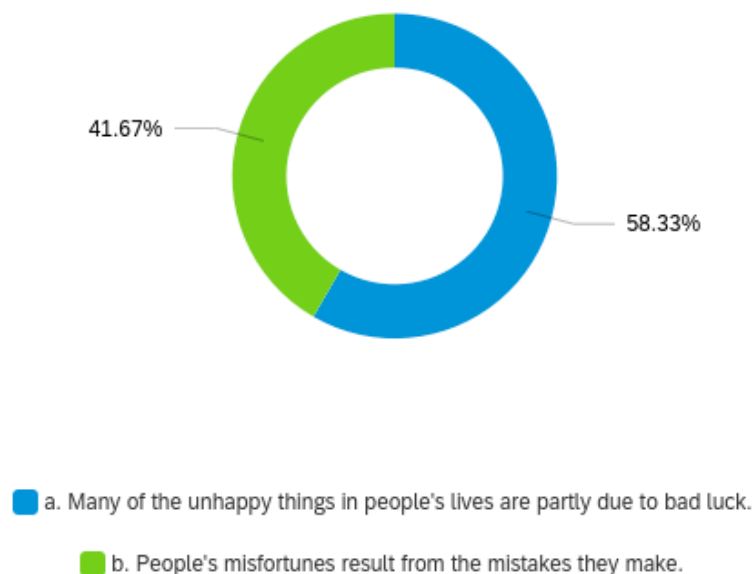
Figure 2. Rotter's Locus of Control Mean Percentages

Figure 2, along with other figures to follow, provide pie chart displays of the results indicating the theme of external vs internal reinforcement determined by Rotter's LOC scale. Based on the scoring key attached to Rotter's LOC scale, this study found that 33.33% of participants identified with an internal locus of control while 66.67% of participants identified with an external locus of control. This finding supports the hypothesis that predicted more individuals would

identify with an external locus of control. The following figures outline this 60-70% external and 30-40% internal locus of control relationship through participants' specific responses to the statements they were asked to choose from.

The first set of statements in figure two suggest that 65.71% of participants agree with statement b) "Most students don't realize the extent to which their grades are influenced by accidental happenings" compared to other 34.29% of participants who agree with statement a) "The idea that teachers are unfair to students is nonsense". The responses to this statement highlight the relationship previously mentioned between internal and external locus of control. Around two thirds of participants agreed with the statement recognizing external reinforcers while the other third of participants agree with the statement recognizing internal reinforcers. Statement B addresses external reinforcement by placing the extent to which a students grades are influenced in the terms of "accidental happenings" (which could also be considered fate, chance, powerful others etc). Further qualitative analyses would determine how someone defines an "accidental happening" but regardless, this outlines the externality of this statement. Statement A addresses internal reinforcement, suggesting the idea that teachers are unfair to students is nonsense, placing the extent to which a student does well solely on the student, this outlines the internality of this statement. The trend shows more individuals chose to agree with the statement encompassing an external locus of control.

The second set of statements in figure two suggest that 63.89% of participants agree with statement a) "Many times I feel that I have little influence over the things that happen to me" compared to other 36.11% of participants who agree with statement b)"It is impossible for me to believe that chance or luck plays an important role in my life". Again, these responses emphasized the same trend as seen in the previous statement where around two thirds of participants agree with the statement regarding the belief in external reinforcement, feeling little personal influence over things that happen to oneself. The other third of participants agree with the statement emphasizing internal reinforcement regarding the belief that chance or luck would not play an important role in life. These statements both highlight the trends found between reports of internal and external locus of control although qualitative analyses would provide more contextual conclusions.



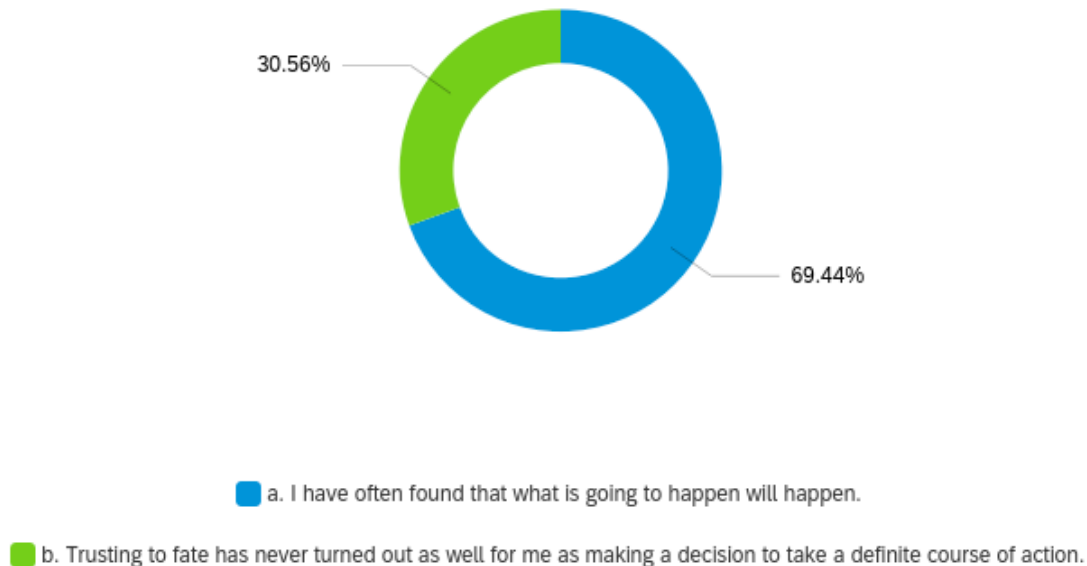


Figure 3. Rotter's Locus of Control Mean Percentages

Figure 3. continues to outline the connection between internal and external locus of control found among the participants. The first set of statements suggest that 58.33% of participants agree with statement a) "Many of the unhappy things in people's lives are partly due to bad luck" compared to other 41.67% of participants who agree with statement b)"People's misfortunes result from the mistakes they make". More participants agree with statement A which refers to "luck", a construct within external powers and external forces, associated with unhappy things. While less participants agreed with statement B referring to personal and internal attributions associated with misfortunes. There was a clear pattern among responses that show more participants identify with an external locus of control than an internal locus of control.

The second set of statements in figure three also reiterates this connection of externality and internality among reinforcement, causation, and control of events in life. These statements suggest 69.44% of participants agree with statement a) "I have often found that what is going to happen will happen" compared to other 30.56% of participants who agree with statement b)"Trusting to fate has never turned out as well for me as making a decision to take a definite course of action". More participants agree with statement A which proposes relying on the external (fate, chance, powerful others) to see what will happen in life. While less participants agreed with statement B which proposes the opposite, suggesting to not trust fate or chance as a definite course of action as it doesn't often go well. These are just a few of the statements pulled from the research to outline the participant's responses trending toward statements involving external powers and forces such as fate, chance, luck, etc.

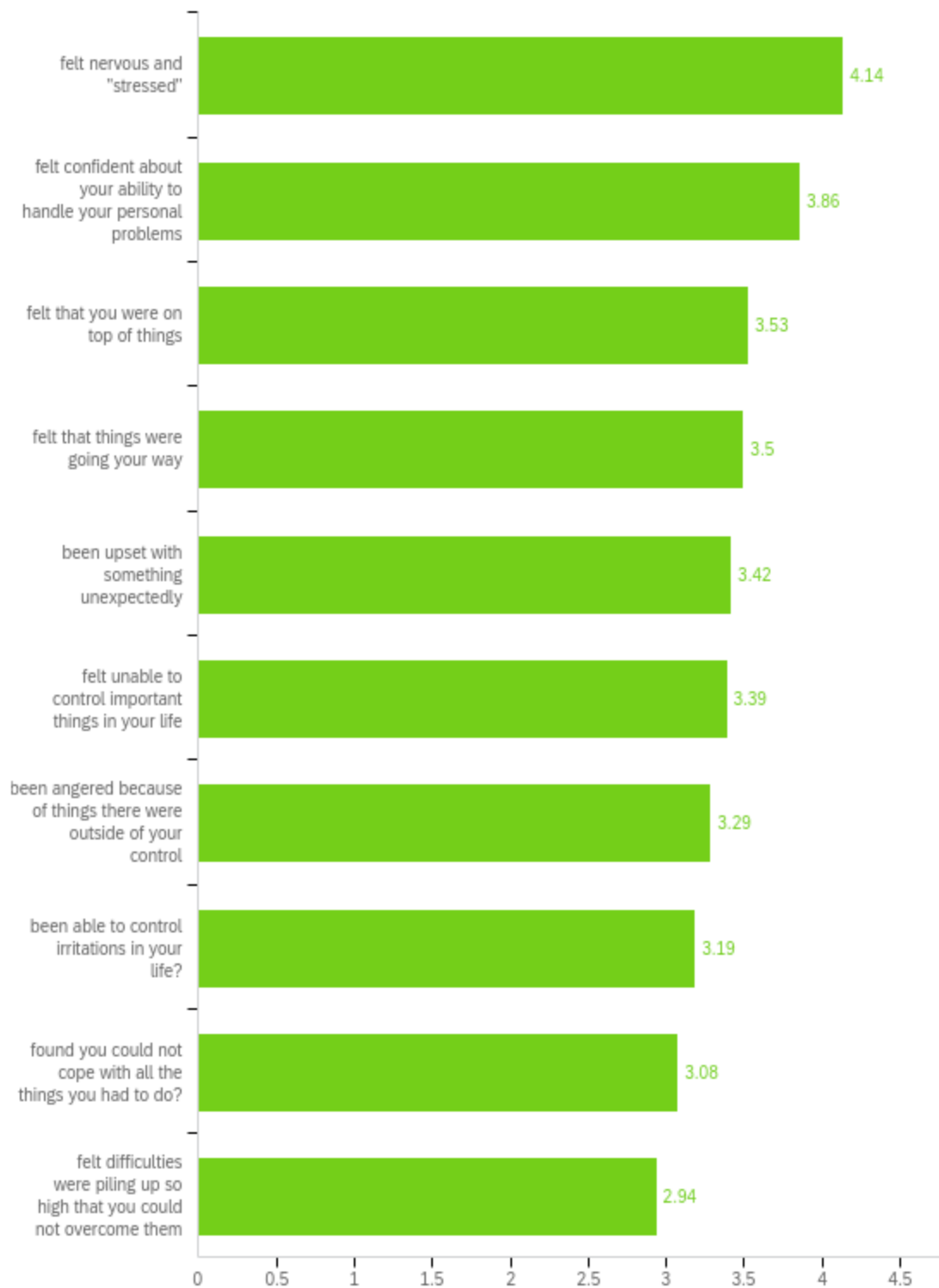


Figure 6. Perceived Stress Scale Mean Scores

Figure 6. illustrates the averages reported from each item on the Perceived Stress Scale. Perception of stress was assessed based on a five point Likert scale ranging zero to four. Individuals were considered to report “higher than average levels” if the mean response was above two; this data is highlighted in green. Individuals were considered to report “lower than average levels” if the mean response was below two; all mean responses were over two. From an overall assessment of the participants’ responses it was clear that stress and perception of stress play an important role in a college student’s life and may be associated with locus of control. The findings suggest that all 36 participants reported between two and four (sometimes, fairly often or very often) to the question “In the last month how often have you felt nervous and stressed?”. This finding supports the hypothesis that participants may perceive stress at higher than average levels. 83.33% of participants also reported between two and four (sometimes, fairly often, or very often) to the question “In the last month how often have you felt unable to control things in your life?”. The response to these statements suggest participants are perceiving stress at higher than average levels. A majority of participants responded that they felt unable to control things in their life which may present perceived stress to be associated with an external locus of control.

Although findings from Rotter’s LOC Scale suggest more individuals to have an external locus of control, there were two conflicting responses on the Perceived Stress Scale in relation to internality which may require further qualitative work to draw conclusions. These findings suggest that 83.33% of participants reported between two and four (sometimes, fairly often, or very often) to the question “In the last month how often have you been able to control irritations in your life?” while a majority 88.89% of participants also reported between two and four (sometimes, fairly often, or very often) to the statement “In the last month how often have you felt you were on top of things?”. The majority response to these questions presents an internal locus of control may also be associated with perceived stress. These findings pose a need for further exploration and qualitative analyses to determine one’s specific locus of control correlated with their specific responses to perceived stress.

## 9. Discussion

The present study poses a unique contribution to the literature involving locus of control, spirituality, and perception of stress by examining the roles of personality constructs in younger populations, spiritual involvement practices, and perceived stress reports. The results of this study support a general understanding of the variables being measured; locus of control, spirituality, and perception of stress. Further quantitative analyses are needed to address specific associations among the variables as well as qualitative interviews with the participants which may yield more specific thematics surrounding these relationships. The first part of the hypothesis predicted that more individuals would identify with an external locus of control which was supported by findings using Rotter’s LOC Scale. When participants were asked to choose a statement which they agree with the most, results showed there was a trend among responses in external powers and forces such as fate, chance, luck etc. Based on Rotter’s LOC scoring key, one third of individuals identified with an internal locus of control while two thirds of individuals identified with an external locus of control. The second part of the hypothesis predicted that individuals would report higher levels of spirituality which was supported by findings of the Spirituality Scale (SS). When participants were asked to choose a statement which they agree with most, the SS revealed high levels of agreeance with spirituality involving a higher power or universal intelligence. Results also suggested that individuals are more involved with their spirituality through intrapersonal practices such as solitary engagement using silence and nature. Findings from this measure showed increased levels of self awareness in spirituality as it relates to connection with earth and others. The final premise of the hypothesis predicted that individuals would perceive stress at higher levels which was supported by findings of the Perceived Stress Scale (PSS). When participants were asked to answer questions about how they’ve felt in the last month, the PSS revealed that participants were fairly often or very often perceiving stress at higher levels than average. Whether these perceptions of stress were directly related to locus of control and spirituality can be further examined through qualitative research including interviews.

Among the analyses of each hypothesis, the present study recommends further qualitative research to reach more concrete evidence for thematics around perception of stress in relation to locus of control and spirituality. These results help researchers gain a foundational understanding of how important the role of spirituality may be in creating mindfulness-based approaches beneficial to reducing stress in the college environment. These results could also be further applicable to research involving the spiritual health locus of control and inflammatory markers for stress such as cortisol. In approaching health interventions, it may be more effective to target specific physiological markers of the body where stress is affecting one’s health. Cortisol and other inflammatory markers could provide physiological evidence to patterns of stress in relation with spirituality and locus of control.

## 10. Limitations

There are limitations within the present study. Along with previous studies, this research was conducted using self-reported data from participants. There is a possibility that participants may have given socially desirable responses to the measures being tested. Additionally, there is also a possibility that participants did not fully understand the questions or had trouble with choosing a given response. Surveying participants was effective but holds some limitations in its validity and reliability in self-reported data. The location of this research was conducted in a liberal arts university setting associated with a predominantly white demographic. The location of this research in a liberal arts university sets its own limitations. The current sample was recruited through the psychology and health and wellness promotion departments, students who demonstrate a known interest in health and wellbeing. College students from varying academic backgrounds may have responded differently considering the field of knowledge being explored. The current sample consisted of twenty-seven females out of thirty-six participants total, meaning that three-fourths of the participants surveyed identified as female. Out of thirty-six participants, thirty-two individuals also identified their race/ethnic origin as white, meaning almost ninety percent of participants surveyed identified as white. This may not be deemed a representative sample for this study as results and analyses may suggest low generalizability due to a small sample size and mostly white, female demographic. The present study also chose to utilize the most general scales of measurement for each of the three variables in the attempt to better understand the overarching thematics. This study worked to gain a foundation for future research but acknowledges the use of general measures as restrictive to results. The present study recognizes that more specified measures of these scales exist yet the aim of this study is to reach a general understanding for future research. The use of other scales such as a spiritual health locus of control, multidimensional health locus of control, academic locus of control, etc., are all examples of specified scales that can be used in future studies to outline the interconnectivity of these thematics. The present study aimed for a general conceptual framework highlighting these variables; the results were limited in its use of statistical methods and further proposes the need for more advanced quantitative analysis. Bivariate or multivariate data analyses may be used in future studies to determine the specific associations between each variable. The present study also proposes the need for qualitative research to address specific dimensions of each variable measured. Finally, the current study is a cross-sectional analysis which suggests some correlative relationships but no conclusions can be drawn regarding causality.

## 11. Acknowledgements

The author would like to express great appreciation and gratitude toward fellow faculty advisor and primary investigator, Professor Aubrey Mast. The primary author and primary investigator of this study want to express appreciation to fellow researchers that have inspired the exploration of this topic and continue to explore constructs of personality in relation to health behaviors and spiritual involvement.

## 12. References

- Cohen, S., Kamarck, T., and Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24, 386-396.
- Conley, Colleen S., et al. (2018). Navigating the College Years: Developmental Trajectories and Gender Differences in Psychological Functioning, Cognitive-Affective Strategies, and Social Well-Being. *Emerging Adulthood*, 8(2), 103-117., doi:10.1177/2167696818791603.
- Debnam, K. J., Holt, C. L., Clark, E. M., Roth, D. L., Foushee, H. R., Crowther, M., Fouad, M., & Southward, P. L. (2012). Spiritual health locus of control and health behaviors in African Americans. *American journal of health behavior*, 36(3), 360-372. <https://doi.org/10.5993/AJHB.36.3.7>
- Delaney, C. (2003). The Spirituality Scale: Development, refinement and psychometric testing of an instrument to assess the human spiritual dimension. *Doctoral Dissertations*.

- Delaney C. (2005). The Spirituality Scale: development and psychometric testing of a holistic instrument to assess the human spiritual dimension. *Journal of holistic nursing : official journal of the American Holistic Nurses' Association*, 23(2), 145–171. <https://doi.org/10.1177/0898010105276180>
- Egan, K. G., & Moreno, M. A. (2011). Prevalence of stress references on college freshmen Facebook profiles. *Computers, informatics, nursing: CIN*, 29(10), 586–592. <https://doi.org/10.1097/NCN.0b013e3182160663>
- Fiori, Katherine & Brown, Edna & Cortina, Kai & Antonucci, Toni. (2006). Locus of control as a mediator of the relationship between religiosity and life satisfaction: Age, race, and gender differences. *Mental Health, Religion & Culture*. 9. 239-263. 10.1080/13694670600615482.
- Gianakos I. (2002). Predictors of coping with work stress: the influences of sex, gender role, social desirability, and locus of control. *Sex Roles*. 46, 149–158
- Gore, J.S., Griffin, D.P. & McNierney, D. (2016). Does Internal or External Locus of Control Have a Stronger Link to Mental and Physical Health?. *Psychol Stud* 61, 181–196. <https://doi.org/10.1007/s12646-016-0361-y>
- Holt CL, Clark EM, Kreuter MW, & Rubio DM. (2003) Spiritual health locus of control and breast cancer beliefs among urban African American women. *Health Psychol*.22(3), 294-9. doi: 10.1037/0278-6133.22.3.294. PMID: 12790257.
- Iles-Caven, Y., Gregory, S., Ellis, G., Golding, J., & Nowicki, S. (2020). The Relationship Between Locus of Control and Religious Behavior and Beliefs in a Large Population of Parents: An Observational Study. *Frontiers in psychology*, 11, 1462. <https://doi.org/10.3389/fpsyg.2020.01462>
- Jain M, Singh S. (2015). Locus of control and its relationship with mental health and adjustment among adolescent females. *Journal of Mental Health and Human Behavior*. 10.4103/0971-8990.164803
- Miller W, Thoresen C. (2003) Spirituality, religion, and health. An emerging research field. *Am Psychol*. Jan;58(1):24-35. doi: 10.1037/0003-066x.58.1.24. PMID: 12674816.
- Naik, Abdul. (2015). A Study on Locus of Control among College Students of Gulbarga City. *The International Journal of Indian Psychology*. 2. 10.25215/0204.027.
- Reknes, I., Visockaite, G., Liefoghe, A., Lovakov, A., & Einarsen, S. V. (2019). Locus of Control Moderates the Relationship Between Exposure to Bullying Behaviors and Psychological Strain. *Frontiers in psychology*, 10, 1323. <https://doi.org/10.3389/fpsyg.2019.01323>
- Rotter, J. B. (1954). Social learning and clinical psychology. Prentice-Hall, Inc. <https://doi.org/10.1037/10788-000>
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, 80(1), 1–28. <https://doi.org/10.1037/h0092976>
- Song, C., Kenis, G., van Gastel, A., Bosmans, E., Lin, A., de Jong, R., Neels, et.al.,. (1999). Influence of psychological stress on immune-inflammatory variables in normal humans. Part II. Altered serum concentrations of natural anti-inflammatory agents and soluble membrane antigens of monocytes and T lymphocytes. *Psychiatry research*, 85(3), 293–303. [https://doi.org/10.1016/s0165-1781\(99\)00012-8](https://doi.org/10.1016/s0165-1781(99)00012-8)
- Weissman, Michael S., (1972). Coping with stress and locus of control. Masters Theses 1911 - February 2014. 2070