Adolescent Perceptions on the Importance of Contributing to Society: a longitudinal analysis
derived from the 4-H Study of Positive Youth Development

by

Margaret A. Baer

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Abstract

The purpose of this study was to identify factors and ideals within adolescents' lives that held a significant relationship with their perceptions of contributing to society. The study utilized longitudinal data collected through surveys as part of the 4-H Study on Positive Youth Development, conducted by the Institute for Applied Research in Youth Development at Tufts University. Three specific participant groups were used for this multinomial logistic regression study. Participants from waves one, four, and eight were selected for the models due to the cognitive development differences of adolescents. The results of the study indicated there were five statistically significant predictor variables that made up adolescents' perceptions of the importance of contributing to society, as defined by the dependent variable, "It is important to contribute to society." The five predictor variables identified the need for adolescent interaction with adults, the importance of understanding adolescent cognitive development, and the necessity of teaching adolescents social skills and emotional competence. The results indicated for an adolescent to understand the importance of contributing to society, society must first care for and educate the child. Keywords: Data Science, Dr. Michael McCarthy, social change, education reform, youth paradigm.

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Chapter 1 - Introduction

Introduction

Society is the specific interpretation of what it is to be human through a shared ideal by a specific community. As such, society is a moral reality and can be viewed as spiritual in nature (van de Walle, 2008). It "is above all a composition of ideas, beliefs, and sentiments of all sorts which realize themselves through individuals" (Durkheim, [1924a] 1953b:54). Through this moral composition, the importance of society can be viewed as "an inescapable network of mutuality, tied in a single garment of destiny. Whatever affects one directly, affects all indirectly" (King, 1963).

While the former perspective of society was built by intellectuals of the past, the current perspective from the general population does not present a healthy outlook on the topic. A simplified illustration of this point can be tested through Google.com. The Google.com search bar contains a built-in autocomplete function. This function yields the most recent trending results of searches conducted through the webpage (Google Search Help, 2019). As of February 21, 2019, typing "why is society" in the search bar provides the following predictors based on the trending searches of others:

1. "why is society so shallow"

2. "why is society so depressed"

3. "why is society broken"

4. "why is society so rude"

5. "why is society obsessed with serial killers"

Here we see the emergence of anomie, or normlessness (TenHouten, 2016), which is becoming more prevalent in today's world. This state of society is characterized by the lack of

trust and erosion of moral standards combined with the absence of legitimacy and effectiveness of leadership (Teymoori, Bastian, & Jetten, 2016). As people are left without moral guidance and lack the desire to pursue goals which contribute to themselves and society, the continued erosion of the desire to improve will eventually lead to the failure of society as a whole.

This disturbing trend can be stopped and reversed through positive contributions to society. Contributing to society is not limited to individuals labeled as "adults", those aged 18-years and older. It takes all ages and generations working together to contribute to the greater good of society. Before one can begin making an effort to improve the welfare of the whole, the individual must understand the importance of contributing. This topic cannot be discussed exclusively, rather it includes the contribution of multiple factors which shape an individual's will to enhance the society in which the individual resides and, hopefully, thrives.

The factors which shape an adolescent's perceptions of the importance of contributing to society need to be instilled at an early age so that the individual can develop into a productive adult. This will create not only a more socially responsible individual, but also a better world for all inhabitants. Therefore, the predictor factors that affect an adolescent's perceptions of the importance of contributing to society must be determined so they may be implanted and cultivated.

The youth of the world face an unfortunate and demoralizing paradigm; either youth are considered the "leaders of tomorrow" or they are viewed as the problem of today (Roger, 2007). Both views obscure the fact that the youth can begin making contributions to society at an early age. It is through these initial contributions that youth will build an ongoing process to understand the importance of contributing to society while becoming holistically developed individuals (Roger, 2007). The fact of the matter is that is it the responsibility of older

generations to foster the importance of societal contributions within adolescent culture (Benson, 2003).

Those who influence youth, specifically adults, must understand the factors that foster the importance of societal contribution. Analysis of 4-H Study of Positive Youth Development data (Institute for Applied Research in Youth Development, 2019) defined the factors, or variables, which affect the perceptions of societal contribution within youth. This data set was specifically selected for the research for three key reasons (Lerner et al., 2005): 1) the eight-year (2002 - 2010), longitudinal study allows for comparison and understanding of the development or disengagement with the idea of contribution to society; 2) the study was conducted through the largest youth development organization within the United States, 4-H; 3) the underlying structure of the study is based upon the Positive Youth Development framework which has been deployed and tested through various types and sizes of youth development organizations.

Problem Statement

The decline in youth attitudinal trends regarding interaction and cooperation has been observed in the United States from the 1940s to present day (Wynne, 1976). This observed decline can be detrimental to the overall health of the United States through the creation of a social life polluted with fear, cellular modes of existence, and irresponsible and incompetent leaders who govern by short-sighted egoism. Unless combative measures are applied, declining attitudinal trends will continue to deplete sensible social responsibility beliefs (Wynne, 1976) and civil society will be irreversibly compromised, if not completely eroded (Lerner, 2000).

Purpose of the Study

The purpose of this study was to identify factors and ideals within adolescents' lives which held a significant relationship with their perceptions of contributing to society. The study utilized data collected through surveys as part of the 4-H Study on Positive Youth Development conducted by the Institute for Applied Research in Youth Development at Tufts University. This research was supported in part by a grant to Dr. Richard M. Lerner from the National 4-H Council.

 Conceptual Framework

This study attempted to determine the factors that shape adolescents' awareness and thoughts regarding the necessity for their contributions to society. Assumptions were generated through observations concerning the increase in the lackadaisical nature of adolescents' disregard of the necessity to strive toward achievement, pursue involvement, and the attainment of leadership opportunities within a variety of youth affiliations. I based these assumptions on my experience as a paraprofessional educator[1], conversations with educators who taught in various institutions and states, covering kindergarten through college-aged individuals, and Edward Wynne's (1974, 1976) research in youth disintegration.

The variables utilized within this study were gathered from the surveys created for the 4-H Study on Positive Youth Development. Survey questions created for this study were based on the Developmental Systems Theory (DST) through the following academic resources (Lerner, 2010): Self-Perception Profile for Children by S. Harter (2012b); Self-Perception Profile for Adolescents by S. Harter (2012a); Center for Epidemiological Studies-Depression (CES-D) by

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[1] The researcher was a paraprofessional educator from 2009 to 2012. Her students were primarily "at-risk" teenagers in the tenth, eleventh, and twelfth grades.

L. S. Radloff (1977); Teen Assessment Project (TAP) Survey Question Bank by S. A. Small and K. B. Rodgers (1995); Eisenberg Sympathy Scale (ESS) by N. Eisenberg, R. A. Fabes, B. C. Murphy, M. Karbon, M. Smith, and P. Maszk (1996); Selection, Optimization, and Compensation (SOC) model by P. B. Baltes and M. M.Baltes (1990); Parental Monitoring Scale (PMS) by S. A. Small and D. Kerns (1993); and Social Responsibility Scale (SRS) by E. Greenberger and L. Bond (1984). The survey items and questions generated from the aforementioned sources (independent variables) were studied to determine which variables held a relationship with the survey item, "It is important to me to contribute to my community and society." (dependent variable).

Research Question

What are the predictor variables that help us understand adolescents' perceptions of the importance of contributing to society?

Significance of the Study

The findings of this study will identify the predictor variables that factor into adolescents' perceptions concerning the importance of contributing to society. Contributions to society are vital to the world's current and future populations. Society's well-being will affect the policies created for populations, including, but not limited to human rights, education reform, and environmental sustainability. At the national level, from kindergarten onward, public and private educational institutions can develop lesson plans which create the building blocks of societal contribution throughout the educational process. Additional youth organizations, separate from education, can continue to build positive programs shaped around youth interaction within their local communities. Parents will understand the need to impart the importance of contributing to society to their children. The parents can then lead by example through the application of societal

contribution variables to their daily lives. For the researcher, the study will help uncover the essential predictor variables which factor into adolescents' perceptions concerning the importance of contributing to society.

Definition of Terms

For this study terms are defined as follows:

1. Society – the specific interpretation of what it is to be human through a shared ideal by a specific community (van de Walle, 2008).

2. Positive Youth Development (PYD) – development that occurs from an intentional process that promotes positive outcomes for young people by providing opportunities, relationships, and the support to promote outcomes (Lerner et al., 2006).

3. The Five Cs Model of Positive Youth Development– Competence, Confidence, Character, Connection, and Caring of which form PYD (Gestsdottir, Geldhof, Lerner, & Lerner, 2017).

   3.1. Competence – a young person's ability to competently navigate the obstacles and possible goals presented by his or her unique environment (Gestsdottir et al., 2017).

   3.2. Confidence – the self-efficacy and well-being that accompany knowing one can competently navigate the context and can intentionally impact one's own developmental pathway (Gestsdottir et al., 2017).

   3.3. Character – the degree a young person behaves according to internalized moral standards which reflects an intersection of prior experiences, lessons learned, and the degree previously learned lessons match the social expectations of a young person's current environment (Gestsdottir et al., 2017).

3.4. Connection – index of the diversity and strength of the relationships between an individual and the interpersonal and institutional features of his or her context (Gestsdottir et al., 2017).

3.5. Caring – how well an individual displays a developmentally and contextually appropriate level of concern for the well-being of others (Gestsdottir et al., 2017).

4. Developmental Systems Theory – how a person carries out transactions with their environment and through that transaction how their biological, psychological, behavioral, and environmental elements change or remain constant (Ford & Lerner, 1992).

Chapter 2 – Literature Review

Introduction

A tremendous amount of research has been conducted concerning youth development; specifically, attributes that help and harm the emotional aspects and characteristic development of youth from childhood through adolescence. This literature review serves as a limited overview of the analyses conducted on the broad variations of past studies of youth development: social organization inclusion (specifically through 4-H), the effects of bullying, technology-based youth programs, and sport-based youth programs. This chapter is organized topically as follows historical support, Positive Youth Development (PYD), results of the 4-H Study of PYD, further methods of youth development research, and factors of sample size.

Literature Review

Historical perspective. Historically, one area where the measures of social responsibility have been collected and evaluated was across various college and community college campuses. This gathering of information was conducted to understand the attitudes of incoming first-year students. In his assessment of a selection of these surveys, conducted from the 1940s to the 1970s, Edward Wynne (1976) identified the concerning results of measured attitudinal expression. Surveys conducted at Dartmouth and the University of Michigan found a decline in 1) the belief that "human nature is fundamentally more cooperative" (66% and 70% to 51% and 55%, respectively) and 2) the identification of how many private and public institutions (such as family, church, school, etc.) to which the students felt related (296 and 259 to 269 and 206, respectively). Other studies identified an increase in student desire for impulse expression from 41% to 54%, and a decrease in student belief it was "very important" to be liked from 48% to 26%.

Wynne (1976) also presented results from a 20-year test of freshman classes at Haverford College which indicated a large growth of withdrawal attitudes paired with a simultaneous increase in egoistic attitudes. Questions posed to the freshman included 1) if students believed they could work great benefit to the world if given a chance (increase from 40% to 66%) and 2) if students believed they knew more than experts (increase from 20% to 38%). It was unknown how students, who were withdrawn and introverted, would carry out their goals without human interaction combined with the lack of desire to acquire knowledge from professionals.

The aforementioned studies established the identification of a shift in attitudinal expression and youth alienation (Wynne, 1974). These behavioral shifts were, and still are, concerning for society's development concerning production of goods and services, maintaining infrastructure through taxation, protection through military service, providing a decent level of public order, and sustaining the commonwealth through construction of community and political activities. Given the decline in attitudinal expression, the proposed results of the study indicated that society would see the failure of adults to adequately provide for the physical and emotional needs of the young and old. This failure would lead to the creation of inadequate levels of defense, public disorder due to the fear generated from polluted social interaction, the creation of such an unpleasant society that individuals adopt individualistic modes of existence, and the abandonment of political activities to irresponsible and incompetent leaders, and followers, who govern based on short-sighted egoism.

Before he discovered the results of the college selection surveys, Wynne (1974) strived to address attitudes within children. The aforementioned observations within society could be altered through Wynne's (1974) recommended behavioral model for children. The model was based on a child's ability to learn affective skills through reward and punishment. His model

proposed that for children to become effective adults, they must acquire the skills of cognition, personal emotion control, and empathy (in lay terms, the affective skills were also referred to as "common sense" and "judgment"). The suggested model comprised of adult role models who appropriately distributed the rewards and punishments, the placement of children within an environment in which specific skills must be developed through the reward/punishment system, rewards when learning was accomplished, and punishment when a child failed to learn. Various types of rewards were proposed to gratify children who learned: praise, the creation of a valued product, tokens, and the like. Multiple types of punishments were also proposed: monetary loss, status decline, criticism, lowered self-esteem, and other unfavorable outcomes (Wynne, 1974). It was the hope that children would progress, with only minor and repairable regressions, through the model to become socialized adults.

Yet the perspectives presented by Wynne (1974) lacked a key point in which E. Z. Friedenberg (1974) brought to attention. Youth do not become members of society solely through interaction with institutions controlled by adults. Rather, youth are a distinct societal category with their own ideals and rights of passage. Friedenberg countered Wynne's view on integrating youth into society upon adulthood as he stated that society does not continue to exist; society develops along with each new generation (Friedenberg, 1974).

Positive Youth Development. To prevent the demise of society, attention must be paid to instilling the values of community and responsibility within youth as well as developing youth to uphold their morality; these values, along with many others, are the core components of the Positive Youth Development (Waid & Uhrich, 2019). The Developmental Systems Theory (DST) is the guiding theory toward positive youth development (Lerner, Almerigi, Theokas, & Lerner, 2005). The theory was influenced by the Ecological Systems Theory (EST) (Vimont,

2012), which states that what matters for behavior and development is the environment as it is perceived rather than as it may exist in "objective" reality (Bronfenbrenner, 1979). Building upon EST, DST includes the utilization of location in order to study the relationship between developmental outcomes and the contexts in which development unfolds (Griffiths & Hochman, 2015). The theory produced five interrelated questions which were manifested into the larger question, "What attributes of which individuals in relation to what contextual/ecological condition at what points in time promote what instances of positive human development?" (Jeličić, Theokas, Phelps, & Lerner, 2007). DST is a useful model in contemporary studies of adolescent development (Robinson, Esters, Dotterer, McKee, & Tucker, 2012).

Positive Youth Development is a "strength-based" conception of development that is defined as the "the engagement in pro-social behaviors and avoidance of health compromising behaviors and future jeopardizing behaviors" (Roth, Brooks-Gunn, Murray, & Foster, 1998, p. 426). When based on PYD, youth development programs are comprised of three major characteristics: goals, activities, and atmosphere. According to Roth and Brooks-Gunn (2003) the goal of these programs is to "promote positive development, even when seeking to prevent problem behaviors" (p.97). Positive development and the prevention of negative behaviors are accomplished through activities which provide youth with the chance to learn and think in different ways. The atmosphere in which the goals can be reached through activities must be established by adults' belief and ability to convey hope to youth through developmental resources, as opposed to problem management (Roth & Brooks-Gunn, 2003).

The PYD model has been explored to determine if the model had satisfactory psychometric properties for the longitudinal measurement invariance in the 4-H Study of PYD (Bowers, Li, Kiely, Brittian, Lerner, & Lerner, 2010). Previous research concluded that, during

the second decade of life, it was best practice to reduce the prevalence of measures of risk and problematic behaviors; these behaviors are considered the "deficit perspective". In contrast to this belief, the PYD perspective emerged to view the strengths of youth and the positive outcomes and qualities that society believes they should develop.

The basis for the PYD construct is the Five Cs model: competence, confidence, connection, character, and caring. Together, the Five Cs are an integrated list of mutually reinforcing positive indicators which constitute a thriving life trajectory (Lerner, 2004). A sixth C, contribution, has been proposed as an addition to the model as it is created through the manifestation of the Five Cs. Through a study conducted by Worker, Iaccopucci, Bird, and Horowitz (2018), *contribution* consists of helping others, participating in activities such as government, and, most important to this study, contributing to society as a whole. At the time of the article publication (2010), the Five Cs Model of PYD was the most empirically supported framework due to its construction based on good psychometric properties. PYD is framed by developmental systems theories and the plasticity of development within these theories (Bowers et al., 2010). The model emphasizes the strengths of adolescents and states that positive development occurs when these strengths are aligned in a systematic manner with positive, growth promoting resources.

The second key component utilized within the study survey, as well as this analysis, was the SOC model (Lerner et al., 2005). The SOC model defines the key strengths during one's life as the ability to select (S), optimize (O), and compensate (C) (Freund & Baltes, 2000). On a general level, the basis of the SOC theory states that selection, optimization, and compensation form fundamental processes for an individual to achieve successful development (i.e., the simultaneous maximization of gains and minimization of losses). These processes are considered

universal toward the regulation of development; yet, they will vary phenotypically according to cultural context, the domain in which an individual functions, and the individual's personal characteristics.

4-H Study of Positive Youth Development results. The 4-H Study of Positive Youth Development was a longitudinal study which began in 2002 and was conducted annually for eight years (Lerner et al., 2005; Phelps et al., 2009). Over eight years, the study surveyed more than 7,000 adolescents in 42 states within the United States. Each year of the study was defined as a "wave" with a total of eight waves. The purpose of the 4-H Study of PYD was to understand what propels a young person along a healthy developmental trajectory toward an idealized adulthood exhibited through effective contributions to self, family, community, and civil society (Lerner et al., 2005).

Wave one consisted of 1,700 adolescents in Grade 5 and was conducted in 40 cities or towns located in 13 states (Lerner et al., 2005). Grade 5 was selected as the baseline group as literate indicated low levels of risk among youth at this grade level (Dryfoos, 1990; Perkins & Borden, 2003 as cited in Lerner et al., 2005). Wave one analysis examined the empirical validity of the PYD construct and the Five Cs utilized confirmatory factor analysis (CFA); the maximum likelihood estimation on the covariance matrix was applied to all CFA analyses. The model contained subscales of 19 manifest indicators. The indicators were comprised of one factor for each of the Five Cs and one factor representing the PYD construct (Lerner, 2005). All hypothesized pathways were found to be significant. Therefore, the Five Cs of the PYD model was retained as the structure for the future waves of the survey and future identification efforts of PYD.

Multiple articles have been written regarding the results of the longitudinal study at various points in time (waves) concerning numerous topics affecting youth development. Bullying is one such topic that was analyzed through the 4-H Study of PYD (Ma, Phelps, Lerner, & Lerner, 2009). A young person being bullied is defined as 1) when he or she is repeatedly exposed to negative actions on the part of one or more other youth: physical assaults, cruel teasing, calling bad names, and spreading rumors and 2) when the young person who is bullied is unable to effectively defend himself or herself from being physically and/or emotionally hurt. Grades 5 and 6 (wave one and wave two, respectively) were studied through a longitudinal random effect hierarchical regression analysis to examine bullying interactions.

The results of the 620-adolescent group (9 bully-victims removed due to low representation) yielded that being a bully predicts lower academic competence based on self-reported grades and self-perceived academic competence (Ma et al., 2009). In addition, the results of 620 adolescents showed that being bullied negatively impacted academic competence beyond prior year academic competence and demographic background (including sex and maternal education). A 250-adolescent group subset showed that educational expectations and school engagement interacted in fostering academic competence for bullies and victims. The surprising result of the study was in concern to peer support, generally regarded as a developmental asset, was found instead to be a developmental liability. Additionally, parent support and teacher support were not significant in in the prediction of academic competence (Ma et al., 2009).

Another inquiry conducted through the results of the 4-H Study of PYD was summarized in an article by Schmid, Phelps, Kiely, Napolitano, Boyd, and Lerner (2011). The study sought to determine whether measures of a hopeful future paired with intentional self-regulation, as

indexed through scores derived from a measure associated with the SOC model (Freund & Baltes, 2000), would predict membership in the most favorable instances of developmental trajectories of positive and negative outcomes. Therefore, for children to achieve positive development and contribute to the context that is supporting the self, they must learn to regulate behaviors in ways that draw from context and resources. Additionally, hope and purpose may be a key basis for taking actions to regulate behaviors and pursuits of goals thus becoming 'psychologically appetitive' (Schmid et al., 2011).

The study was specific to Grades 7 through 9 (wave three through five, respectively). Positive outcomes were assessed through PYD and youth contribution measures; negative outcomes were assessed from incidences of risky behaviors and symptoms of depression (Schmid et al., 2011). Sex and maternal education were used as controls for the analysis as predictions of developmental outcomes and the trajectory of group membership. Group membership was analyzed through binomial logistic analysis where '1' represented the "optimal" trajectory group and '0' represented all other trajectory groups. The optimal group for PYD and contribution measures were groups with high values. The optimal group for depressive symptoms was the group with low values. Results indicated that the optimal PYD group contained 68% of all participants and 73% of girl participants. The optimal contribution trajectory contained 26% of all participants and 31% of girl participants. The optimal depressive symptoms trajectory contained 72% of all participants and 67% of girl participants. The analysis showed that females and participants with higher levels of mother's education were positively related to optimal PYD and contribution trajectories. The results from Grades 7 through 9 were relatively flat trajectories; however, the results from Grades 5 through 10 yielded more nuanced patterns of development (Schmid et al., 2011).

Many other applications of the 4-H Study of PYD survey exist. The initial 4-H Study of PYD was conducted to determine if participation in 4-H led to higher educational achievement and motivation to pursue further education (Kinsey, 2013). In addition to validation of this idea, other valuable insights were gained. 4-H members demonstrated higher levels of civic engagement within their communities and the results from wave seven indicated 4-H youth were 3.3 times more likely to contribute to their community than non 4-H participants (Kinsey, 2013).

An analysis of the 4-H Study of PYD (Lerner et al., 2005) conducted by Stephens, Bowers, and Lerner (2017) sought to examine the cross-sectional relations between natural mentoring relationships and disordered eating attitudes and behaviors of males and females from a sample of 975 particpants from Grade 9. In the article, natural mentors are defined as nonparental, supportive adults from the adolescent's existing social network (Bruce & Bridgeland, 2014). Other research has indicated relationships with these natural mentors have specific emotional characteristics which included warmth, acceptance, and closeness (Bowers et al., 2012; DuBois & Silverthorn, 2005a,b; Hurd, Varner, & Rowley, 2013; Hurd & Zimmerman, 2014; Kogan, Brody, & Chen, 2011). In order to determine if a natural mentor was present in the life of the adolescent one variable was selected, "Other than your parents, is there at least one other adult you would feel able to talk to if you were having problems in your life?" (Stephens et al., 2017). The study found natural mentoring relationships were linked to higher levels of PYD in both genders.

Further youth development research. One of the most prominent conceptualizations of PYD, the 5Cs model has often been recognized as a valuable framework for the assessment of PYD in sports. However, it should be noted that, while multiple sports psychologists have written about PYD's potential through sport, the empirical validity of this claim requires further

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research due to the heavy correlation between the 5Cs within the PYD study (Jones, Dunn, Holt, Sullivan, & Boom, 2011). Studies conducted to further explore this concept have provided mixed results; some studies only focused on one or two of the 5Cs (Jones et al., 2011) while others found positive relationships concerning identity work and emotional development (Matinek, Schilling, & Johnson, 2001).

To evaluate, within a sport setting, the hidden dimensionality of PYD as well as the applicability of the 5Cs, Jones, Dunn, Holt, Sullivan, and Bloom, (2011) conducted a study through youth sport camps at a Canadian university. The study consisted of 258 youth (59 males, 199 females; median age = 13.77 years, SD = 1.23; age range of 12- to 16-years-old). To measure PYD within the participants, 30 items (six items for each of the 5C measures) were selected and modified to reflect a sport setting. Respondents were provided a 7-point response scale per question (i.e., 1 = strongly disagree; 7 = strongly agree). The results of the study indicated that in a sporting context, PYD may be best represented by pro-social values paired with confidence and competence, rather than the 5Cs measures (Jones et al., 2011).

Earlier analysis on the effect of sport within adolescence was conducted by Martinek, Schilling, and Johnson, (2001) to address early incidences of troubling behavior within children. Troubling behavior (school suspension, combative behavior, and indifference of students) is common in middle and high school; however, there was a noted increase in these behaviors in elementary aged children, especially in the underserved areas of Greensboro, North Carolina. Project Effort was developed between Guilford County Schools and the University of North Carolina at Greensboro (UNCG) to focus on dismantling the problematic behaviors through a sports club.

The sports club was created based on Don Hellison's (2011) Take Personal and Social Responsibility model (TPSR). The T within TPSR refers to both teaching and taking personal and social responsibility (Hellison, 2011). The model is centered on the idea of empowering at-risk youth to take more control over their lives and engage in self-development, and build social responsibility, regardless of external forces. In the article, social responsibility was defined as, "being sensitive to the rights, feelings, and needs of others." (Martinek et al., 2001).

The article described the impact of a 6-month sport club and mentoring program for 16 elementary school children who live in a low-socioeconomic area of the city called the "Grove" area (Matinek et al., 2001). Student selection was based on high office referral rates and low motivation toward academic work. The program was created based on the beliefs that physical activity would promote ample opportunity for children to interact with others, engage in moral decision making, and to have fun through play as well as providing additional mentoring opportunities for the children to serve as a vehicle for someone to aid in applying goal setting and problem-solving strategies (Martinek et al., 2001).

Three data sources were used: mentor journal sheets, classroom teacher journal cards, and club member exit interviews (Martinek et al., 2001). A participant-goal matrix was created from the data gathered over the duration of the study. The results of the social responsibility section showed that 63% of the members were able to show respect and self-control most or some of the time in the classroom; however, 37% of the members were consistently in trouble with the teacher or principal. With concern to "caring for others", only 50% of club members showed this most of the time. The "caring for others" goal was considered one of the most difficult goals for the club members to reach. Thought behind the difficulty of attainment of the "caring for others" goal was that many of the students lacked the social maturity needed to be concerned about

others paired with the fact that many of the role models shown on television, or in video games, were not very positive. The results of the study state that the data suggested mentoring helps to facilitate the application of responsibility values to the classroom; however, persistence in teaching these values must be continued (Martinek et al., 2001).

Various youth activity groups exist to foster the development of PYD and social responsibility within individuals. One such group was studied by Hamilton and Flanagan (2007). In their article, Hamilton and Flanagan (2007) discussed their qualitative study in which an adult facilitator invited adolescents to collaborate on a youth-produced film to encourage peers to adopt an ethic of social responsibility for one another. The article defines social responsibility as, "the sense of obligation that an individual or group feels to fellow human beings or to society" (Hamilton & Flanagan, 2007, p. 444). Participants within the study consisted of 12 youth, ages 13- to 18-years-old, 11 Caucasians and 1 Hispanic, 3 were female and 9 were male. For the study, the theme of social responsibility was framed by the axiom "Friends don't let friends…" which references the mutual responsibility friends may feel toward one another when engaged in potentially risky circumstances or behaviors (Hamilton & Flanagan, 2007, p. 445). The goal of the study was to reframe youths' concepts about health with regard to alcohol, tobacco, and other drug use (ATOD). Two views were presented in the study: 1) private: everyone has a "right" to experiment with ATOD and 2) public: adolescents intervening in a friend's use of ATOD (Hamilton and Flanagan, 2007).

Framing for this study was twofold. First, through literal framing of shots for the filming and second, through framing of messages and how different groups might interpret them (Hamilton and Flanagan, 2007). The results of the video-creation study are viewed as limited. The 6-week program was potentially too short to accomplish a complete reframing of social

responsibility with concern to ATOD (Hamilton and Flanagan, 2007). However, the results gathered in the short time frame were positive in that the youth participants did reframe their understanding as a community issue, they developed a sense of ownership toward peer intervention, they developed a greater understanding that practical strategies for intervention were needed, and they reframed their personal identities as community members who could assume responsibility for a community issue (Hamilton and Flanagan, 2007).

This social responsibility study was part of a larger study from which the results showed views of health as a private issue of individual choice increase with age, forms of intervention change including the decline of confiding in adults with age, the ability to intervene with friends is positively related to the family values of encouraged compassion as well as the feeling of belonging and group solidarity at school, and intervention is positively related to youths' beliefs that the behavior poses harm. (Hamilton & Flanagan, 2007).

The PYD model can be paired with additional theories to build and assess youth development programs. The City of Miami, Florida developed the Youth Development Project (YDP) to address the needs of the city's troubled young people (Kurtines et al., 2008). The community sought to change the negative experiences generated during an extended period of substantial multicultural growth while building upon the positive experiences. In addition to the PYD model, Miami's YDP built upon developmental intervention science (DIS). DIS specifically utilizes the use of descriptive and explanatory knowledge concerning change within a human system to develop multidisciplinary/life-saving intervention strategies. Through the pairing of PYD and DIS, the city of Miami is destined to see long-term community commitment through short-term outreach design (Kurtines et al., 2008).

Factors of sample size. The aforementioned studies greatly vary in sample size. While multiple articles have been written on the appropriate sample size for various types of research and subjects, no definitive guidelines have been defined (Young & Casey, 2018). Sample sizes which are too small may result in poor chi-square distributions due to model discrepancies. Samples which are too large may significantly depart from the model (Grace 2006, MacCallum, Widaman, Zhang, & Hong, 1996). The issue of sample sizes which are too small or too large result in a Goldilocks situation in which sample sizes must be 'just right' for the significance of a model to be properly evaluated (Dochtermann & Jenkins, 2010).

Generally, greater concern has been placed on analysis conducted on small sample sizes. However, findings by Hennink, Kaiser, and Marconi (2016) found near code saturation ("hearing it all") was accomplished between six to nine interviews. In an additional small sample study, Guest, Bunce, and Johnson (2006) found six interviews identified 73 percent of codes and 12 interviews identified 92 percent of codes within the study. Young and Casey (2018) also examined the validity of projects with small sample sizes through a four-way test study. Their results concluded that large themes within the sample were present from sizes as small as five particpants; however, none of the projects were able to reach 100 percent theme completion.

Conclusion

From the reviewed literature, the information was important for building the foundation of understanding, measuring, and improving youth morals and characteristics through participation in activities such as social organizations and sporting clubs. However, the research on the PYD framework regarding the 5Cs model is not entirely indicative of understanding and shaping attitudes within youth. In addition, the addressed issues which adolescents were facing at

the time may not be significant adolescent issues in the future. Research methods must be

continually updated to assess the changing factors within adolescent culture.

Chapter 3 – Methodology

Research Question

What are the predictors that help us understand adolescents' perceptions of the importance of contributing to society?

Methods

To address the research question, a *quasi-experimental* design was utilized for the study (Trochim, 2006c). As no random sampling was conducted for the initial study, a full experimental design cannot be implemented. The quasi-experimental design tested for a causal relationship between PYD and students' perceptions of the importance of contributing to society. The causal model sought to address the belief about the identity and nature of PYD and its direction of causal influence among the element of contributing to society (Markus & Robey, 1988). It was through this model that an "emergent" perspective was expected; the belief the ideal of society contribution of the students emerged from a dynamic interaction between the students' external circumstances and internal motives and interests (Pfeffer, 1982).

Multinomial logistic regression was performed on Groups 1, 2, and 3. Multinomial logistic regression is similar to logistic regression with the exception that there can be multiple possible outcomes due to a categorical dependent variable (Glenn, 2017a). This method was selected for the analysis because the dependent variable contained five categories: "strongly disagree", "disagree", "not sure", "agree", and "strongly agree". Although the dependent variable could have been consolidated into a dichotomous variable in order to perform the more common approach of logistic regression, the analysis could have suffered due to a loss of information from the consolidation (Institute for Digital Research and Education, 2017). The multinomial logistic regression method utilized maximum likelihood estimation to determine the independent

variables that determined the probability of categorical membership within the dependent variable (Glenn, 2017a).

Given the amount of independent variables within analysis, the forward stepwise method of variable introduction was utilized. The forward stepwise method was applied to introduce the independent variables into the original model which only included the intercept (dependent variable). This method introduced one independent variable per step based on the variable's ability to create the largest statistically significant change in the -2 Log Likelihood. The final model only included the important independent variables (predictor variables). While the forward stepwise method is a good practice for studies with many independent variables, it is limited as the method may select independent variables which have no practical significance (IBM Knowledge Center, 2018b).

Hypotheses

Four hypotheses were tested within the study:

H_0: There is no association between the predictor variables and adolescents' perceptions of the importance of contributing to society.

H_1: There is an association between the predictor variables and adolescents' perceptions of the importance of contributing to society.

H_0: There is no association between the cognitive level of adolescents and their perceptions of the importance of contributing to society.

H_1: There is an association between the cognitive level of adolescents and their perceptions of the importance of contributing to society.

Data Source

Data for this analysis was provided by the Institute for Applied Research in Youth Development (IARYD) (2019). All data utilized in the analysis was numerical. The data was initially collected by Dr. Richard M. Lerner, Director of the IARYD at Tufts University and his team for the 4-H Study of Positive Youth Development (PYD). This longitudinal study began in 2002 and was conducted annually for eight years (Lerner et al., 2005). Over the eight-year study, more than 7,000 adolescents in 42 states within the United States were surveyed. Each year of the study was defined as a "wave" with wave one consisting of participants in Grade 5 and wave eight consisting of participants in Grade 12.

Participants

The participants within the 4-H Study of PYD were fifth through twelfth graders with wave one participants in Grade 5 during the 2002-2003 school year and wave eight participants in Grade 12 during the 2009-2010 school year (Lerner et al., 2005; National 4-H Council, 2013). The 4-H Study of PYD was longitudinal in effort to study the development of the same participants over eight years. Due various factors, such as families moving to different states or participants discontinuing their membership within 4-H, not every participant within wave one was present in the subsequent waves. Participants were primarily recruited through school districts in order to access the largest possible sample in regards to diversity and participation in after-school programs and youth organizations.

Three specific participant groups were used for this study. Participants from waves one, four, and eight were selected for the model due to the cognitive development differences of adolescents (Adler & Turley, 2015). Cognitive development is the growth of a child's ability to think and reason which typically occurs in two stages: ages six to 12 (traditionally second

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through sixth grade) and ages 12 to 18 (traditionally sixth through twelfth grade) (Adler & Turley, 2015). Within the first stage of cognitive development, children think through concrete operations which are physical entities that do not extend to abstract thought (Choudhury, Blakemore, & Charman, 2006). Therefore, children are not able to consider possibilities, compare or debate ideas, or have awareness of the act of thought processes until the second stage of cognitive development (Adler & Turley, 2015). As two separate ways of thinking are present within the participants of 4-H study of PYD, the researcher sought to study them as two individual groups and then compare both groups to the overall result group.

The first group within the study was the comprehensive result group which measured the long-term potential effects of specific variables on adolescents' perceptions of the importance of contributing to society. This group consisted of 82 participants who completed both wave one and wave eight of the 4-H Study of PYD and responded to the variable "It is important to contribute to society." (*w8ytap02*). Data from the first group was used to build the multinomial logistic regression model. The second group represented the first stage of cognitive development. This group consisted of 173 participants who completed both wave one and wave four and responded to the variable "It is important to contribute to society." (*w4ytap02*). The third group represented the second stage of cognitive development. This group consisted of 161 participants who completed both wave four and wave eight and responded to the variable "It is important to contribute to society." (*w8ytap02*).

Sample Characteristics

The demographic characteristics which were examined within the three participant groups included gender, age, and race. These demographic characteristics are not specific to the purpose of the study; however, the characteristics provide insight into the participants of the

initial study. Demographic characteristics of religion and language spoken at home were not

included within this study as they were not collected in wave one.

Both female and male youth were present within Group 1, 2, and 3. Female participation

within all groups was higher than that of males. Group 1 consisted of 57 females (68.7%) and 26

males (31.3%). Group 2 consisted of 105 females (57.4%), 77 males (42.1%), and 1 inconsistent

report (0.5%). Group 3 consisted of 118 females (72.8%), 42 males (25.9%), and 2 inconsistent

reports (1.2%). The genders of participants within the sample are shown in Table 3.1.

Table 3.1

Gender of Participants Within Sample

	Group 1		Group 2		Group 3	
Gender	*n*	Percent	*n*	Percent	*n*	Percent
Female	57	68.7%	105	57.4%	118	72.8%
Male	26	31.3%	77	42.1%	42	25.9%
Inconsistent	0	0.0%	1	0.5%	2	1.2%
Total	83	100.0%	183	100.0%	162	100.0%

The ages of participants within the sample are shown in Table 3.2. Participant ages were

calculated based on the date of birth provided by the participant and are presented in years. In

Group 1, one participant within wave one did not provide their date of birth. In Group 2, three

participants within wave one and one participant within wave four did not provide their date of

birth. In Group 3, three participants within wave four did not provide their date of birth. As age

was not assigned as an independent variable, these null values would not impact the analysis and

the participants were included within the multinomial logistic regression.

Table 3.2

Age of Participants Within Sample

	Group 1		Group 2		Group 3	
	Wave 1	Wave 8	Wave 1	Wave 4	Wave 4	Wave 8
Median	10.92	18.33	10.92	14.17	13.92	18.17
Minimum	10.08	17.33	10.17	13.25	12.00	16.25
Maximum	11.92	19.25	12.25	15.75	15.58	19.25
Range	1.83	1.92	2.08	2.50	3.58	3.00
Missing	1	0	3	1	3	0
Valid	82	83	180	182	159	162

The majority of participants identified themselves as "White, Caucasian, Not Hispanic": 55 participants (66.3%) in Group 1, 111 participants (60.7%) in Group 2, and 116 participants (71.6%) in Group 3. "Hispanic or Latino" had the second largest percentages and "Asian, Asian American, or Pacific Islander" had the third largest representation. Multiple participants did not consistently report their race throughout the duration of the study: 15 participants (18.1%) in Group 1, 38 participants (20.8%) in Group 2, and 22 participants (13.6%) in Group 3. The races of all participants within the sample are shown in Table 3.3.

Table 3.3

Race of Participants Within Sample

| | Group 1 | | Group 2 | | Group 3 | |
Race	*n*	Percent	*n*	Percent	*n*	Percent
American Indian/Native American	2	2.4%	3	1.6%	1	0.6%
Asian, Asian American, or Pacific Islander	4	4.8%	11	6.0%	9	5.6%
Black or African American	1	1.2%	4	2.2%	7	4.3%
Hispanic or Latino	6	7.2%	13	7.1%	7	4.3%
Multiethnic or multiracial	0	0.0%	1	0.5%	0	0.0%
Other	0	0.0%	2	1.1%	0	0.0%
White, Caucasian, Not Hispanic	55	66.3%	111	60.7%	116	71.6%
Inconsistent Response	15	18.1%	38	20.8%	22	13.6%
Total	83	100.0%	183	100.0%	162	100.0%

Measures

Dependent variable. The dependent variable selection occurred before the predictor variables that help us understand students' perceptions of the importance of contributing to society could be identified. The selected variable was "It is important to contribute to society." (*w1ytap02* in wave one, *w4ytap02* in wave four, and *w8ytap02* in wave eight). This variable indicates the participants' responses to the survey item, "It is important to me to contribute to my community and society." This survey item was presented in each wave within the social responsibility portion of the "About Me" section. The survey item, along with the other three items within the social responsibility portion, was selected from the larger work of Small and Rogers (1995) in their Teen Assessment Project (TAP) Survey Question Bank.

To verify the validity of the selected dependent variable, "It is important to contribute to society.", three highlight tables were created to examine 1) if there was a change over time in adolescents' perception of the importance of contributing to society and, if so, 2) in what direction did the change occur? The highlight tables were generated from the full data set provided (Institute for Applied Research in Youth Development, 2019) and compared the differences in "It is important to contribute to society." between participants in waves one and eight (see Figure 3.1), waves one and four (see Figure 3.2), and waves four and eight (see Figure 3.3), with all null values removed.

		Wave One		
Wave Eight	Disagree	Not Sure	Agree	Strongly Agree
Strongly Disagree		1	1	
Disagree		1	4	1
Not Sure		8	5	4
Agree	1	9	22	17
Strongly Agree		4	10	15

Figure 3.1. Importance of contributing to society: Comparison of wave one and wave eight.

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Wave Four	Strongly Disagree	Disagree	Wave One Not Sure	Agree	Strongly Agree
Strongly Disagree		1	5	1	5
Disagree	2	2	9	5	8
Not Sure	2	6	13	31	26
Agree	2	2	23	43	37
Strongly Agree		1	3	15	20

Figure 3.2. Importance of contributing to society: Comparison of wave one and wave four.

Wave Eight	Strongly Disagree	Disagree	Wave Four Not Sure	Agree	Strongly Agree
Strongly Disagree			3	1	1
Disagree	1	1	2	4	
Not Sure	3	3	11	12	1
Agree	2	7	26	49	16
Strongly Agree	1	4	8	29	22

Figure 3.3. Importance of contributing to society: Comparison of wave four and wave eight.

The highlight tables indicated two important findings. First, many participants maintained their perception on the importance from the earlier wave to the later wave. Second, the changed perceptions of participants generally shifted in a positive direction.

Independent variables. The independent variables are those which make up adolescents' perceptions of the importance of contributing to society. The insights gained from the literature review were used to select the independent variables. These insights resulted in the selection of eight independent variables. The list of the independent variables is shown in Table 3.4.

Table 3.4

Independent Variables

Depression Scale

Parental Monitoring Scale

My friends care about me.

My teachers really care about me.

Selection Scale

Optimization Scale

Compensation Scale

Is there at least one other adult you would feel able to talk to if you were having problems in your life?

The depression scale was created through the summation of the results of the twenty survey items within the depression section (Lerner et al., 2005). The parental monitoring scale (PMS) was created through the mean value of the survey items within the parental monitoring section (Lerner et al., 2005). PMS was used to measure the extent on information adolescents provide to their parents concerning their activities and whereabouts (Small & Kerns, 1993). To represent the influential relationships adolescents have with one another, the variable "My friends care about me." was selected. The same influential relationship selection method was utilized for the about my school (Lerner et al., 2005) section of the survey and the variable "My teachers really care about me." was selected.

All three scale items of the select (S), optimize (O), and compensate (C) (SOC) model were included. Each of the scale items were created through the summation of six survey items per scale topic. These independent variables were included to address cognitive development through the selection, optimization, and compensation fundamental processes for an individual to achieve successful development (Freund & Baltes, 2000). The inclusion of the variable "Is there at least one other adult you would feel able to talk to if you were having problems in your life?" represented the importance of adult mentorship within the lives of adolescents (Wynne, 1974; Martinek et al., 2001; Lerner et al., 2005; Hamilton & Flanagan, 2007; Stephens et al., 2017).

The three categorical independent variables were recoded to dichotomous variables: "My friends care about me.", "My teachers really care about me.", and "Is there at least one other adult you would feel able to talk to if you were having problems in your life?". The initial values and recoded values for the three variables are presented in Table 3.5.

Table 3.5

Recoded Independent Variable Values

"My teachers really care about me."

Original Response Options		Recoded Responses	
1	Strongly Disagree	0	Disagree
2	Disagree	0	Disagree
3	Not Sure	0	Disagree
4	Agree	1	Agree
5	Strongly Agree	1	Agree

"My friends care about me."

Original Response Options		Recoded Responses	
1	Almost never true or never true	0	Disagree
2	Seldom true	0	Disagree
3	Sometimes true	0	Disagree
4	Usually true	1	Agree
5	Always true	1	Agree

"Is there at least one other adult you would feel able to talk to if you were having problems in your life?"

Original Response Options		Recoded Responses	
0	No	0	No
1	Yes, for at least some of my problems	1	Yes
2	Yes, for most or all of my problems	1	Yes

Before the independent variables were entered into the models, all numerical independent variables were assessed for multicollinearity: "Depression Scale", "Parental Monitoring Scale", "Selection Scale", "Optimization Scale", and "Compensation Scale". Multicollinearity can lead to difficulty when attempting to create a valid regression model due to unreliable, inflated variances of coefficient estimates (Alin, 2010). The difficulties can occur in one of two ways: strong or perfect. Strong multicollinearity will lead to imprecise estimates and perfect multicollinearity will make estimations impossible (O'Halloran, 2005).

To assess multicollinearity, Pearson's correlation matrices were utilized to determine linear dependence (Ly, Marsman, & Wagenmakers, 2018). This method was selected over two other highly common correlation methods, Spearman and Kendall's tau. The Spearman correlation coefficient method was not selected for this analysis as its purpose is to measure the

strength of any monotonic relationship (Weir, 2011), not specifically a linear monotonic relationship. Kendall's tau was not selected for this analysis as this method would have provided a different interpretation of the analysis. Kendall's tau correlation is used to examine the difference between probability, not proportion of variability (Hauke & Kossowski, 2011).

The correlation matrices assessed the individual relationship of each potential independent variable with all other potential independent variables as a number between -1 and 1 (Geert Van Den Berg, 2015). The absolute value of this range indicated the extent to which the two variables were linearly related; for example, the larger the absolute value of the numerical value, the greater the magnitude of the relationship. The sign of the of the correlation coefficients indicated if the direction of the relationship was positive or negative (Xiao, Ye, Esteves, & Rong, 2015).

The Pearson correlation matrices were generated for all numerical variables for waves one, four, and eight within IBM SPSS Statistics version 24.0 (SPSS) (IBM, 2016a). The problem of multicollinearity was examined at the 0.8 threshold as this is a commonly accepted identifier of multicollinearity (Kumari, 2008). No variables exhibited multicollinearity.

Data Collection

Data was collected through the administration of a self-reported survey (Lerner et al., 2005). Participants were able to complete the survey during scheduled times at their schools, after school programs, or 4-H sites. Staff and/or researchers were present during the scheduled times to administer the surveys (Lerner et al, 2005).

Ethical Considerations

Confidentiality of all information, personal identification and survey responses, was maintained through the usage of cover sheets on all questionnaires (Lerner et al., 2005). Once a

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completed questionnaire was returned, each participant was given a student identification number which was placed on the survey and the cover sheet was removed. Participants from previous waves maintained the same family identification number.

All information collected by IARYD received parental consent and IRB approval (Bloomquist, 2010). As such, all items are believed to: 1) assess the positive and risk behaviors of youth; 2) be standard measures in the field; 3) are appropriate and safe for specified ages studied; and 4) enact no risk, harm, or distress to participants.

If any participant responses indicated that the participant was in immediate danger or intended to endanger others, the appropriate authorities would have been contacted.

Limitations

The Institutional Review Board allows for the opt-out ability of a participant to not answer a question, if they so desire (Institutional Review Board, 2012). Therefore, this study, as well as the previous study conducted by IARYD, was limited due to the participants' ability to not provide an answer to a survey question. Unanswered questions created gaps within the data collected. Missing data can be addressed multiple ways. Specific for longitudinal studies, there are three techniques which are typical applications for missing data within the data set: listwise deletion, direct maximum likelihood, and multiple imputation (Jeličić, Phelps, & Lerner, 2010). However, it should be noted that historically the issue of missing data within longitudinal studies has not been described well. No empirical examples, in regard to adolescent development, have shown the extent of variability concerning differences of missing data techniques.

In addition, the study was limited as random sampling did not occur within the data collection method. The results of this study may be applicable to youth outside of 4-H; however, this cannot be a definitive statement.

All of the studies discussed within this document, as well as the analysis I conducted, are limited to the scope of Western industrialized countries. Although scientific knowledge about human psychology is predominantly based from this subpopulation, it is a limited subpopulation of the World and should not be considered representative of all human nature (Henrich, Heine, & Norenzayan, 2010). This subpopulation is defined as people from Western, Educated, Industrialized, Rich, and Democratic (WEIRD) societies. WEIRD societies only account for 12% of the world's population and therefore cannot serve as definitive findings that can be projected upon all of the human population.

Summary

Empirical research conducted to study PYD within various youth programs has demonstrated the validity of the PYD approach as well as the value of the generated information. The purpose of this study was to identify and examine the predictor variables which constitute adolescents' perceptions about the importance of contributing to society. The study utilized longitudinal data gathered from the 4-H Study of PYD to conduct a multinomial logistic regression. The multinomial logistic regression consisted of three groups of students from waves one, four, and eight of the 4-H Study of PYD. The groups contained participants who responded to the variable "It is important to contribute to society." and addressed the cognitive differences of participants within Grades 8 and 12.

Chapter 4 - Findings

Introduction

The objective for this study was to examine the relationships between the predictor variables and adolescents' perceptions of the importance of contributing to society. The study tested the following hypotheses:

H_0: There is no association between the predictor variables and adolescents' perceptions of the importance of contributing to society.

H_1: There is an association between the predictor variables and adolescents' perceptions of the importance of contributing to society.

H_0: There is no association between the cognitive level of adolescents and their perceptions of the importance of contributing to society.

H_1: There is an association between the cognitive level of adolescents and their perceptions of the importance of contributing to society.

For the study, multinomial logistic regression was conducted in SPSS on Group 1, Group 2, and Group 3. The findings of the three multinomial regressions are reported below in four sections. First, the models were assessed to determine if a relationship between the independent variables and the dependent variable was present through the assessment of the model fitting information and goodness-of-fit tables. Second, the strength of the relationships within the three multinomial logistic regressions is presented through an examination of the Nagelkerke pseudo R^2 value. The likelihood ratio tests follow the pseudo R^2 results. Third, the likelihood ratio tests provide the predictor variables included within each model. Fourth, the full models are presented. Fifth, the model classifications are shown in the final section of the analysis.

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Analysis of Relationships

Warnings. The model generated for Group 1 included two cautionary warnings. The first warning noted, "Unexpected singularities in the Hessian matrix are encountered. This indicates that either some predictor variables should be excluded or some categories should be merged." This warning can occur if one of the predictors is constant for a dependent variable category or if the reference category of the dependent variable is problematic (IBM, 2016b). Despite the first warning, the multinomial logistic regression procedure continued and the results provided within this study are based on the last iteration of the model. The second warning compounded upon the first and stated, "Validity of the model fit is uncertain." Due to these warnings, the relationship analysis for Group 1 is not conclusive and should not interpreted as a definitive statement.

Overall test of relationships. Table 4.1 displays the model fitting information for all three groups. The model fitting information indicates if a relationship is present between the dependent and independent variables based on the statistical significance of the final model chi-square information. The null hypothesis states there is no difference between the empty model (the model without independent variables) and the model with independent variables. The alternative hypothesis states there is a difference between the model without independent variables and the model with independent variables (Bayaga, 2010).

Table 4.1

Model Fitting Information

Group	Model	-2logLikelihood	X^2	df	p
Group 1	Intercept Only	209.981			
	Final	192.030	17.951	4	0.001
Group 2	Intercept Only	500.671			
	Final	479.422	21.250	8	0.007
Group 3	Intercept Only	379.427			
	Final	333.525	45.902	12	0.000

The Group 1 distribution shows that the probability of the model chi-square 17.951 was 0.001, less than the level of significance of 0.05. The Group 2 distribution shows that the probability of the model chi-square 21.250 was 0.007, less than the level of significance of 0.05. The Group 3 distribution shows that the probability of the model chi-square 45.902 was 0.000, less than the level of significance of 0.05. Findings for all three groups indicated there is a difference between the empty model and the model with independent variables. Therefore, the alternative hypothesis is accepted for all three groups.

Goodness-of-fit tests. The three models were also examined based on the goodness-of-fit test results. The goodness-of-fit tests determined whether the observed data was inconsistent with the fitted model (IBM Knowledge Center, 2018a). Inconsistencies can occur due to non-linearities or interactions which can create an over-fit model (Allison, 2014).

The goodness-of-fit tests contain Pearson's chi-square statistic for the model as well as the chi-square statistic based on the deviance. Both the Pearson and deviance chi-square values

are sensitive to null values within the data set. All null values were removed from the analysis so there was no concern of null sensitivity (IBM Knowledge Center, 2018a).

Pearson's chi-square statistic tests the likeliness that an observed distribution is due to chance for categorical data. If the variables are independent, the statistic will measure how well the observed distribution fits with the expected distribution (Light, 2008). The deviance, or -2 Log likelihood (-2LL) statistic, measures the amount of unexplained variation present within the multinomial logistic regression model. Similar to the examination of the sum of square in linear regression, the differences between the predicted and actual outcomes of multinomial logistic regression are summed together to provide the total error within the model (Strand, Cadwallader, & Firth, 2011). The chi-square statistic based on the deviance is the likelihood ratio comparison of the fitted model to a model which perfectly fits the data (Allison, 2014).

The null hypothesis for the goodness-of-fit test states that the fitted model is correct (Allison, 2014). The alternative hypothesis states that the model is not well fit (Peng & Nichols, 2003). The desired outcome of the goodness-of-fit test is to accept the null hypothesis. To accept the null hypothesis, the p-values for a group must be statically insignificant, $p > 0.05$. If the p-value for a group is statically significant, $p < 0.05$, the null hypothesis would be rejected and the alternative hypothesis accepted. For Groups 1, 2, and 3, the chi-square values were relatively low to the degrees of freedom and all p-values were relatively high ($p > 0.05$). The findings indicated there was no evidence to reject the null hypothesis. The full test goodness-of-fit test results are presented in Table 4.2.

Table 4.2

Goodness-of-fit Test Results

Group	Criterion	X^2	df	p
Group 1	Pearson	308.000	324	0.730
	Deviance	192.030	324	1.000
Group 2	Pearson	720.472	720	0.488
	Deviance	479.422	720	1.000
Group 3	Pearson	520.069	628	0.999
	Deviance	332.139	628	1.000

Strength of relationships within models. The strength of the multinomial logistic

regression relationship within the models generated for the three groups was assessed through

pseudo R^2. Within SSPS, three pseudo R^2 indices are presented: Cox & Snell, Nagelkerke, and

McFadden. The Cox & Snell index presents the ratio of the likelihoods reflecting the

improvement of a full model compared to the intercept only model. Interpretation of this

measure can be difficult as the Cox & Snell measure cannot reach a maximum value of one, as is

common with other measures (Institute for Digital Research and Education, 2011). The

Nagelkerke index is the adjusted Cox & Snell measure. Nagelkerke pseudo R^2 measures if the

full model perfectly predicts the outcome. The maximum value of the Nagelkerke pseudo R^2 is

one (IBM Knowledge Center, 2014). Due to the redundancy of the Cox & Snell index compared

to the Nagelkerke index, the Cox & Snell index was not utilized for the analysis. The McFadden

pseudo R^2 index is one of the most commonly reported pseudo R^2 indices (Williams, 2018).

McFadden pseudo R^2 indicates a good fit when the value reported is between 0.2 and 0.4

(Mangiafico, 2015).

All pseudo R^2 options used in multinomial regression follow the same, simple rule; the higher the output value, the better the model. However, other than the simple rule presented, it should be noted that multinomial pseudo R^2 indices are not the same as the ordinary least squares (OLS) index which is most common in linear R^2 measurement (Institute for Digital Research and Education, 2017). As OLS R^2 is a highly familiar measure, which uses the 0-1 scale, the Nagelkerke index was selected to measure the validity of the models. The Nagelkerke index produces results which are nearly as close to results produced by OLS R^2, yet these results are somewhat lower than OLS R^2 (Smith & McKenna, 2013). The Nagelkerke pseudo R^2 values for Groups 1, 2, and 3 are presented in Table 4.3.

Table 4.3

Pseudo R-Square

Group	Nagelkerke
Group 1	0.211
Group 2	0.117
Group 3	0.273

Variable composition of models. Tables 4.4, 4.5, and 4.6 present the likelihood ratio tests for Groups 1, 2, and 3, respectively. The likelihood ratio tests evaluated the relationship between the dependent and independent variables at the 95% level of significance ($p < 0.05$). Few independent variables had statistically significant relationships with the dependent variable. Although an independent variable is present within the overall likelihood ratio test, it is not necessarily statically significant in differentiating between groups within the model (Bayaga, 2010).

Table 4.4

Likelihood Ratio Tests - Group 1

	Model Fitting Criteria	Likelihood Ratio Tests		
Variable Description	-2 Log Likelihood of Reduced Model	X^2	df	p
At least one other adult to talk to if having problems?	209.981	17.951	4	0.001

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

As shown in Table 4.4, for Group 1 there is a statistically significant relationship between the dependent variable and the independent variable of "Is there at least one other adult you would feel able to talk to if you were having problems in your life?" ($0.001 < 0.05$).

As shown in Table 4.5, for Group 2 there are two statistically significant relationships between the dependent variable and the eight independent variables: "Is there at least one other adult you would feel able to talk to if you were having problems in your life?" ($0.03 < 0.05$) and "Depression Scale" ($0.041 < 0.05$). Therefore, two significant unique contributions were made by the independent variables for Group 2 (Wuensch, 2014).

Table 4.5

Likelihood Ratio Tests - Group 2

	Model Fitting Criteria	Likelihood Ratio Tests		
Variable Description	-2 Log Likelihood of Reduced Model	X^2	df	p
At least one other adult to talk to if having problems?	489.829	10.407	4	0.034
Depression Scale	489.371	9.949	4	0.041

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

As shown in Table 4.6, for Group 3 there is a statistically significant relationship between the dependent variable and the three independent variables of "Selection Scale" ($0.035 < 0.05$), "Optimization Scale" ($0.002 < 0.05$), and "My teachers really care about me." ($0.001 < 0.05$).

Table 4.6

Likelihood Ratio Tests - Group 3

Variable Description	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	X^2	df	p
Selection Scale	343.872	10.347	4	0.035
Optimization Scale	351.046	17.521	4	0.002
My teachers really care about me.	352.592	19.067	4	0.001

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

Completed models. The completed models were provided within the parameter estimates tables. The completed models indicated which independent variables were statistically significant for each category of the dependent variable: "strongly disagree", "disagree", "agree," and "strongly agree". The category of the dependent variable that was used as the reference category was "not sure". The Wald statistic was the determining factor to assess whether a statistically significant independent variable ($p < 0.05$) produced a significant contribution to the prediction of the model outcome. Usage of the Wald statistic is analogous to the t-test performed in linear regression to assess the regression coefficients; specifically, to determine if the independent variable's coefficient is significantly different from zero (Strand et al., 2011). The Wald statistic is compared to the critical value, z (Taboga, 2013). For Groups 1, 2, and 3, all statistically significant independent variables ($p < 0.05$) produced Wald statistic greater than

3.8415; therefore, the variables were found to significantly contribute to the prediction of the model outcome.

The independent variables that were found to be statistically significant in their contribution to predicting the outcome were deemed predictor variables. The odds of a participant belonging to the reference category, "not sure", are presented based on an increase in standard deviation of one (Wuenschk, 2014) per the exponent of the log odds (Exp(B)) of predictor variable (Strand et al., 2011). Negative Exp(B) values indicated a decrease in the likelihood of group membership and positive Exp(B) values indicated an increase in the likelihood of group membership (Wuenschk, 2014). Predictor variables are shown in Tables 4.7, 4.8, and 4.9 for Groups 1, 2 and 3, respectively. Group specific findings are stated after each table.

Table 4.7

Parameter Estimates - Group 1

		B	*SE*	Wald	*df*	*p*	Exp(B)
Agree	At least one other adult to talk to if having problems?	2.575	0.906	8.081	1	0.004	13.125

a. The reference category is: Not Sure.

For Group 1, the following findings regarding the odds of a participant belonging to the reference category, "not sure", are presented based on an increase in standard deviation of one and all other variables in the model held constant.

The findings indicated the odds of a participant belonging to the "not sure" category rather than the "agree" category increased by 13.125 for the predictor variable "Is there at least one other adult you would feel able to talk to if you were having problems in your life?".

Table 4.8

Parameter Estimates - Group 2

		B	*SE*	Wald	*df*	*p*	Exp(B)
Strongly Disagree	At least one other adult to talk to if having problems?	-2.547	0.865	8.680	1	0.003	0.078
Strongly Agree	Depression Scale	-0.088	0.034	6.557	1	0.010	0.916

a. The reference category is: Not Sure.

For Group 2, the following findings regarding the odds of a participant belonging to the reference category, "not sure", are presented based on an increase in standard deviation of one and all other variables in the model held constant.

The findings indicated the odds of a participant belonging to the "not sure" category rather than the "strongly disagree" category decreased by 0.078 for the predictor variable "Is there at least one other adult you would feel able to talk to if you were having problems in your life?". The odds of a participant belonging to the "not sure" category rather than the "strongly agree" category decreased by 0.916 for the predictor variable "Depression Scale".

Table 4.9

Parameter Estimates - Group 3

		B	*SE*	Wald	*df*	*p*	Exp(B)
Strongly Disagree	Selection Scale	1.732	0.840	4.250	1	0.039	5.650
Disagree	My teachers really care about me.	-2.381	1.216	3.832	1	0.050	0.092
Agree	Optimization Scale	0.874	0.230	14.457	1	0.000	2.398
Strongly Agree	Optimization Scale	0.772	0.241	10.227	1	0.001	2.163

a. The reference category is: Not Sure.

For Group 3, the following findings regarding the odds of a participant belonging to the reference category, "not sure", are presented based on an increase in standard deviation of one and all other variables in the model held constant.

The findings indicated the odds of a participant belonging to the "not sure" category rather than the "strongly disagree" category increased by 5.650 for the predictor variable "Selection Scale". The odds of a participant belonging to the "not sure" category rather than the "disagree" category decreased by 0.092 for the predictor variable "My teachers really care about me". The odds of a participant belonging to the "not sure" category rather than the "agree" category increased by 2.398 for the predictor variable "Optimization Scale". The odds of a participant belonging to the "not sure" category rather than the "strongly agree" category increased by 2.163 for the predictor variable "Optimization Scale".

Classifications of models. Tables 4.10, 4.11, and 4.12 present the model classifications for Groups 1, 2, and 3, respectively. The model classifications present the observed versus predicted frequencies by response category. The model generated for Group 1 was 49.4% accurate and the model for Group 2 was 45.4% accurate; these models are less accurate than flipping a coin. The model generated for Group 3 was 53.1% accurate at predicting frequencies by response category.

Table 4.10

Model Classification - Group 1

| | Predicted | | | | | |
Observed	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Percent Correct
Strongly Disagree	0	0	0	1	0	0.0%
Disagree	0	0	0	6	0	0.0%
Not Sure	0	0	6	8	0	42.9%
Agree	0	0	2	35	0	94.6%
Strongly Agree	0	0	0	25	0	0.0%
Overall Percentage	0.0%	0.0%	9.6%	90.4%	0.0%	49.4%

Table 4.11

Model Classification - Group 2

| | Predicted | | | | | |
Observed	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Percent Correct
Strongly Disagree	0	0	1	7	0	0.0%
Disagree	0	0	0	17	0	0.0%
Not Sure	0	0	11	42	0	20.8%
Agree	0	0	5	72	0	93.5%
Strongly Agree	0	0	1	27	0	0.0%
Overall Percentage	0.0%	0.0%	9.8%	90.2%	0.0%	45.4%

Table 4.12

Model Classification - Group 3

			Predicted			
Observed	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Percent Correct
Strongly Disagree	0	0	0	3	0	0.0%
Disagree	0	2	0	7	0	0.0%
Not Sure	0	0	5	14	1	25.0%
Agree	0	1	4	76	1	92.7%
Strongly Agree	0	0	2	43	5	10.0%
Overall Percentage	0.0%	0.6%	6.8%	88.3%	4.3%	53.1%

Summary

Multinomial logistic regression was conducted on Groups 1, 2, and 3 to examine the relationships between the predictor variables and adolescents' perceptions of the importance of contributing to society through the generation of three models. The study tested the following hypotheses:

H_0: There is no association between the predictor variables and adolescents' perceptions of the importance of contributing to society.

H_1: There is an association between the predictor variables and adolescents' perceptions of the importance of contributing to society.

H_0: There is no association between the cognitive level of adolescents and their perceptions of the importance of contributing to society.

H_1: There is an association between the cognitive level of adolescents and their perceptions of the importance of contributing to society.

Due to the SPSS warning that the validity of the model fit is uncertain, Group 1 cannot be found to be statistically significant. Therefore, the initial H_0 was not rejected. Group 2 and 3 models were found to be significant through tests of relationships and goodness-of-fit. Two predictor variables were found to be statically significant in Group 2 and three predictor variables were found to be statistically significant in Group 3. As a result, the secondary H_0 was rejected and H_1 was accepted.

Chapter 5 - Discussion

Introduction

The decline in youth attitudinal trends regarding interaction and cooperation has been observed from the 1940s to present day (Wynne, 1976). This observed decline was the problem the study sought to address as the decline can be detrimental to the overall health of the United States, unless combative measures are applied. The purpose of this study was to identify factors and ideals within adolescents' lives which held a significant relationship with their perceptions of contributing to society. The study utilized data collected through surveys as part of the 4-H Study on Positive Youth Development (PYD) as conducted by the Institute for Applied Research in Youth Development (2019). The participants within the 4-H Study of PYD were fifth through twelfth graders with wave one participants in Grade 5 during the 2002-2003 school year and wave eight participants in Grade 12 during the 2009-2010 school year (Lerner et al., 2005; National 4-H Council, 2013).

Three specific participant groups were used for the analysis. Participants from waves one, four, and eight were selected for the model due to the cognitive development differences of adolescents (Adler & Turley, 2015). The Group 1 was the comprehensive result group which measured the long-term potential effects of specific variables on adolescents' perceptions of the importance of contributing to society from wave one to wave eight. Group 2 represented the first stage of cognitive development from wave one to wave four. Group 3 represented the second stage of cognitive development from wave four to wave eight. Multinomial logistic regression was performed on Groups 1, 2, and 3 to identify factors and ideals within adolescents' lives (independent variables) which held a significant relationship with their perceptions of contributing to society (dependent variable) as well as to predict group membership within the

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dependent variable categories: "strongly disagree", "disagree", "not sure", "agree", and "strongly agree".

The following chapter concludes the study. A summary of the findings is presented followed by the interpretation, context, and implications of said findings. The limitations of this study, the 4-H Study of PYD, and the general field of societal research are discussed next. Future directions of research are presented before the conclusion of the study.

Summary of Findings

For Group 1, the findings of the study were inconclusive due to the uncertainty of the validity of the model.

For Group 2, the findings of the study indicated there was a relationship between adolescents' perceptions of the importance of contributing to society and two predictor variables:

- "Is there at least one other adult you would feel able to talk to if you were having problems in life?"
- "Depression Scale"

For Group 3, the findings of the study indicated there was a relationship between adolescents' perceptions of the importance of contributing to society and three predictor variables:

- "Optimization Scale"
- "My teachers really care about me."
- "Selection Scale"

Hypothesis testing. Hypothesis testing was conducted to examine the relationships between the predictor variables and adolescents' perceptions of the importance of contributing to society. The study tested the following hypotheses:

H_0: There is no association between the predictor variables and adolescents' perceptions of the importance of contributing to society.

H_1: There is an association between the predictor variables and adolescents' perceptions of the importance of contributing to society.

H_0: There is no association between the cognitive level of adolescents and their perceptions of the importance of contributing to society.

H_1: There is an association between the cognitive level of adolescents and their perceptions of the importance of contributing to society.

Through multinomial logistic regression, Group 2 and Group 3 models were found to be significant through tests of relationships and goodness-of-fit. Due to the SPSS warning that the validity of the model fit is uncertain, Group 1 cannot be found to be statistically significant. Therefore, the initial H_0 was not rejected. Group 2 and 3 models were found to be significant through tests of relationships and goodness-of-fit. Two predictor variables were found to be statically significant in Group 2 and three predictor variables were found to be statistically significant in Group 3. As a result, the secondary H_0 was rejected and H_1 was accepted.

Unexpected insignificant findings. The lack of the independent variable "Compensation Scale" within the model for Group 3 was unexpected. "Compensation Scale" was a summation of six survey items which addressed what a participant would do when confronted with a potential loss in goal relevant means. In situations such as these, compensation occurs when one must apply their available means in order to maintain a given level of functioning (P. B. Baltes & Baltes, 1990; Carstensen, Hanson, & Freund, 1995). Due to the relevance of this variable with the second stage of cognitive development, it was surprising this

variable was not present within the Group 3, the group specifically created for the identification

of the second stage of cognitive development.

Interpretation of Findings

I personally believe the findings of this study are important in understanding adolescents;

not only their perceptions regarding society but potentially understanding the broader scope of

how their perceptions develop on many topics. The interpretation and following discussions of

the findings are specific to adolescents' perceptions on the importance of contributing to society.

However, I feel further research could identify similar, if not the same, findings on adolescents'

perceptions of multiple topics. For this specific study the relationship interpretation of the

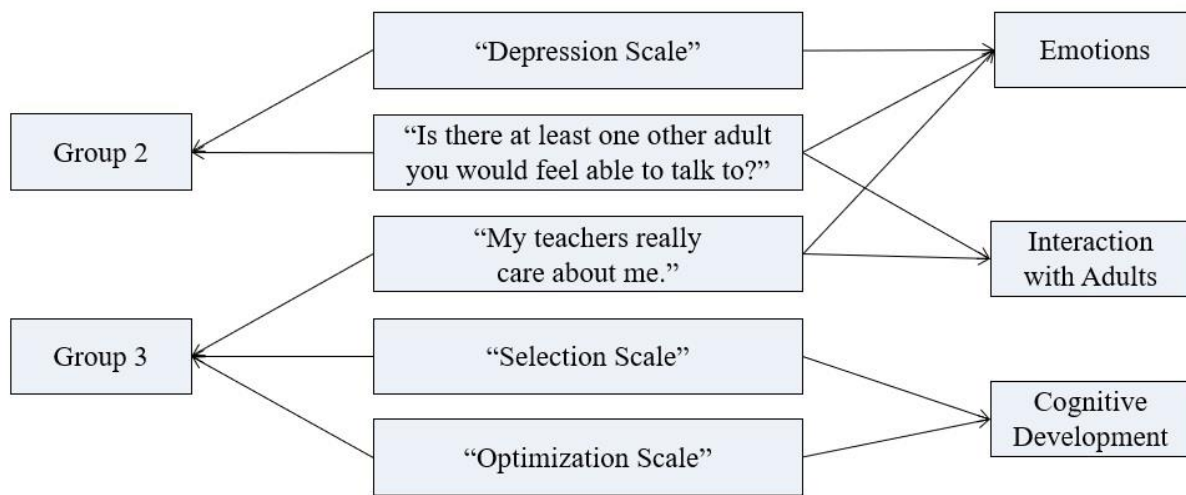findings is displayed within Figure 5.1.

Figure 5.1. Predictor variable relationship interpretation

The findings indicated the importance of adult interaction within the lives of adolescents

to develop adolescents' perceptions of the importance of contributing to society. Of the five

predictor variables present within the two models, two predictor variables relate to adolescent-

adult interactions or relationships: "Is there at least one other adult you would feel able to talk to

if you were having problems in life?" and "My teachers really care about me." As can be seen,

adult interaction was not specific to adolescents' parents but instead included natural mentors from the adolescent's existing social network (Bruce & Bridgeland, 2014). The relationship between natural mentors and adolescents contains specific emotional characteristics which included warmth, acceptance, and closeness (Bowers et al., 2012; DuBois & Silverthorn, 2005a,b; Hurd, Varner, & Rowley, 2013; Hurd & Zimmerman, 2014; Kogan, Brody, & Chen, 2011).

In all two models, three of the five variables acted as predictor variables in regard to adolescents' emotions. The three predictor variables indicated the relationship of emotions, or feelings, within the lives of adolescents to develop their perceptions of the importance of contributing to society. The emotion related keywords within the variables to denote feelings were "care" presented once and "feel" presented once as well as the entirety of the "Depression Scale" variable. These findings highlight the necessity of teaching social skills and emotional knowledge to adolescents (Weare, 2009). This type of education enables adolescents to gain emotional competence by way of the social information processing model (Lau & Wu, 2012). Two forms of education are presented in the model. The first is interpersonal cognition which is the interpretation of social interactions among peers. The second is intrapersonal cognition which is the adolescent's application of social skills through the concepts of their emotions. Through education and development of emotional competence, the declining trend of interaction and cooperation (Wynne, 1976) can be reversed; emotional competence can lead to the contribution of a more positive societal existence for all.

Two of the five variables act as predictor variables in reference to cognitive development: "Optimization Scale" and "Selection Scale." These two predictors are relative to the second stage of cognitive development, represented by Group 3, which entails the ability to consider

possibilities, compare or debate ideas, and have awareness of the act of thought (Adler & Turley, 2015). Given the statistically significant presence of both "Optimization Scale" and "Selection Scale" within Group 3, there was evidence to support a difference in cognitive development between Group 2 and Group 3.

The two predictor variables are also related to the point of view concerning lifespan development. Lifespan development regulation cannot be complete if the aspects of gains (growth) and losses (decline) are not addressed and developed (Adler & Turley, 2015). Optimization is the thoughtful consideration and application of processes related to maximizing gains. The "Selection Scale" is similar in that it denotes the practice of developing, choosing, and committing to goals in an organized way (Freund & Baltes, 2000). Said another way, optimization can be viewed as the learning process related to skills; selection can be viewed as the process of determining which skills to learn. The processes of optimization and selection within cognitive development must be understood and utilized when creating, implementing, and evaluating PYD.

Context of Findings

The findings provide validity for the requirement adolescent interaction with adults and development of cognition and empathy. The findings are supportive of the literature review in regard to a portion of Wynne's (1974) recommended behavior model which proposed, through the use of adult role models, children must acquire the skills of cognition, personal emotion control, and empathy. No further conclusions on the finding context can be applied to this topic because of research limitations on the importance of adolescents' perceptions of the importance of contributing to society. The broader topic of the literature review was the importance for building the foundation of understanding, measuring, and improving youth morals and

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characteristics. The findings from this study related to the general topic of the literature review through the utilization of youth development programs and the foundations of the 4-H Study of PYD and are therefore in agreement with and can expand upon the existing literature.

Implications of Findings

The findings presented improved upon the understanding of relationships between the predictor variables and adolescents' perceptions of the importance of contributing to society. The practitioners who oversee and conduct youth development programs can use the findings to reassess program structures. These structures should include more adult interaction with youth through various applications such as, but not limited to, mentorships, community outreach, and job shadowing. In addition, adolescents' emotions were present within the study. The inclusion of mentor opportunities will not only benefit the adolescent but will also benefit the mentor as they can be proud of their own contributions and their ability to educate and interact with youth.

Practitioners should develop programs to teach about emotions: what they are, how to interpret them, and the importance of respecting others' emotions. These emotional development programs should be taught at a very early age so emotional development may be refined throughout adolescence.

Proximal similarity of the findings can be applied to not only youth development programs but also to school, sport, home, and any other settings involving the interaction of adult role models with adolescents. As the findings were generated from participants who live in the United States, application of the findings is recommended for this country but could be pursued in other countries as well. This study is not conclusive nor exhaustive; however, the study does provide direction for application and future research.

Limitations of the Study

Limitations due to the analysis conducted within this study, the validity of the study

findings, and knowledge base of the researcher are provided within this section. The presented

limitations, paired with findings of the study, provided insight and guidance for the direction of

future research, as discussed within the next section.

Study specific limitations.

Design. This study was conducted on data gathered from the 4-H Study of PYD (Lerner

et al., 2005). The study did not conduct random sampling therefore selection bias is present

toward membership within 4-H and other youth development programs. As the study was funded

by the National 4-H Council (Lerner et al., 2005), this bias was not unexpected and its respective

limitations are further discussed later in this chapter.

Measurement. The data from the 4-H Study of PYD was gathered through self-reported

surveys. Self-reported surveys may contain response bias, the tendency of a participant to

provide untrue or misleading answers (Glenn, 2017b). These biases can be due to self-selection

bias from individuals who agreed to participate in the survey (Khazaal et al., 2014). The response

bias could also be present due to social-desirability bias, the idea of a participant's desire to

"look good" in a survey, even if the survey is anonymous (Rosenman, Tennekoor, & Hill, 2011).

The confounding nature of both biases may also be present. Participants within this survey were

allowed the option to not respond. Nonresponse within a survey may inhibit results by affecting

estimates based upon the survey results (Fowler, 2014). Additionally, data gathered through

surveys does not allow the researcher(s) to ask exploratory questions in order obtain a better

understanding of a participant's ideals or opinions (Kelley, Clark, Brown & Sitzia, 2003).

Various scale types and sizes were utilized within the survey which can limit the generalizability

of the findings and the opportunities for prediction (Esser & Vliegenthart, 2017). Analysis of the survey results are limited to the factors within the surveys as provided by the academic resources which served as the basis for the Developmental Systems Theory (DST).

Multinomial logistic regression analysis. The utilization of multinomial logistic regression required the assignment of one reference category from the five categories of the dependent variable. It was through the reference category that the results of the model were interpreted. A different reference category selection may present a different interpretation of the same data set (Schofer, 2010). In addition, multinomial logistic regression is not one of the most commonly used forms of analysis. Due to this lack of utilization, guidance can vastly vary on the statistical measures which comprise multinomial logistic regression and the resulting outcomes. Journal articles exist which have published incorrect findings which leads to doubt on the validity of any and all multinomial logistic regression findings.

Concerns of validity. Three threats to the validity of the study exist. The appropriateness of the findings was addressed through internal, construct, and external validity (Iselin, 1999). This section discusses the following 1) internal validity - the ability to make causal research statements (Iselin, 1999), 2) construct validity – the legitimacy of the inferences from the sample utilized (Trochim, 2006a), and 3) external validity – the ability to make generalized statements (Trochim, 2006b).

Internal validity. The study conducted was not a "true experiment" as no random sampling was conducted for the initial study (Trochim, 2006c). As the study was only quasi-experimental, it cannot be claimed that the predictor variables found within the multinomial logistic regression caused changes within adolescents' perceptions of the importance of contributing to society. However, the predictor variables found comprised a portion of the

perceptions of the importance of contributing to society based on a three-group subset of adolescents who participated in the 4-H Study of PYD.

Construct validity. The findings of the study indicated relational construct validity in that the predictor variables showed various levels of relationship toward adolescents' perceptions of the importance of contributing to society, for the given sample population of the study. However, the findings did not indicate definitional construct validity. The findings cannot state that the predictor variables are the only factors which contribute to adolescents' perceptions of the importance of contributing to society. Furthermore, the findings cannot state the degrees of the relationships between the predictor variables and adolescents' perceptions of the importance of contributing to society.

External validity. The proximal similarity model generated based on the findings of this study was limited in regard to its external validity on three levels: people, location, and time (Trochim, 2006b). Many participants within the study were members youth development programs, including 4-H (Lerner et al., 2005), the largest youth development organization in the United States (White et al, 2019) that provide "learn-by-doing" experiences through hands-on projects that are guided and encouraged by adult mentors (National 4-H Council, 2010). While the findings may be applicable in regard to other participants in youth development organizations, specifically organizations which use a similar development approach as 4-H, the findings might not be applicable to adolescents who do not participate in youth development programs.

The proximal similarity model was also limited due to the location of the participants. Participants were located within the United States, a subpopulation of the Western, Educated, Industrialized, Rich, and Democratic (WEIRD) society (Henrich et al., 2010). As the WEIRD

society only accounts for 12% of the world's population, the findings from this study may not apply to adolescents who are a part of the of the other 88% of the world's population. Furthermore, although the United States resides within the realm of the WEIRD society, each individual within the population could have different personal characteristics in relation to WEIRD. These personal WEIRD characteristics could compound or conflict with the findings presented within this study, possibly rendering the findings more or less applicable.

The time limitation placed upon the study is one of relevance of the findings to present day. The final wave of the study was completed nearly a decade ago (2009-2010 school year) and the initial wave was completed nearly another decade before then (2002-2003 school year) (National 4-H Council, 2013). As Friedenberg (1974) stated, society develops with each new generation. For human society to continue, there will always be a presence of adolescents who will, or will not, contribute to society in various ways. However, the findings of this study cannot be presented as absolute findings for adolescents in future generations of society.

Contributions of the Study

Overall, the findings of this study can be utilized to encourage the mobilization of community energy through positive youth development programs, schools, families, and the like (Benson, 2003), to care for and develop a child into an adolescent who understands the importance of contributing to society, because society first contributed to them. It is necessary for all facets of society to evaluate their philosophies regarding adolescents and determine how to incorporate adolescents as meaningful and productive assets to society as early as possible (Duerden, Widmer, & Witt, 2010).

Specific to youth development programs, this study can contribute to the understanding and application of the five predictor variables within the program structure. As previously stated,

practitioners, along with adult mentors, should develop programs to teach about emotions: what they are, how to interpret them, and the importance of respecting others' emotions.

This study has also contributed to the broader topic of positive youth development, specifically how it can be utilized to identify adolescents' perceptions of the importance of contributing to society. Although society is continuously changing and developing, there are three ever present items within society: adults, emotions, and cognitive development that occurs during adolescence. The factors which develop the three items may change over time, thus changing the outcomes; however, the three items are consistently present no matter the changes which take place. Based off the changing nature of society, and its cause and effect relationship with the three continuous items (adults, emotions, and adolescents' cognitive development), additional research opportunities exist.

Future Directions of Research

There are three directions of future research. The first presents alternative methods and approaches to this specific study on predictor variables in adolescents' lives which held a significant relationship with their perceptions of contributing to society. The second provides potential iterations to any future iterations of the 4-H Study of PYD. The third discusses continued research on the topic of societal contribution in realms outside of the 4-H study.

Societal contribution study. To begin, additional attention should be paid to Group 1 of this study. Multiple iterations of the multinomial logistic regression could be run for each independent variable to determine which variable(s) created the warning message and which variable(s) create a statistically significant model.

Further research within the scope of the societal contribution study could include all participants which were removed due to the presence of null values. The particpants could be re-

entered into the data set and appropriate variable estimations could be conducted to replace the null values therefore increasing the sample size. The multinomial logistic regression for Groups 1, 2, and 3 could then be re-run with increased sample sizes to determine if a larger sample indicates different results and, if so, to what degrees the results differ.

Multinomial logistic regression could be utilized on all waves received from the 4-H Study of PYD to individually examine if any other independent variables are found to be significant predictor variables per the categorical dependent variable, "It is important to me to contribute to my community and society." Should predictor variables be found, the per-wave models could be compared and contrasted to examine predictor variables throughout the eight-wave study.

4-H Study of PYD. It could be of interest to examine the results of the 4-H Study of PYD across generations to examine if results remain consistent or if they change. Future research for the 4-H Study of PYD could consist of a follow-up study on the children of participants from the original study to compare and contrast findings across generations. Analogous with the generational study, a new sample could be drawn from 4-H to participate within the study. The intergenerational findings between the second-generation participants and the second sample participants could be examined to assess if adolescents with one or more parents who participated within 4-H responded differently than adolescents who did not have one or more parents who participated within 4-H. The potential relationships are displayed in Figure 5.2.
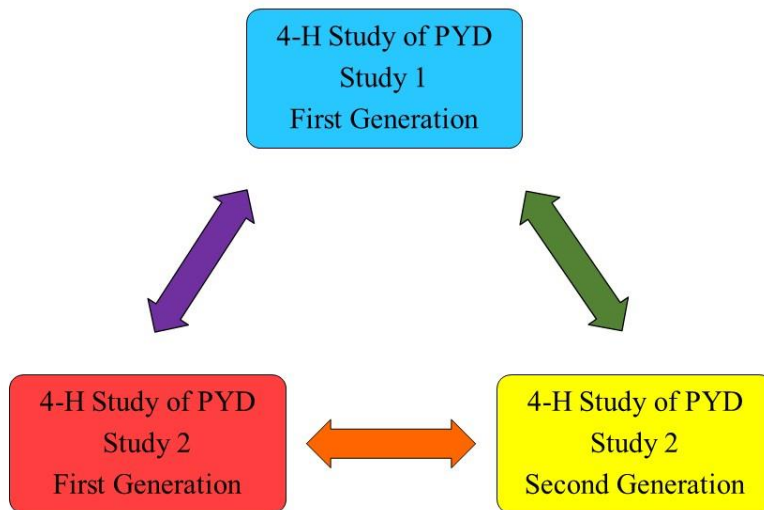
Figure 5.2. Proposed second implementation of the 4-H Study of PYD

Additional research opportunities. Additional research opportunities exist through a deeper look into the historical perspectives of society, the factors which could predict the importance of contribution to society, and events which are considered to have positively or negatively changed society. Levitt and Dubner (2014) suggest that the world should be viewed through a long lens. This belief indicates that solving the problems of today may not be as simple as studying the events of one to two preceding generations. Rather, examination of society can be reviewed as far back as humanity has been documenting its existence.

Conclusion

The purpose of this study was to determine the predictor variables which assist in understanding adolescents' perceptions of the importance of contributing to society. The study was conducted on data gathered from the 4-H Study of Positive Youth Development (Lerner et al., 2005). The results of the three multinomial logistic regression models indicated there were five statistically significant predictor variables which made up adolescents' perceptions of the

importance of contributing to society, as defined by the dependent variable, "It is important to contribute to society." The five predictor variables identified the need for adolescent interaction with adults, the importance of understanding adolescent cognitive development, and the necessity of teaching adolescents social skills and emotional competence. For an adolescent to understand the importance of contributing to society, society must first care for and educate the child.

References

Adler, L. C., & Turley, R. K. (2015, August 17). Cognitive development in the teen years. Retrieved from https://www.urmc.rochester.edu/encyclopedia/content.aspx?ContentTypeID=90 &ContentID=P01594

Alin, A. (2010). Multicollinearity. *Wiley Interdisciplinary Reviews: Computational Statistics, 2*(3), 370-374. doi:10.1002/wics.84

Allison, P. D. (2014, March 23). *Measures of fit for logistic regression* (Tech. No. 1485-2014). Retrieved https://statisticalhorizons.com/wp-content/uploads/GOFForLogisticRegression-Paper.pdf

Baltes, P. B., and Baltes, M. M. (1990). Psychological perspectives on successful aging: The model of selective optimization with compensation. *Successful Aging: Perspectives from the Behavioral Sciences* (pp.1-34)*.* Cambridge, U.K.: Cambridge University Press.

Bayaga, A. (2010). Multinomial logistic regression: Usage and application in risk analysis. *Journal of Applied Quantitative Methods, 5*(2), 288-297. Retrieved from http://jaqm.ro/issues/volume-5,issue-2/pdfs/bayaga.pdf

Benson, P. (2003). Developmental assets and asset-building communities: Conceptual and empirical foundations. *Developmental assets and asset-building communities: Implications for research, policy, and practice* (pp. 19-43). New York: Kluwer Academic/Plenum Publishers.

Bloomquist, Karen. (2010). "Participation in positive youth development programs and 4-H: Assessing the impact on self-image in young people" *Theses, Dissertations, & Student Scholarship: Agricultural Leadership, Education & Communication Department*. 13. Retrieved from http://digitalcommons.unl.edu/aglecdiss/13

Bowers, E. P., Geldhof, G. J., Schmid, K. L., Napolitano, C. M., Minor, K., & Lerner, J. V. (2012). Relationships with important non-parental adults and positive youth development: An examination of youth self-regulatory strengths as mediators. *Research in Human Development, 9*(4), 298-316.

Bowers, E. P., Li, Y., Kiely, M. K., Brittian, A., Lerner, J. V., & Lerner, R. M. (2010). The five Cs model of positive youth development: A longitudinal analysis of confirmatory factor structure and measurement invariance. *Journal of Youth and Adolescence, 39*(7), 720-735. doi:10.1007/s10964-010-9530-9

Bronfenbrenner, U. (1979). *Ecology of Human Development: Experiments by Nature and Design*. Cambridge: Harvard University Press.

Bruce, M. & Bridgeland, J. (2014). *The mentoring effect: Young people's perspectives on the outcomes and availability of mentoring*. Boston, MA: MENTOR – The National Mentoring Partnership

Carsten, L. L., Hanson, K. A., & Freund, A. M. (1995). Selection and compensation in adulthood. In R.A. Dixon & L. Bäckman (Eds.), *Compensating for psychological deficits and declines: Managing losses and promoting gains (*pp. 107-126). Hillsdale, NJ: Lawrence Erlbaum Associates.

Choudhury, S., Blakemore, S., & Charman, T. (2006). Social cognitive development during adolescence. *Social Cognitive and Affective Neuroscience, 1*(3), 165-174. doi:10.1093/scan/nsl024

Dochtermann, N. A., & Jenkins, S. H. (2010). Multivariate methods and small sample sizes. *Ethology, 117*(2), 95-101. doi:10.1111/j.1439-0310.2010.01846.x

Dubner, S. J., & Levitt, S. D. (2014). *Think like a freak* (1st ed.). HarperCollins USA.

DuBois, D. L., & Silverthorn, N. (2005a). Natural mentoring relationships and adolescent health: Evidence from a national study. *American Journal of Public Health*, *95*, 518-524.

DuBois, D. L., & Silverthorn, N. (2005b). Characteristics of natural mentoring relationships and adolescent adjustment. Evidence from a national study. *The Journal of Primary Prevention, 26*(2), 69-92.

Duerden, M. D., Widmer, M. A., & Witt, P. A. (2010). Positive youth development: What it is and how it fits in therapeutic settings. *Journal of Therapeutic Schools and Programs, 1*(4), 118-133. doi:10.19157/jtsp.issue.04.01.06

Durkheim, E. [1924a] 1974. *Sociologie et philosophie*. Paris: Presses Universitaires de France; 1953b. *Sociology and Philosophy*, trans. David F. Pocock, London: Cohen and West.

Eisenberg, N., Fabes, R. A., Murphy, B. C., Karbon, M., Smith, M., & Maszk, P. (1996). The relations of children's dispositional empathy-related responding to their emotionality, regulation, and social functioning. *Developmental Psychology, 32*, 195-209.

Esser, F., & Vliegenthart, R. (2017). Comparative research methods. *The International Encyclopedia of Communication Research Methods,* 1-22. doi:10.1002/9781118901731.iecrm0035

Ford, D. H., & Lerner, R. M. (1992). Developmental systems theory: An integrative approach. Thousand Oaks, CA, US: Sage Publications, Inc.

Fowler, F. J. (2014). *Survey research methods* (5th ed.). London: Sage Publication.

Freund, A. M., & Baltes, P. B. (2000). The orchestration of selection, optimization, and compensation: An action-theoretical conceptualization of a theory of developmental regulation. In W. J. Perrig, & A. Grob (Eds.), *Control of human behavior, mental processes and consciousness* (pp. 35-58). Mahwah/NJ: Erlbaum.

Friedenberg, E. Z. (1974). Commentary on Wynnes "socialization to adulthood: Different concepts, different policies". *Interchange, 5*(2), 73-75. doi:10.1007/bf02138831

Geert Van Den Berg, R. (2015, December 31). Pearson correlations – Quick introduction. Retrieved from https://www.spss-tutorials.com/pearson-correlation-coefficient/

Gestsdottir, S., Geldhof, G. J., Lerner, J. V., & Lerner, R. M. (2017). What drives positive youth development? Assessing intentional self-regulation as a central adolescent asset. I*nternational Journal of Developmental Science, 11*(3-4), 69-79. doi:10.3233/dev-160207

Glenn, S. (2017a, January 26). Multinomial logistic regression: Definition and examples. Retrieved from https://www.statisticshowto.datasciencecentral.com/multinomial-logistic-regression/

Glenn, S. (2017b, October 12). Response bias: Definition and examples. Retrieved from https://www.statisticshowto.datasciencecentral.com/response-bias/

Google Search Help. (2019, February 21). Get search results faster. Retrieved from https://support.google.com/websearch/answer/106230?co=GENIE.Platform=Android&hl=en

Grace, J. B. (2006). *Structural equation modeling and natural systems*. Cambridge Univ. Press, Cambridge.

Greenberger, E.& Bond, L., (1984). *Psychosocial maturity inventory*. Irvine: University of California, Irvine, Department of Social Ecology.

Griffiths, P. E., & Hochman, A. (2015). Developmental systems theory. *ELS,* 1-7. doi:10.1002/9780470015902.a0003452.pub2

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods, 18*(1), 59-82.

Hamilton, C., & Flanagan, C. (2007). Reframing social responsibility within a technology-based youth activist program. *American Behavioral Scientist, 51*(3), 444-464. doi:10.1177/0002764207306070

Harter, S. (2012a). Self-perception profile for adolescents: manual and questionnaires. Retrieved from https://portfolio.du.edu/SusanHarter/page/44210

Harter, S. (2012b). Self-perception profile for children: manual and questionnaires. Retrieved from
    https://portfolio.du.edu/SusanHarter/page/44210

Hauke, J., & Kossowski, T. (2011). Comparison of values of pearsons and spearmans correlation
    coefficients on the same sets of data. *Quaestiones Geographicae, 30*(2), 87-93.
    doi:10.2478/v10117-011-0021-1

Hellison, D. R. (2011). *Teaching personal and social responsibility through physical activity* (3rd ed.).
    Champaign, IL: Human Kinetics.

Hennink, M. M., Kaiser, B. N., & Marconi, V. C. (2016). Code saturation versus meaning saturation:
    How many interviews are enough? *Qualitative Health Research*, 27, 1-18.

Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and
    Brain Sciences, 33*(2-3), 61-83. doi:10.1017/s0140525x0999152x

Hurd, N. M., Varner, F. A., & Rowley, S. J. (2013). Involved-vigilant parenting and socio-emotional
    well-being among Black youth: The moderating influence of natural mentoring relationships.
    Journal of Youth and Adolescence, 42, 1583-1595.

Hurd, N. M., & Zimmerman, M. A. (2014). An analysis of natural mentoring relationship profiles and
    associations with mentees' mental health: Considering links via support from important others.
    American Journal of Community Psychology, 53(1-2), 25-36.

IBM Knowledge Center. (2014). Pseudo r-squared measures. Retrieved from
    https://www.ibm.com/support/knowledgecenter/en/SSLVMB_23.0.0/spss/tutorials/plum_germcr
    _rsquare.html

IBM. (2016a, March 15). IBM SPSS Statistics 24 (Version 24) [Computer software]. Retrieved from
    http://www-01.ibm.com/support/docview.wss?uid=swg24041224

IBM. (2016b, September 07). Unexpected singularities in the Hessian matrix in NOMREG. Retrieved
    from https://www-01.ibm.com/support/docview.wss?uid=swg21480408

IBM Knowledge Center. (2018a). Hi-square-based fit statistics. Retrieved from
    https://www.ibm.com/support/knowledgecenter/en/SSLVMB_24.0.0/spss/tutorials/plum_germcr
    _chisquare.html#plum_germcr_chisquare

IBM Knowledge Center. (2018b). Stepwise Multinomial Logistic Regression. Retrieved from
    https://www.ibm.com/support/knowledgecenter/en/SSLVMB_24.0.0/spss/tutorials/nom_telco_ste
    pwise.html

Interagency Working Group on Youth Programs. (2017, February 4). Positive youth development.
    Retrieved from https://youth.gov/youth-topics/positive-youth-development

Institute for Applied Research in Youth Development. (2019, January 28). [4-H Study of Positive Youth Development Data]. Unpublished raw data.

Institute for Digital Research and Education. (2011, October 20). FAQ: What are pseudo R-squareds? Retrieved from https://stats.idre.ucla.edu/other/mult-pkg/faq/general/faq-what-are-pseudo-r -squareds/

Institute for Digital Research and Education. (2017, May 15). Multinomial logistic regression. Retrieved from https://stats.idre.ucla.edu/spss/dae/multinomial-logistic-regression/

Institutional Review Board Office. (2012, May 10). Illegal Behavior. Retrieved from https://irb.northwestern.edu/templates-forms/consent/illegal-behavior

Iselin, E. R. (1999). The quality of accounting research and internal, external, and construct validity. *Asian Review of Accounting, 7*(1), 43-64. doi:10.1108/eb060705

Jeličić, H., Theokas, C., Phelps, E., & Lerner, R. M. (2007). Conceptualizing and measuring the context within person → ← context models of human development: Indications for theory, research, and application. In T.D. Little, J. A. Bovaird, & N. A. Card (Eds.), *Modeling ecological and contextual effects in longitudinal studies* (pp. 427-456). Mahwah: Erlbaum.

Jeličić, H., Phelps, E., & Lerner, R. M. (2010). Why missing data matter in the longitudinal study of adolescent development: Using the 4-H study to understand the uses of different missing data methods. *Journal of Youth and Adolescence, 39*(7), 816-835. doi:10.1007/s10964-010-9542-5

Jones, M. I., Dunn, J. G., Holt, N. L., Sullivan, P. J., & Bloom, G. A. (2011). Exploring the '5Cs' of positive youth development in sport. *Journal of Sport Behavior, 34*(3), 250-267. Retrieved from https://www.researchgate.net/publication/235890447_Exploring_the_'5Cs'_of_positive_youth _development_in_sport

Kelley, K., Clark, B., Brown, V., & Sitzia, J. (2003, May). Good practice in the conduct and reporting of survey research, *International Journal for Quality in Health Care*, *15*(3), 261–266, https://doi.org/10.1093/intqhc/mzg031

Khazaal, Y., Singer, M. V., Chatton, A., Achab, S., Zullino, D., Rothen, S., . . . Thorens, G. (2014). Does self-selection affect samples' representativeness in online surveys? An investigation in online video game research. *Journal of Medical Internet Research, 16*(7). doi:10.2196/jmir.2759

King Jr., M.L. (1963). *Letter from a Birmingham Jail*. Retrieved from https://www.africa.upenn.edu/Articles_Gen/Letter_Birmingham.html

Kinsey, S. (2013). Using multiple youth programming delivery modes to drive the development of social capital in 4-H participants. *New Directions for Youth Development, 2013*(138), 61-73. doi:10.1002/yd.20058

Kogan, S. M., Brody, G. H., & Chen, Y. (2011). Natural mentor processes deter externalizing problems among rural African American emerging adults: A prospective analysis. *American Journal of Community Psychology, 48,* 272-283.

Kumari, S. (2008). Multicollinearity : Estimation and elimination. *Journal of Contemporary Research in Management,* 87-95. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.926.6361&rep=rep1&type=pdf

Kurtines, W. M., Ferrer-Wreder, L., Berman, S. L., Lorente, C. C., Silverman, W. K., & Montgomery, M. J. (2008). Promoting positive youth development. *Journal of Adolescent Research, 23*(3), 233-244. doi:10.1177/0743558408314372

Lau, P. S., & Wu, F. K. (2012). Emotional competence as a positive youth development construct: A conceptual review. *The Scientific World Journal, 2012*, 1-8. doi:10.1100/2012/975189

Lerner, R. M. (2000). Developing civil society through the promotion of positive youth development. *Journal of Developmental & Behavioral Pediatrics, 21*(1), 48-49. doi:10.1097/00004703 -200002000-00008

Lerner, R. M. (2004). *Liberty: Thriving and civic engagement among America's youth*. Thousand Oaks, CA: SAGE. doi:10.4135/9781452233581

Lerner, R. M. (2005, September). Promoting positive youth development: Theoretical and empirical bases. *White paper prepared for the Workshop on the Science of Adolescent Health and Development, National Research Council/Institute of Medicine* Washing, D.C.: National Academies of Science.

Lerner, R. M., Almerigi, J. B., Theokas, C., & Lerner, J. V. (2005). Positive youth development a view of the issues. *The Journal of Early Adolescence, 25*(1), 10-16. doi:10.1177/0272431604273211

Lerner, R. M., Lerner, J. V., Almerigi, J. B., Theokas, C., Phelps, E., Gestsdottir, S., . . . Eye, A. V. (2005). Positive youth development, participation in community youth development programs, and community contributions of fifth-grade adolescents. *The Journal of Early Adolescence, 25*(1), 17-71. doi:10.1177/0272431604272461

Lerner, R.M., Lerner, J.V., Almerigi, J., Theokas, C., Phelps, E., Naudeau, S., Getsdottir, S., Ma, L., Jeličić, H., Alberts, A., Smith, L., Simpson, I., Christiansen, E., Warren, D., & von Eye, A. (2006). Towards a new vision and vocabulary about adolescence: Theoretical, empirical, and applied bases of a "positive youth development" perspective. In L. Balter & C.S. Tamis-LeMonda (Eds.), *Child psychology: A handbook of contemporary issues*. New York: Psychology Press/Taylor & Francis.

Lerner, R. (2010). Scoring protocol. Retrieved from https://ase.tufts.edu/iaryd/documents/4HpydResources/PYDscoringProtocolUptoGrade7.pdf

Light, C. (2008). Tutorial: Pearson's chi-square test for independence. Retrieved from
    https://www.ling.upenn.edu/~clight/chisquared.htm

Ly, A., Marsman, M., & Wagenmakers, E. (2018). Analytic posteriors for Pearsons correlation
    coefficient. *Statistica Neerlandica, 72*(1), 4-13. doi:10.1111/stan.12111

Ma, L., Phelps, E., Lerner, J. V., & Lerner, R. M. (2009). Academic competence for adolescents who
    bully and who are bullied. *The Journal of Early Adolescence, 29*(6), 862-897.
    doi:10.1177/0272431609332667

MacCallum, R. C., Widaman, K. F., Zhang, S. B., & Hong, S. H. (1999). Sample size in factor analysis.
    Psychol. Methods 4, 84-99

Mangiafico, S. S. (2015). Simple logistic regression. Retrieved from
    https://rcompanion.org/rcompanion/e_06.html

Markus, M. L., & Robey, D. (1988). Information technology and organization change: Causal structure in
    theory and research. *Management Science, 34*(5), 583-598. Retrieved from
    http://www.jstor.org/stable/2632080

Martinek, T., Schilling, T., & Johnson, D. (2001). Transferring personal and social responsibility of
    underserved youth to the classroom. *The Urban Review, 33*(1), 29-45.

National 4-H Council. (2010, September 10). What is 4-H?. Retrieved from
    https://4-h.org/about/what-is-4-h/

National 4-H Council. (2013, December). The positive development of youth: Comprehensive findings
    from the 4-H Study of positive youth development. Retrieved from https://4-h.org/wp
    -content/uploads/2016/02/4-H-Study-of-Positive-Youth-Development-Fact-Sheet.pdf

Netzer, L. M. (2016, August 8). Very high odd ratio in multinomial logistic regression, is it ok? Retrieved
    from https://www.researchgate.net/post/Very_High_Odd_Ratio_in_multinomial_logistic
    _regression_is_it_ok

O'Halloran, S. (2005, August 9). Lecture 10: Logistical regression ii— multinomial data. Retrieved
    from www.columbia.edu/~so33/SusDev/Lecture_10.pdf

Peng, C. J., & Nichols, R. N. (2003). Using multinomial logistic models to predict adolescent
    behavioral risk. *Journal of Modern Applied Statistical Methods, 2*(1), 177-188.
    doi:10.22237/jmasm/1051748160

Pfeffer, J. (1982). *Organizations and organization theory*. Boston: Pitman.

Phelps, E., Zimmerman, S., Warren, A., Jeličić, H., Eye, A. V., & Lerner, R. M. (2009). The structure and developmental course of positive youth development (PYD) in early adolescence: Implications for theory and practice. *Journal of Applied Developmental Psychology, 30*(5), 571-584. doi:10.1016/j.appdev.2009.06.003

Radloff, L. S. (1977). The CES-D scale. *Applied Psychological Measurement, 1*(3), 385-401. doi:10.1177/014662167700100306

Robinson, A. M., Esters, L. T., Dotterer, A., Mckee, R., & Tucker, M. (2012). An exploratory study of the five Cs model of positive youth development among Indiana 4-H youth. *Journal of Youth Development, 7*(1), 82-98. doi:10.5195/jyd.2012.154

Roger, C. (2007). Youth participation in society. *Asia Europe Journal, 5*(4), 469-477. doi:10.1007/s10308-007-0152-0

Rosenman, R., Tennekoon, V., & Hill, L. G. (2011). Measuring bias in self-reported data. *International Journal of Behavioural and Healthcare Research, 2*(4), 320. doi:10.1504/ijbhr.2011.043414

Roth, J., Brooks-Gunn, J., Murray, L.& Foster,W. (1998). Promoting healthy adolescents: Synthesis of youth development program evaluations. *Journal of Research on Adolescence*, *8*, 423-459.

Roth, J. L., & Brooks-Gunn, J. (2003). What exactly is a youth development program? Answers from research and practice. *Applied Developmental Science, 7*(2), 94-111. doi:10.1207/s1532480xads0702_6

Schmid, K. L., Phelps, E., Kiely, M. K., Napolitano, C. M., Boyd, M. J., & Lerner, R. M. (2011). The role of adolescents' hopeful futures in predicting positive and negative developmental trajectories: Findings from the 4-H study of positive youth development. *The Journal of Positive Psychology, 6*(1), 45-56. doi:10.1080/17439760.2010.536777

Schofer, E. (2010). Multinomial logit. Retrieved from https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=22&cad=rja&uact=8 &ved=2ahUKEwiKnwy77hAhUOd98KHQ5ZCDk4FBAWMAF6BAgFEAI&url =http://www.socsci.uci.edu/~schofer/2010Soc229AR/pub /Class 2 Multinomial 1.0.ppt&usg=AOvVaw019j-k9aSg02tkjpcL4JuZ

Small, S. A., & Kerns, D. (1993). Unwanted sexual activity among peers during early and middle adolescence: Incidence and risk factors. *Journal of Marriage and the Family, 55*(4), 941. doi:10.2307/352774

Small, S. A., & Rodgers, K. B. (1995). Teen assessment project (TAP) survey question bank. Madison: University of Wisconsin-Madison.

Smith, T. J., & McKenna, C. M. (2013). A comparison of logistic regression pseudo R^2 indices. *Multiple Linear Regression Viewpoints, 39*(2), 17-26. doi:http://www.glmj.org/archives/articles/Smith_v39n2.pdf

Strand, S., Cadwallader, S., & Firth, D. (2011, July 20). 1module 4-multiple logistic regression. Retrieved from http://www.restore.ac.uk/srme/www/fac/soc/wie/research -new/srme/modules/mod4/module_4_-_logistic_regression.pdf

Taboga, M. (2013, October 27). Wald test. Retrieved from https://www.statlect.com/fundamentals-of -statistics/Wald-test

TenHouten, W. D. (2016). Normlessness, anomie, and the emotions. *Sociological Forum, 31*(2), 465-486. doi:10.1111/socf.12253

Teymoori, A., Bastian, B., & Jetten, J. (2016). Towards a psychological analysis of anomie. *Political Psychology, 38*(6), 1009-1023. doi:10.1111/pops.12377

The Legacy Center for Community Success. (2016, March 23). 2016 profiles of student life: Attitudes & behaviors study. Retrieved from http://tlc4cs.org/wp-content/uploads/2013/07/Attitudes -Behaviors-Study-HHSC-032216.pdf

Trochim, W. M. (2006a, October 20). Construct validity. Retrieved from http://www.socialresearchmethods.net/kb/constval.php

Trochim, W. M. (2006b, October 20). External validity. Retrieved from https://socialresearchmethods.net/kb/external.php

Trochim, W. M. (2006c, October 20). Quasi-experimental design. Retrieved from https://socialresearchmethods.net/kb/quasiexp.php

University of South Florida. (2011, August 17). USF test and measures collection. Retrieved from http://tam.rc.usf.edu/node/2679

van de Walle, G. (2008). Durkheim and socialization. *Durkheimian Studies, 14*(1). doi:10.3167/ds.2008.140105

Vimont, M. P. (2012). Developmental systems theory and youth assets: A primer for the social work researcher and practitioner. *Child and Adolescent Social Work Journal, 29*(6), 499-514. doi:10.1007/s10560-012-0271-3

Waid, J., & Uhrich, M. (2019). A scoping review of the theory and practice of positive youth development. *The British Journal of Social Work*. doi:10.1093/bjsw/bcy130

Weare, K. (2009). *Developing the emotionally literate school*. Los Angeles: Sage.

Weir, I. (2011, March 25). Spearman's correlation. Retrieved from
    http://www.statstutor.ac.uk/resources/uploaded/spearmans.pdf

White, A. A., Colby, S. E., Franzen-Castle, L., Kattelmann, K. K., Olfert, M. D., Gould, T. A., . . . Yerxa,
    K. (2019). The iCook 4-H study: An intervention and dissemination test of a youth/adult out-of-
    school program. *Journal of Nutrition Education and Behavior, 51*(3).
    doi:10.1016/j.jneb.2018.11.012

Williams, R. (2018, January 14). Scalar measures of fit: Pseudo R2 and information measures (AIC &
    BIC). Retrieved from https://www3.nd.edu/~rwilliam/stats3/L05.pdf

Worker, S. M., Iaccopucci, A. M., Bird, M., & Horowitz, M. (2018). Promoting positive youth
    development through teenagers-as-teachers programs. *Journal of Adolescent Research, 34*(1),
    30-54. doi:10.1177/0743558418764089

Wuensch, K. (2014, September 28). Multinomial logistic regression with SPSS. Retrieved from
    http://core.ecu.edu/psyc/wuenschk/MV/multReg/Logistic-Multinomial.pdf

Wynne, E. (1974). Socialization to adulthood: Different concepts, different policies. *Interchange*, 5(1),
    23-35. doi:10.1007/bf02138946

Wynne, E. (1976). Youth disintegration: The data. *New Directions for Community Colleges, 1976*(16),
    11-15. doi:10.1002/cc.36819761604

Xiao, C., Ye, J., Esteves, R. M., & Rong, C. (2015). Using Spearmans correlation coefficients for
    exploratory data analysis on big dataset. *Concurrency and Computation: Practice and
    Experience, 28*(14), 3866-3878. doi:10.1002/cpe.3745

Young, D. S., & Casey, E. A. (2018). An examination of the sufficiency of small qualitative samples.
    Social Work Research, 53-58. doi:10.1093/swr/svy026