

2011

# Demographic indicators of persistence among intermediate 4-H members in Iowa

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**Demographic indicators of persistence among intermediate 4-H members in Iowa**

by

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A thesis submitted to the graduate faculty

in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Major: Agricultural Education (Agricultural Extension Education)

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2011

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**ABSTRACT**

One purpose of the 4-H program is to create a long-term educational experience in which young people want to continue to be involved from year to year. Previous research has focused on retention within the 4-H program, but this study looked at 4-H participation from a new perspective—persistence. The purpose of this study was to explore the demographic characteristics that predict persistence among intermediate 4-H members in Iowa. The study used 4-H membership data from the 2009–2010 and 2010–2011 membership years. There was a high percentage of persistence for these members from 2009–2010 to 2010–2011, and a high percentage of the persisted members came from rural communities under 10,000 in population or a farm. These findings indicate a need to expand the Iowa 4-H program and reach more youth in urban communities across the state.

## CHAPTER 1: INTRODUCTION

Youth development programs conducted in out-of-school time (OST) “represent major community-based assets increasing the probability of indicators of positive development” (Balsano, Phelps, Theokas, Lerner, & Lerner, 2009, p. 251) in today’s early adolescents. These OST programs establish a supportive environment for those who choose to participate. The goals of OST programs are to provide a safe environment, offer educational opportunities, “reduce the likelihood of engagement in problematic behaviors” (National Research Council and Institute of Medicine [NRCIM], 2002, p. 49), help youth acquire life skills, and promote positive youth development (PYD). Many youth organizations and community groups provide opportunities for adolescents to participate in programs during OST. Examples of such programs include Boy Scouts, Girl Scouts, Campfire U.S.A., Young Men’s Christian Association (YMCA or the Y) and Young Women’s Christian Association (YWCA), Big Brothers Big Sisters, after-school programs, little leagues, youth sports teams, and 4-H clubs.

Organizations such as Boy Scouts and Girl Scouts, Big Brothers Big Sisters, and 4-H clubs use a theory-based approach to encourage PYD attributes in an effort to provide personal-growth opportunities for participants (Gressley, Tessman, Hall, & Parrott, 2009). The way OST programs are delivered plays a vital role in fostering leadership, citizenship, and other skills that promote further development of youth and later affect what Balsano et al. (2009) call responsible adulthood. The Iowa 4-H Youth Development website (2011c) states that “4-H is a community of young people across America who are learning leadership, citizenship and life skills.”



The 4-H program, a national organization, has existed for more than 100 years and continues to provide opportunities for PYD in which youth create experiences and engage in activities to “build their capacities” (Gregoire, 2004, p. 1). Nationally, there are more than 60 million 4-H alumni (National 4-H Council, 2011). As part of the National Institute of Food and Agriculture (NIFA), 4-H programs are offered within the land-grant university system (NRCIM, 2002; Russell, 2001) and are considered the youth outreach program of each state’s Cooperative Extension Service. The original concept of 4-H was “to involve farm and other rural youth in constructive community activities” (NRCIM, 2002, p. 274). Today, 4-H provides the same unique type of learning opportunities to youth in urban communities and rural areas.

In Iowa, 4-H reaches approximately 100,000 youth annually “through a variety of outreach methods in diverse settings” (Russell, 2001, p. 1). 4-H delivers content and a youth development experience through community or project clubs, special interest groups, camps, after-school programs, and school-enrichment experiences (Gressley et al., 2009). By using various delivery modes, 4-H reaches a broader audience of youth. Increasing the diversity of participants allows greater use of curriculum and activities to aid in youth development through fun, hands-on, and experiential learning activities in a non-formal educational setting (Russell, 2001).

More than 24,000 young people in Iowa (Iowa 4-H Youth Development, 2010 statistics) participate in 4-H clubs annually. These clubs provide a continuous means of delivery to support the educational objectives, social interaction, and life skill development of youth who choose to become 4-H members. The 4-H club experience consists of a group of young

people who meet together to participate in project learning, complete citizenship and service learning projects, and learn group development skills. In Iowa, the most recognized mode of delivery is a traditional 4-H community club. Youth involved in a 4-H community club focus on one or more areas of interest and enrich their learning through project knowledge and experiential activities. Recently, the 4-H program has attempted to reach a broader and diverse audience by implementing project and special interest clubs. These clubs are different from a community club; the focus is on one particular project area. Volunteer leaders provide leadership and guidance to all 4-H clubs and members.

4-H camps offer short- and long-term experiences for participants of all ages and cover many different themes and recreational activities. 4-H camping programs are offered at local, county, regional, and state levels and provide a unique setting that allows youth to experience the outdoors, participate in challenging activities, and learn new skills while gaining independence.

4-H after-school programs can be conducted independent from or in partnership with other youth-serving organizations to create a safe environment for youth during OST. And school-enrichment programs allow local school districts to use research-based, unbiased, age-appropriate 4-H curricula in classrooms (Iowa 4-H, 2011b).

In Iowa, youth may participate in 4-H beginning in kindergarten and continuing through 12th grade. Youth in kindergarten through third grade may participate in the 4-H Clover Kids Program (Iowa 4-H, 2006). To participate as a member in the 4-H club experience, youth must be in grades 4–12. Members are divided into three developmentally appropriate age

groups according to their current grade in school: juniors (grades 4–6), intermediates (grades 7 and 8), and seniors (grades 9–12).

Youth development programs, including 4-H, have struggled to maintain and sustain membership of older members, beginning in early adolescence and continuing as they get older. (Albright, 2008; Weiss, Little, & Bouffard, 2005). A dilemma in the Iowa 4-H program, like in other 4-H programs across the country, is getting youth to persist as members of clubs over a long period of time. Membership in Iowa 4-H clubs totaled 28,056 in 2001. Over the course of 10 years, club membership declined to 24,394 in 2010. With the exception of one year (membership enrollments increased by 365 members in 2009), total Iowa 4-H club membership has declined annually according to the 2010 Iowa 4-H Enrollment data statistics.

Lauver and Little (2005) expressed concerns about the length of involvement in OST youth development programs as it relates to accomplishing program outcomes. “If OST programs are to achieve success in promoting positive youth development and learning, they must attract young people and maintain their consistent participation and long-term attendance” (p. 71). In non-formal educational settings, such as 4-H clubs, it is difficult to increase the length of persistence. Unlike “formal education, 4-H youth activities are voluntary educational experiences. Members choose to participate and some, unfortunately, choose to drop out” (Norland & Bennett, 1993, p. 1).

For youth to realize maximum benefit from the 4-H program, sustained participation and increased persistence is crucial (Weiss et al., 2005). Investigating the reasons youth do or do

not persist in OST programs offers an opportunity to ensure greater success in achieving program objectives and outcomes. Therefore, if the 4-H program can gain insight as to why some older 4-H members do not persist, it seems logical that the program could take steps to slow the decline in statewide 4-H club membership and identify individuals or groups at high risk of not re-enrolling. As a starting point, this study aimed to examine baseline demographic data and search for indicators that reveal tendencies of persistence as a 4-H club member from one year to another.

### **Problem Statement**

Iowa 4-H membership has steadily declined in recent years. One way to stabilize enrollment numbers is to retain current members for a longer period of time. Persistence within the Iowa 4-H program plays a vital role in accomplishing that objective. The concept of persistence is very broad; many factors influence an individual's decision to continue further involvement in any program. Therefore, there is a need to understand and identify demographic predictors related to a lack of persistence and to ongoing persistence in the Iowa 4-H program.

### **Purpose and Objectives**

The purpose of this study was to explore the demographic characteristics influencing whether intermediate 4-H members persisted from 4-H membership year 2009–2010 to 2010–2011.

The objectives of the study were as follows:

1. Describe the demographics of intermediate 4-H members who were active during the 2009–2010 4-H membership year.

2. Using demographic characteristics, explore the differences between intermediate 4-H members enrolled in the 2010–2011 membership year (persisted) and former 4-H members who did not re-enroll (non-persisted).
3. Determine the extent to which continued 4-H participation can be predicted from demographic characteristics.

### **Significance of Study**

One purpose of the 4-H program is to create a long-term educational experience in which young people want to continue to be involved from year to year. Previous research has focused on retention within the 4-H program and qualitative responses that describe participants' reasons for not remaining in the program (Bouffard et al., 2006). Mulroy and Kraimer-Rickaby (2006) looked at two aspects of the 4-H program: sustainability and impact of the youth development program. They noted that “many researchers are interested in understanding the contextual variables that attract and retain youth in 4-H programs and dissuade youth from enrolling, engaging, and remaining in 4-H (p. v).” This study provides a new perspective: using quantitative, demographic information to determine the length of time an individual continues, or persists, within the 4-H program.

This study will generate information that allows 4-H professionals to begin understanding the most important demographic factors for retaining current members and extending the overall length of 4-H membership. This is in line with the Iowa 4-H program's goal to “focus on connecting young people with caring adults and involving them over an extended period of time” (Iowa 4-H Youth Development, 2005). Hartley (1983) stated, “The program can't meet its objectives and goals if its members drop out after the first year.” The Iowa 4-H program

wants to do better than enrolling young people for just 1, 2, or 3 years. The longer a young person is involved, the more life skill development they will achieve. Boyd, Herring, and Briers (1992) found a positive relationship between participation in 4-H and leadership life skill development.

The study by Boyd et al. (1992) indicated that leadership life skill development increased as level of 4-H participation increased. Those researchers characterized leadership life skill development as “working with others, understanding self, communicating, making decisions, and leadership” (p. 1). Though not exact, these characteristics are similar to the five outcomes of the Iowa 4-H program: leadership, citizenship, communications, personal life management, and knowledge. As the Boyd et al. (1992) study suggests, to make a greater impact on youth and their achievement of these life skills, it is crucial to create a level of persistence as participants continue through the program.

### **Terms and Definitions**

*4-H youth development program*—A community program for youth within the United States Department Agriculture (USDA)/National Institute of Food and Agriculture (NIFA). “The program began as a way to involve farm and other rural youth in constructive community activities, 4-H now runs programs in urban areas, contributing to a positive outcome of millions of young people every year.” (National Research Council and Institute of Medicine, 2002, p. 275)

*4-H club membership*—Membership requires an annual enrollment, which can be completed online or with a paper form. Youth in grades 4–12 are eligible to join the program. Members

are classified into three developmentally appropriate age groups: juniors (grades 4–6), intermediates (grades 7–8, and seniors (grades 9–12).

*4-H On-line enrollment database*—The 4-H On-line program is a database that keeps a record of all 4-H'ers in Iowa. This computerized system records contact information, project areas, and involvement information for all members and volunteers.

*4-H membership year*—The official 4-H year in Iowa is September 1 through August 31. Some counties or clubs may organize during a different month.

*Traditional/community 4-H club*—A community 4-H club usually includes five or more members and one or more adult volunteers who live in the same general area. Community clubs usually meet once a month in a public building. Members enroll in a variety of projects and work on them at home, in project meetings, or in another setting.

*Independent membership*—4-H members who do not belong to a club are considered independent members. Independent members select a mentor who helps them learn. These members are held to the same expectations as other 4-H club members. They are eligible to participate in all 4-H activities and have the same opportunities as other members.

*Involvement*—The act of being engaged and participating in the wide variety of opportunities, events, and activities supported or sponsored by the 4-H program (Tinto, 1997).

*Nonformal learning experiences*—Experiences that don't take place in formal classroom settings and that are conducted using a variety of learning strategies and methods (Norland & Bennett, 1993).

*Persistence*—The continuation of an activity after being involved no matter the consequences and accomplishments (Arnold, 1999).

*Retention*—The ability to hold on to members and have them re-enroll each year.

*Specialty/project club*—A specialty/project club focuses on a single project or a group of related projects. Project clubs may exist for just about any subject or project young people are interested in. Examples include livestock (e.g., large animal, small animal, and horse), science, shooting sports, conservation, computers, and Lego leagues. The theme of most meetings relates in some way to the project.

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## **CHAPTER 2: LITERATURE REVIEW**

The purpose of this study was to explore the demographic characteristics influencing whether intermediate 4-H'ers persisted from 4-H year 2009–2010 to 2010–2011. An in-depth look at data collected through the 4-H On-line enrollment database was conducted to determine indicators affecting ongoing persistence of adolescent members in Iowa 4-H clubs. This literature review provides additional information on topics important to this study: adolescent development related to involvement in out-of-school-time (OST) activities, the role of youth development programs, the conceptual framework for this study, retention versus persistence, retention in youth development programs, and related studies of persistence and retention in 4-H. The body of literature presented provides evidence and support for the study and its importance to the 4-H program.

### **Adolescent Development**

Previous misconception of the term “adolescence” has led to negative connotations focusing on behavior, attitude, and influences during a transition period in human development (Scales & Leffert, 2004). Adolescence research has focused on societal problems that become more apparent during this stage and in some cases appear for the first time during a person’s life (Steinberg & Morris, 2001). As adolescents progress through stages of physical, cognitive, social, and psychological development as they transition into adulthood, many adolescents are “reevaluating their beliefs, standards, values, and ways of behaving” (Gemelli, 1996, p. 447).

Scales and Leffert (2004) researched 40 developmental assets that help youth develop into healthy, mature young people and provide a crucial framework and influence to “shape young people’s developmental pathways” (p. 13). According to Scales and Leffert, the developmental assets focus on developing important “relationships, opportunities, skills and values” (p. 1) that provide the “building blocks” (p. 5) necessary to create “healthy, caring, principled, and productive” (p. 5) members of our society.

That research provided the foundation and framework of what is referred to today as positive youth development (PYD). Each developmental asset was classified as internal or external (Roth & Brooks-Gunn, 2003; Scales & Leffert, 2004). The external assets (e.g., support, empowerment, boundaries and expectations, and constructive use of time) focus on concepts and principles of youth development. To help youth overcome the obstacles and challenges of adolescence, OST youth programs provide a context in which PYD can occur. According to Roth and Brooks-Gunn (2003), the fundamental ways to facilitate adolescent development within PYD programs are “support, empowerment, boundaries and expectations, and constructive use of time” (p. 198).

Balsano et al. (2009) expanded Scales and Leffert’s (2004) research to create “the developmental systems theory-based model of PYD that has evolved over the last decade” (Balsano et al., 2009, p. 250). The developmental systems model supports adolescents’ growth by focusing on their strengths and explains how the an adolescent’s strengths align with all of the resources available to them to positively affect their development. Lerner, Lerner, Phelps, and Colleagues’ (2009) new definition of PYD “views young people as resources to be developed rather than as problems to be managed” (p. 7), and their research

focused on the developmental attributes of competence, confidence, connection, character, and caring (the “Five Cs”; p. 250). A sixth C, “contributing” is said to develop after the other five are at work in the adolescent; Lerner (2004, in Alberts et al. 2006) attributes the establishment of contribution as a sort of return on investment, a young person’s make-up due to the fact they have the other Five Cs working in their favor.

Youth development professionals placed an emphasis on identifying the best opportunities to instill the Five Cs (confidence, competence, connectedness, caring, and character) in youth to create successful members of our society. Currently, there are many programs that provide opportunities to focus on the adolescents’ growth and development in a variety of settings and environments (Jacobs, Wertlieb, & Lerner, 2003). Youth development programs are now providing opportunities for youth to engage in an experience in which they can develop relationships with peers and caring adults.

Research in the area of youth development conducted over the last decade has focused on the development of youth through their adolescent years (Restuccia & Bundy, 2003). The research surrounding PYD provides evidence of positively affecting youth during this time by focusing on a set of core concepts. Lochner and Nall Bales (2006) also indicated positive effects related to youth belonging to short- and long-term youth development. In the early 1990s, the youth development movement shifted from programs seeking short-term results to programs striving for a deeper impact and a long-term experience (Restuccia & Bundy, 2003).

### Role of Youth Development

Positive youth development does not have a universal definition (Catalano, Berglund, Ryan, Lonczak, & Hawkins, 1998) but does have a set of qualities, or developmental assets, that guide its practice and goals. The concept of youth development is used in many programs “ranging from large national youth-serving agencies, such as 4-H, Boys and Girls Clubs, Girls, Inc., Boy Scouts, and Girl Scouts, to more local youth sports organizations, community centers, schools, libraries, faith-based institutions, museums, art centers, service clubs, and numerous other grassroots organizations” (NRCIM, 2002, p. 3). No matter the program, PYD needs to play a critical role in adolescents’ lives.

“Quality programs have a dual focus: they develop skills, competencies, and knowledge as well as prevent problem behaviors by reducing risk and related risk factors” (Anderson-Butcher, 2005, p. 1). The specific characteristics emphasized in a single organization vary, but most programs share some common features that assist in PYD. The NRCIM (2002) categorized these features as outlined in Table 2.1.

Table 2.1  
*Features Needed in Programs to Assist with the Positive Development of Youth*

Physical and psychological safety	provide safe environments for youth to participate
Appropriate structure	"programs need to be developmentally, as well as culturally, appropriate" (p.49)
Supportive relationships	"the predictive of importance of connectedness" (p.81)

Table 2.1 (Continued)

Opportunities to belong	"The need to belong has been suggested to be one of the strongest human motivational needs" (p.81)
Positive social norms	"rules of behavior, expectations, values and morals, and obligations for service" (p.90)
Support for efficacy and mattering	"allow youth to participate in the leadership of the program" and "involve youth in responsible leadership positions around program activities" (p.134)
Opportunities for skill building	importance for engagement in "opportunities for skill building" (p. 135) creating new knowledge and learning of new skills
Integration of family, school and community efforts	"meaningful communication and synergy among the different settings of adolescents' lives" (p.110)

*Note.* Page numbers for quotations are from *Community Programs to Promote Youth Development* (NRCIM, 2002).

Other adolescent development researchers later condensed the features and found that "effective youth-serving programs are positive and sustained relationships between youth and adults, activities that build important life skills and opportunities for children to use these life skills as both participants and as leaders in valued community activities" (Lerner et al., 2009, p. 12). Programs exhibiting characteristics of these features can be labeled as youth development programs. Roth and Brooks-Gunn (2003) developed a formal, yet preliminary, definition of a youth development program to describe the goals these programs seek to accomplish:

*Youth development programs seek to enhance not only adolescents' skills*

*but also their confidence in themselves and their futures, their character, and their connections to other people and institutions by creating environments, both at and away from the programs, where youth can feel supported and empowered. (p. 219)*

The core concepts of Roth and Brooks-Gunn's (2003) definition provide direction and focus in youth development programs, which offer a valuable component to adolescents' lives (Scales & Leffert, 2004). These programs are designed to promote youth development by applying the operational definitions for the five C's (competence, confidence, connections, character, and caring/compassion). Organizations involved with youth development use the environment of the program and the assets of the individual to achieve this.

Belonging, generosity, independence, and mastery are essential needs of youth and help youth become confident and contributing members of our society (Brendtro, Brokenleg & Van Bockern, 2002). Scales and Leffert (2004) reference the importance of providing an atmosphere of belonging, assisting in the mastery of skills through educational and actual life experiences, instilling a sense of confidence or "self-worth" (p. 108), and establishing a connection between other OST participants, including a relationship with a caring adult leader. Youth development programs provide opportunities to assist youth in meeting these basic needs. For example, individuals who participate in county 4-H programs learn mastery through project area learning, generosity through citizenship activities, and independence through leadership development; they also experience a sense of belonging to a group of young people with similar interests (Iowa 4H Youth Development, 2003).

The Iowa 4-H program operates according to a set of “essential elements” (Iowa 4-H Youth Development, 2003). These elements are having a caring adult, providing safe environments, developing mastery, promoting service, allowing self-determination, nurturing inclusiveness, fostering futuristic thinking, and providing activities for engagement. By recognizing the four needs of youth and incorporating these eight essential elements into clubs, programs, and events, 4-H is uniquely positioned help all youth involved in the program achieve five desired outcomes: strong communication skills, leadership development, citizenship, personal life management, and knowledge from project learning. The Iowa 4-H Model diagram in Appendix A provides a visual representation of how youth achieve these outcomes through 4-H participation.

### **Conceptual Framework**

Youth development organizations must engage in ongoing assessment of their programs and youth outcomes to assist with strategic planning for the future, including setting goals and objectives (Upcraft and Schuh, 1996). By using such assessments, organizations can identify positive impacts, define critical issues or problems, and make appropriate changes to the direction the program is going. Upcraft and Schuh (1996) believe, “Assessment, then, can help us decide what we do, as well as how well we do it” (p. 14). It is useful to use a well-established theory or modeled framework for program assessment. The model used to frame this study and serve as the conceptual framework was Alexander Astin’s (1993) Input-Environment-Output (I-E-O) model.

The components in Astin’s model can be characterized as inputs, environments, and outcomes (Astin, 1993; Upcraft & Schuh, 1996). These areas of focus allow assessment of all

areas of a student's involvement in relation to outcomes received from the experience.

Following is a brief description and explanation of the components within Astin's model.

Astin's model has been used widely in higher education to assess outcomes of students attending institutions of higher learning. The developmental framework of this model provides researchers with guidelines to assess how the characteristics of previous knowledge, combined with an educational and social experience, determine the overall outcomes achieved by the institutions (Upcraft & Schuh, 1996).

Inputs are preexisting details of the individual's life that are brought into a new environment. Astin (1993) explains them as "characteristics of the student at the time of initial entry to the institution" (p. 7). A student's previous characteristics can have a great effect on the change, growth, and development that may come from being engaged in the new environment and possible outcomes that may be achieved.

Astin's theory of involvement (Pascarella & Terenzini, 1991) is set within the second component of the model, which identifies environmental effects and the impact of the overall experience of the higher educational setting on the student. The effects of multiple influences available in the environment make an impact on the development of an individual. Upcraft and Schuh (1996) suggested these are "things which might influence what and how much students learn or change" (p. 220). Examples of items that fall under the environment component include "programs, policies, faculty, peers and educational experience" (Astin, 1993, p. 7).



The theory of involvement is placed within the environment component of the I-E-O model because it relates to how involved the individual gets in the new environment. Astin (1985) defined involvement as the “amount of physical and psychological energy that the student devotes” (p. 134) to the activity or learning experience. Before Astin’s definition, the word involvement was merely the notion of the impact and experience the environment setting had on the individual (Pascarella & Terenzini, 1991). Astin’s thinking evolved beyond the impact of the experience on the individual and now “assigns the institutional environment a critical role” (Pascarella & Terenzini, 1991, p. 51) by looking at the number of opportunities present for participation. In this theory, the “quality of effort or involvement” (Pascarella & Terenzini, 1991, p. 51) is critical to the growth, development and change that occur during the experience (Pascarella & Terenzini, 1991).

The final element of Astin’s I-E-O model is the desired outcomes to be achieved through an individual’s involvement in the environment. This element is an assessment of whether the desired outcomes were a direct result of “the student’s characteristics after exposure to the environment” (Astin, 1993, p. 7). Satisfaction, personal development, cognitive development, and career development (Upcraft & Schuh, 1996) are examples of outcomes that can be assessed with this model.

#### **Conceptualizing 4-H Using the I-E-O Model**

“The model could be used in almost any social or behavioral science field (i.e. history, anthropology, economics, sociology, psychology or political science) that studies human beings and the environmental influence on their development” (Thurmond & Popkess-Vawter, n.d., p. 3). The three components of the I-E-O model are present in the 4-H

program—(1) what the individual brings into the program (inputs), (2) the overall experience provided (environment), and (3) desired characteristics developed while involved (outcomes)—making this model a viable framework around which to develop the concepts of this study.

4-H provides opportunities for youth to grow and develop life skills by providing an environment of non-formal, voluntary learning experiences. Youth participating in the 4-H program bring with them interests, goals, and developmental needs. These characteristics are combined with activities, events, and club environments to provide the entire 4-H experience. The ultimate outcome is to for youth to develop skills in leadership, citizenship, communications, personal life management, and knowledge (Iowa State University Extension 4-H Youth Development, 2005) and become competent, confident, connected, caring, and contributing members of society with good characters (Lerner et al., 2009).

The I-E-O model provides a conceptual guide (Upcraft & Schuh, 1996,) outlining all needed information to evaluate the level of persistence achieved by a 4-H youth development program. This model offers the organization's administration and decision makers a better basis for knowing how to achieve desired educational outcomes (Upcraft & Schuh, 1996) and can assist in assessing the program's ability to change or see growth in the student (Upcraft & Schuh, 1996) based on their involvement or experience. Researchers can use the I-E-O model "to assess the impact of various environmental experiences by determining whether students grow or change differently under varying conditions" (Upcraft & Schuh, 1996).

Astin (1993) explains that "the basic purpose of the model is to assess the impact of various environmental experiences by determining whether students grow or change differently

under varying environmental conditions” (p. 7). The I-E-O model requires three types of information: “what they are like when they come to college” (Inputs), “the nature of their experiences while in college” (Environment), and “what they are like when they leave college” (Outcomes) (Upcraft & Schuh, 1996, p. 222). The following paragraphs describe how the 4-H program’s assessment of individual outcomes can fit within these same three categories.

The first dimension of the I-E-O model is inputs. Astin (1993) labels these as variables from a “variety of personal, background, and educational characteristics” (Upcraft & Schuh, 1996, p. 219) that may or may not affect how the individual is involved in the program. The 4-H program is open to all youth, and each brings to the program their unique background, knowledge of the program, and reason for wanting to be involved. In the 4-H program, inputs include demographic information such as gender, age, race/ethnicity, residence, previous experience with 4-H through clover kids or other Extension youth development programs, and family history in the program (Upcraft & Schuh, 1996). These inputs may or may not affect a youth’s overall involvement or experience with the 4-H environment. However, understanding the characteristics of the population participating as members is important to assessing how long a member will persist in the program.

Environmental factors are an integral part of the I-E-O model and are key to seeing development and change in youth. In 4-H, the program quality and experience are critical to recruitment and persistence of members (Lauver & Little, 2005). Examples of environmental aspects of the 4-H program are numerous; the list in Figure 2.1 is not exhaustive, but it provides an idea of the wide array of experiences available through 4-H club membership.

The environment and involvement provide the basis for youth to persist in 4-H and achieve the third component of the I-E-O model, outcomes.

Outcomes of the Iowa 4-H program are consistent with those of other youth development programs and similar to those assessed through the I-E-O model. The Iowa 4-H program strives to help youth achieve five specific outcomes: leadership, citizenship, communication, personal life management, and knowledge (Iowa State University Extension 4-H Youth Development, 2005). Other 4-H program outcomes, which are not measured as often, include satisfaction of the experience based on beginning expectations, impact of skills attained on college or career objectives, and moral development of attitudes and values (Upcraft & Schuh, 1996).

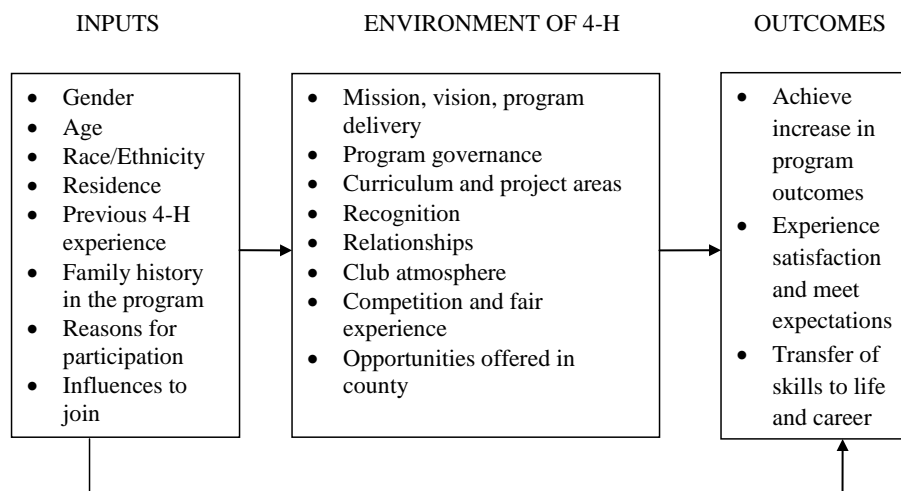


Figure 2.1. Conceptualizing 4-H using the I-E-O model. Adapted from Terenzini and Reason (2005).

To assess the extent to which 4-H members achieve outcomes through the current program structure, an intense research project would need to look at the individual's satisfaction with environmental aspects of the Iowa 4-H program and how that contributes to their level of persistence. To fully understand how the I-E-O model relates to this study, it was important to look at previous research and information on indicators or predictors of the input measures that may play a role in overall persistence of youth in the Iowa 4-H program.

### **Retention Versus Persistence**

To achieve success in OST programs focused on PYD, sustained participation and "long-term attendance" must occur (Lauver & Little, 2005, p. 71). The 4-H program is considered an OST program and recognizes that continual, long-term experiences are vital to achieving the program's desired outcomes. To assess the outcomes, the 4-H program must determine the direction of measure in regard to retention or individual persistence.

Both terms, persistence and retention, are important in maintaining youth involvement in the program. Retention is viewed as a program measure. Individual participants who continue to be involved in the program for an extended period of time are said to have been retained. Retention has been used as a measure of program delivery, and OST programs have been more widely researched under the term retention (Arnold, 1999).

Recently, higher education models, such as Astin's I-E-O model, have been focused on indicators affecting the persistence of individuals in university or program settings.

Persistence focuses on the act of continuation due to the environmental experiences available for participation within the program (Tinto, 1997). The term persistence provides a positive

reflection of youth wanting to continue in the program to complete a project or reach an individual goal (Arnold, 1999) and indicates greater involvement and participation in the life of the activities (Tinto, 1997). If the 4-H program is going to focus strictly on long-term experiences while still achieving its outcomes, it is more appropriate to examine persistence than retention.

### **Retention in Youth Development Programs**

Youth development professionals continue to struggle with lower attendance in OST programs during the transitional years of early adolescence (Ferrari & Turner, 2006; President & Fellows of Harvard College, 2004). Understanding why participation in OST programs decreases requires investigating the “processes through which adolescents initiate their participation in programs and either persist or drop out” (Borden, Perkins, Villarruel, & Stone, 2005, p. 33). Ferrari and Turner (2006) espoused that long-term engagement assists adolescents in experiencing positive outcomes during their involvement. The outcomes and potential benefits of OST programs will not be attainable if youth do not participate (HFRP, 2004).

Focus must be placed not only on getting adolescents involved but also on ensuring their continual and long-term participation. Anderson-Butcher (2005) suggested that program leaders recognize what initiated adolescents’ involvement and then continue to offer those same things but in new ways. Anderson-Butcher also identified several areas that need to be monitored to maintain a quality program and assist in persistence of adolescents. In an effort to retain youth in OST programs, ongoing planning as well as “examining opportunity structures, youths’ interests, and youths’ needs for competence, autonomy, and relatedness”

(Anderson-Butcher, p. 5) is required. In 4-H, competence, autonomy, and relatedness are called mastery, independence, and belonging. Regardless of the terminology, these concepts are vital to keeping youth involved.

Youth development professionals continue to seek information on why participants are attracted to and remain involved in their programs. Borden et al. (2005) reported some reasons for and against participation in youth programs. Youth respondents in Borden et al.'s study indicated they participate in OST programs simply because it's fun, keeps them out of trouble, and they have the opportunity "to learn new skills and gain new knowledge" (p. 38); their reasons for not participating in these programs included: "(1) youth were too busy or lack of time, (2) had other interests, (3) held negative opinions of the youth center, or (4) were constrained from participation by parents or guardians" (p. 39). To further explore reasons for persistence of 4-H club members and the impact of maintaining long-term experiences for adolescents in the 4-H program, a review of current research related to persistence of 4-H clubs from other states was conducted.

#### **4-H Studies of Persistence and Retention**

Ongoing participation in the 4-H program has been more widely researched under the term retention than under the term persistence. Youth participating in the Iowa 4-H program have the opportunity to continue involvement until they complete their senior year of high school. To understand what makes youth persist in the program, we must understand why they stay. "Identifying the reasons long-term members choose to continue with 4-H is a critical piece in understanding the puzzle" (Harder, 2005, p. 9) and in determining the best methods to encourage persistence with the Iowa 4-H program.

“The dropout of first-year 4-H Club members reduces the length of participation by youth in the 4-H program,” (Hartley, 1983, p. 1). Hartley surveyed members who persisted, members who did not, those who had never participated as 4-H club members, and 4-H club leaders and Extension agents. The study investigated many inputs and environmental aspects of the 4-H experience and indicated a 55% re-enrollment rate. There was a direct relationship between participation in 4-H activities and re-enrollment; completion of a 4-H project and recognition were directly associated with re-enrollment. Members had a greater chance of not persisting the older they were when they enrolled as a first-year member.

Astroth (1985) observed a similar problem in Kansas: 4-H clubs successfully recruited new members to the program but were unable to grow their total number of club members. An in-depth look at 10 years of enrollment data indicated Kansas was losing 40%–50% of new members recruited into the program after their first year. “Recognizing that we had a retention problem, and not an enrollment problem, new families were surveyed to find out what was causing these high casualty figures” (Astroth, p. 2). Members and families gave the following reasons for leaving the 4-H program:

- “Lack of an understanding of the 4-H program, its goals, activities, events, and time commitment.
- Moved.
- Never felt welcome or a part of the group.
- Conflicting time commitments.
- Project groups didn’t meet often and/or frequently enough to satisfy children.”  
(Astroth, 1985, p. 2)

Astroth (1985) used the information to create a new system to help with persistence of first- and second-year members. With assistance from a parent committee, a new staff position was created to offset the large number of youth leaving the program early. Astroth’s research



provided insight into the length of time the 4-H program needs to keep new members in the club program (i.e., to the third year) to ensure a chance of greater length of persistence.

Heinsohn and Lewis (1995) found that at any given time in youth organizations, such as 4-H and scouts, the number of 9- to 11-year-old participants makes up more than half the enrollment. An analysis of 4-H enrollment information collected in Colorado during a 2-year time period (2002–2003) supports this statement; 11-year-olds represented the largest percentage of members (Harder, Lamm, Lamm, Rose & Rask, 2005). Further distribution of the data indicated the smallest percentages were members ages 5–7 and 16–18.

Harder et al. (2005) provided additional information on the participation rates of various ages and groups in Colorado. An inquiry into the years in 4-H by age was broken down into intermediate and senior membership levels. In both levels, an analysis of the number of years determining persistence found a dramatic drop in the membership levels which occurred the following membership year. For example, 14-year-olds who had persisted for 7 years in 2002 represented between 20% and 25% of overall membership. In 2003, the same group dropped to approximately 5% of membership. All data were based on the age of joining 4-H in Colorado being 7 years old.

Harder et al. (2005) analyzed the Colorado data further to gain a basic understanding of the ages at which enrollment increased and began to decrease. A steady increase of 4-H membership occurred through age 12. After 12 years of age and continuing to 18 years of age, a steady decline in the member population occurred. On the basis of these findings, the length of persistence in for 12- to 18-year-olds is shorter than that for 9- to 11-year-olds.

Norland and Bennett (1993) investigated the relationship between satisfaction and a number of independent variables. The demographic variables included gender, years in 4-H, urban or rural location, project, club, and family. These variables were used to develop a set of predictors to look at the satisfaction level of the program. There were either low or no positive relationships between satisfaction and the number or type of projects taken, tenure as a 4-H member, and urban or rural respondents. There was, however, a very high positive relationship between “gender (girls were more satisfied than boys), and high participation in 4-H activities (Norland & Bennett, p. 2).” This suggests that satisfaction comes through involvement in activities and events. And satisfaction may influence members’ persistence.

Research conducted by Thompson (1998) and presented by Homan, Dick, and Hedrick (2007) supplied three reasons as to why individuals did not re-enroll: “they were too busy, other activities were more important, and they did not have enough time for 4-H activities”(Homan et al., 2007, p. 137). According to Homan et al., the 4-H program must continue to meet the needs of an audience with diverse needs and interests. Staff administering the program must constantly be evaluating the opportunities presented to 4-H members. A recent study by the Minnesota 4-H program (Sheehan & Harrington, 2010) investigated reasons for joining, staying in, and leaving the 4-H program; one indication reported in that study was that strong engagement in learning new things elevated the satisfaction and persistence level of members who stayed compared with those who left the program.

Being too busy is a frequently mentioned reason for older members not persisting in the 4-H program. In Ritchie and Resler’s (1993) study, participation in sports activities was the

second most common reason youth were not persisting in 4-H, and the third most common reason was holding down a job. Both reasons were consistent with responses in previous studies.

The most frequent response Ritchie and Resler (1993) received when they asked youth why they were not continuing to persist was displeasure with 4-H clubs. The club program plays a large role in the overall environment of the 4-H program, so these findings indicated an “internal” area of concern, “not external, to 4-H Clubs, and their leaders” (Ritchie & Resler, p. 2). Sheehan and Harrington (2010) reported that a positive relationship with the club leader and connections to the members can significantly increase the likelihood members will persist. They found that “youth who stayed in the program because of positive connections with leaders” (Sheehan and Harrington, column 3, ¶ 1) tended to persist longer. Social interaction and reinforcement are directly related to the environment of the 4-H club. This provides further evidence as to why assessing the program’s environment is important. An increased focus on obtaining greater parent support, which Ritchie and Resler mentioned as a possible way to positively affect the persistence of members, may also help facilitate positive relationships and club environments.

Cole and Waters (2001) conducted a qualitative study to determine factors influencing retention of senior 4-H members in rural Tennessee. The focus groups participants were youth who were no longer active in 4-H; they were asked questions related to their 4-H experience, both likes and dislikes. The most positive responses mentioned activities/events, camps, and 4-H being fun. Respondents mentioned a dislike of the club structure. “The teens said that the 4-H club was boring, too strict, and that the club structure allowed no time for

fun things” (Cole & Waters, p. 5). Responses to the question of “What did you not like about these activities?” (p. 5) again showed an internal environmental issue with the 4-H club structure. Statements suggested that rules for activities were too strict and limited participation. In addition, the frequency of 4-H agents changing was stated as another reason to not like 4-H.

Cole and Waters (2001) concluded their study with a unique question designed to get immediate feedback from youth and specific responses about how to increase persistence of older 4-H members. Four themes were identified that potentially affect the length of persistence. The first theme focused on marketing and communication of programs. The second theme was the need for more mature activities that meet the needs and interests of this age group (examples mentioned in the article were to go on trips, discuss careers and jobs and offer programs wanted by teens (Cole and Waters)). The third theme was time. One comment was, “You will not pick 4-H over other things, do it during school” (Cole and Waters, p. 8), the “it” referring to 4-H being held during the school day. The fourth theme was the importance of a positive relationship between the 4-H agent and youth. On the basis of these issues raised by teens, Cole and Waters (2001) presented the following recommendations for the Tennessee 4-H program: (1) development of new programs and program delivery methods, (2) increased marketing, (3) collaboration with schools, and (4) training and support for 4-H agents.

An assessment conducted with senior 4-H members from Iberville Parish in rural Louisiana was used to examine the participation of older adolescents within the parish’s 4-H program (Acosta & Holt, 1991). Enrollment numbers in the Louisiana 4-H program indicated a

decline of youth age 13 and older. The assessment sought information about what topics youth would find interesting. After assessing the collected topics, the 4-H advisory committee and staff implemented specific programs that were requested. When the program, which had been redesigned to “appeal to the modern teenager” (Acosta & Holt, 1991, p. 3), was reassessed, the parish reported a 21% increase in persistence among senior 4-H members. This program was redesigned according to the “felt needs” (Acosta & Holt, 1991, p. 3) of the members; the key to persistence among the senior 4-H members in the Iberville Parish was to have their needs met during each developmental stage of adolescence.

Albright (2010) conducted a similar focus group study to assess 4-H persistence in a county in Ohio. The findings were consistent with previous research, mentioning conflicts with sports and activities due to a lack of time and relationships with advisors. Issues of “uninvolved and over-involved” (Albright, 2010, p. 6) club leaders were mentioned. As previously mentioned, these negative experiences within the 4-H club environment may affect persistence of members.

Albright’s (2010) research also revealed another reason for decreased participation: competition. Individuals in Albright’s (2008) study mentioned both positive and negative experiences associated with judging, competitiveness of parents and others, and sportsmanship. Limited research has been conducted on competition and its relationship to persistence in the 4-H program, but Albright (2008) cited two other studies that may have relevance to the area of competition within 4-H. Cano and Bankston (1992) “identified inequality of judging experiences as a factor affecting the participation of minority youth in 4-H” (p. 28) and concern with “excessive parent involvement, unethical practices, and

unhealthy characteristics that are prevalent in competitive events” (Radhakrishna, Everhart & Sinasky, 2006, p. 8). And Radhakrishna et al. (2006) investigated members’ beliefs and values as they related to competitive events in 4-H. On the positive side of the issue of competition, which is part of the environment in the 4-H program, Sheehan and Harrington (2010) found increased persistence in members who enjoyed their work on projects and participation in fairs.

The majority of research reviewed here focused solely on the 4-H member population as a whole, excluding individual demographic inputs. However, Bankston (1992) surveyed extension personnel regarding strategies that have been implemented to help increase the population of minority members enrolled in the Ohio 4-H program. Successful strategies included recognizing minority volunteer leaders, recognizing achievement, making minority youth and leaders feel welcome, holding meetings in convenient locations, and focusing on the first-year members by creating something special for them to do in the club and making sure they have the needed information and supplies to complete a project (Bankston, 1992).

Lack of persistence in the 4-H program may not always be a result of a negative experience or the fault of the program itself. Heinsohn and Lewis (1995) looked at the concept of persistence from a developmental standpoint, in other words, “a natural part of growing up” (p. 1). A young person typically enters the 4-H program between the ages of 9 and 11, when their parents are heavily influencing or making decisions about what activities or organizations their child will be involved in. However, Eccles and Midgley (1989) discuss the need for environments that are representative of adolescents’, not parents’, needs. The person-environment fit theory states that youth are influenced by factors “between the

characteristics that individuals bring to their social environments and the characteristics of the environments themselves” (NRCIM, 2002, p. 62). Upon reaching adolescence, many youth begin to develop their need for independence. With that independence comes independent decision making. “They want to pursue interests and activities of their own, not their parents’ choosing” (Heinsohn and Lewis, p. 2). Research suggests that youth will be drawn to programs that will help them develop their strengths (NRCIM, 2002). Youth want the leadership and responsibility to help shape the program and provide input into the activities being conducted (NRCIM, 2002).

Homan et al. (2007) surveyed current 4-H members, past 4-H members, and nonmembers on positive and negative perceptions of 4-H in grades 4, 7, and 10 in hopes of supporting the developmental perspective of Heinsohn and Lewis (1995). Findings of that survey revealed that “older youth were less likely to agree they intend to stay in 4-H, that their parents want them in 4-H, or that their friends want them in 4-H” (Homan et al., p. 3). One reason for nonpersistence may be how youth viewed the 4-H program in Ohio. The 10th grade students viewed 4-H less favorably than the fourth and seventh graders, but Homan et al. did not indicate reasons for this.

Wingenbach, Meighan, Lawrence, Gartin and Woloshuk (1999) surveyed the adult volunteers and Extension staff who work with the 4-H program in West Virginia. The purpose of that research was to generate a list of recommendations related to variables viewed as critical for persistence in the 4-H program by those who work directly with members. The similarity between volunteer and staff responses in that survey and youth responses in the previous studies is worth mentioning. Results indicated a need for “pro 4-H”

Extension staff and volunteers, increased participation in the camping program, and recognition for all 4-H members. The importance of listening to the needs and ideas of youth also was mentioned as a way to increase persistence.

### **Summary**

Youth development programs create a positive atmosphere to meet the basic needs of youth. These programs focus on developing adolescents who are competent, confident, connected, caring, contributing, and of strong character. The outcomes of participation and long-term persistence in these programs assist in “developing skills, competencies and knowledge as well as prevent problem behaviors” (Anderson-Butcher, 2005, p. 3). Recent research has indicated that involvement in OST programs has a significant impact on overall developmental characteristics of adolescents.

The I-E-O model can be adapted to 4-H, as evidenced by a diverse set of studies on retention and persistence of 4-H members. When assessing youth involvement in 4-H, the term persistence, which indicates an individual’s desire for continued involvement in the program, is more appropriate than the term retention. Studies conducted in several states have shed light on environmental aspects of the 4-H program that affect persistence, and many aspects were consistent across studies and states. Many 4-H members do not persist after their first year in the program, and common reasons for this include a lack of understanding of the program, time commitments, and level of participation in activities.

Hartley (1983) asked, “Can we identify those likely to drop out and those likely to stay in 4-H? (p. 1)” The research reviewed here did not clearly identify characteristics or indicators of



persistence. However, there were several common themes. The most common reason for a decrease in the number of 4-H members persisting was a lack of time to participate because of involvement in school, sports, extracurricular activities, and work. A second reason for not persisting focused on dissatisfaction with the 4-H program environment. A more in-depth examination revealed some specific reasons for this dissatisfaction including displeasure with the 4-H club, lack of mature opportunities, negative relationships with volunteers or Extension staff, and lack of interest in programs.

Some 4-H programs have implemented successful interventions to assist with solving the challenges of decreased persistence. Astroth (1985) described the use of a new family coordinator to offset parents' lack of understanding of the 4-H program and make the 4-H club environment more welcoming. In Louisiana, a parish 4-H program designed to "appeal to the modern teenager" (Acosta & Holt, 1991, p. 3) by creating programs and activities that were of interest to the youth involved resulted in a 21% increase in persistence of senior 4-H members.

This literature review forms the foundation for and explains the conceptual model (Astin's I-E-O model) used to guide this study. The studies described here provide further insight about retention and, more appropriate for this study, persistence in the 4-H program.

### **CHAPTER 3: METHODS AND PROCEDURES**

The purpose of this study was to explore the demographic characteristics influencing whether intermediate 4-H'ers in Iowa persisted from 4-H year 2009–2010 to 2010–2011. The study used 4-H membership data from the 2009–2010 and 2010–2011 membership years and investigated specific variables and indicators associated with participation and the ability to predict persistence in the program. The following objectives guided the study:

1. Describe the demographics of intermediate 4-H members who were active during the 2009–2010 4-H membership year.
2. Using demographic characteristics, explore the differences between intermediate 4-H members enrolled in the 2010–2011 membership year (persisted) and former 4-H members who did not re-enroll (non-persisted).
3. Determine the extent to which continued 4-H participation can be predicted from demographic characteristics.

#### **Data Collection**

Data used for this project was obtained from the Iowa 4-H On-Line enrollment database, which is managed by a state 4-H specialist. Each 4-H member supplies required personal information as part of the annual process of enrolling in the 4-H program. The enrollment system tracks the individual member's projects, activities/events participated in, years of involvement, and other basic demographic information.

The purpose, design, and data assessment plan for this study was submitted for approval to the Institutional Review Board (IRB) within the Office for Responsible Research at Iowa

State University for approval. The IRB determined the study was exempted from human subject research and granted approval for the study (Appendix B). Data were requested and obtained from the state 4-H office after IRB approval was granted.

Upon receipt of IRB approval and with permission from the Iowa 4-H program director, the Iowa state 4-H office supplied the required data and information for the study to the investigator. To analyze whether individual members persisted between year one and year two, data were requested from the 2009–2010 and 2010–2011 membership years. The data set was used to examine demographic information from intermediate members enrolled in 4-H for the second year of this study on or before February 1, 2011. The data and information supplied to the researcher did not have any identifiable characteristics (i.e., names, e-mail addresses, telephone numbers, or home addresses), eliminating the ability to identify individual participants within the sample.

County-based 4-H staff oversee the annual membership enrollment process and enter information in the statewide database system from enrollment forms submitted by members and their families. All demographic information supplied to the researcher was gleaned from the required annual enrollment form (Appendix C). A state 4-H specialist evaluated the data for accuracy of reporting before providing it to the investigator. The state specialist found the information to be accurate and current as of February 1, 2011.

The requested data were delivered in the form of a Microsoft Excel spreadsheet, which had to be transposed to list each member's demographic information on a single line. Each individual 4-H member was already assigned a six-digit identification in the 4-H On-line database. This identification number was maintained throughout the study. The following

demographic and enrollment information was provided to the investigator for each enrolled member: county of residence, grade in school as of 2009–2010, number of years involved in 4-H (including the program year 2009–2010), gender, ethnicity, race, school, classification of residence, type of club(s) participating in, projects enrolled to participate in, volunteer status, and enrollment status for the 2010–2011 4-H membership year.

A review of the supplied data and information found variables that did not fit into the category of individual inputs according to the I-E-O model. The investigator decided to eliminate variable of ethnicity as it was closely tied to another demographic variable, race. The name of school was not used to evaluate the objectives of this study. The project areas each member enrolled in were requested, but ultimately these were not viewed as demographic variables for the purpose of the study, which is consistent with viewing inputs as controlled variables (Upcraft & Schuh, 1996). Also excluded from analysis was the variable of whether the 4-H member was volunteering or not. After observing the data set, the investigator determined that there was very little data within this variable, so it was eliminated.

### **Study Design**

This study was a quantitative investigation of existing data held within the Iowa 4-H On-Line enrollment database. Demographic information and characteristics of intermediate 4-H'ers was used to identify specific variables that may indicate or predict persistence in the 4-H program. The I-E-O model (adapted to 4-H) is the framework for this study, so inputs must be considered. The study identified inputs (i.e., demographic information and individual

characteristics) consistent with those in previous research conducted by Astin (Upcraft & Schuh, 1996).

Of the information requested (from a 2-year time period), the following characteristics were included in the study: age, gender, , type of community residence, grade, school type, years in 4-H, enrolled projects, activities participated in, type of club, and membership type. The data were statistically evaluated to investigate correlations between active members and inactive/archived individuals. Members were recorded as active participants (persisting) if the data indicated they were active, pending, or incomplete. Active means the member re-enrolled in the 4-H program for another year. Pending and incomplete were also recorded as having persisted; these terms mean that enrollment information has been received but yet not approved or that further requirements need to be met before the enrollment process is complete and the individual is listed as active. Individuals listed as archived had already indicated they were not going to continue being involved in the 4-H program; those individuals were considered as not persisting.

After reviewing the data to ensure that correct, accurate information was received, each individual characteristic was listed as its own variable. The following variables were used for analysis: grade 2009–2010 (Grade0910), gender, years in 4-H including the 2009–2010 membership year (Years4H0910), residence, race, club involvement, membership status 2009–2010 and 2010–2011, and level of involvement in types of club. Each variable was listed in accordance with the categories and information received from the yearly 4-H enrollment document (Appendix C).

The following variables were inputted into STATA, a data analysis and statistical software program, and each variable was coded as indicated below:

ID: Each individual already had a 6-digit numerical identifier corresponding to their information in the database.

County: Counties were listed in alphabetical order, and each county was given a number from 1 to 100. East and West Pottawattamie are recognized as separate units within the Iowa Extension system and 4-H program, so their information was separate and they were given separate numbers. Doing so caused the numbers not to correspond with the numbers used to identify each county.

Grade 2009–2010 (Grade0910): Numbers corresponded with the grade level on the enrollment enrollment form. For example, 6 indicated sixth grade.

Grade 2010–2011 (Grade1011): Numbers corresponded with the appropriate grade level assuming advancement from the previous year.

Gender: This variable was treated as a dicotomus variable. Zero (0) was used for males, and one (1) was for females.

Years in 4-H including the 2009–2010 membership year (Years0910): This was a numerical representation of the total number of years each individual had been involved in the program. For example, the number three (3) indicated the third year of enrollment in the program. Some counties also include pre-4-H experiences in the total number of years, which may lead to years of involvemnt and grade being equal.

Years in 4-H for 2010–2011 membership year (Years1011): This was a numerical representation of the total number of years each individual has been or was involved in the 4-H program. The information for this variable was determined by increasing the variable of Years in 4-H in 2009–2010 by 1 year if the individual persisted. If the individual did not persist, the number of years involved was not changed.

Residence: Numbers were used to represent five categories, which corresponded to the coding used on the enrollment form:

- 1 = Farm (rural area where agricultural products are sold)
- 2 = Town under 10,000 and rural nonfarm
- 3 = Town/City 10,000–50,000 and its suburbs
- 4 = Suburb of city more than 50,000
- 5 = Central city more than 50,000

Race: The coding of options available on the enrollment form were used with one modification. Since ethnicity was not collected, a separate classification for Hispanic origin was used in addition to the six options available on the enrollment form. The seven classifications for race were coded as follows:

- 0 = Prefer not to state (not listed)
- 1 = White
- 2 = Black
- 3 = Hispanic
- 4 = American Indian or Alaskan Native
- 5 = Native Hawaiian or Pacific Islander
- 6 = Asian

Community Club, Special interest/project club, or Independent member: These variables were treated as dichotomous. Zero (0) was used for individuals who were not involved in that club or membership category. One (1) was used for individuals who were participating in that form of membership.

Membership status 2009–2010 and 2010–2011: As indicated earlier, membership status was categorized as persisted or nonpersisted. If the individual was listed as active, pending, or incomplete a one (1) was used to indicate continued involvement or persistence. If the individual was inactive or archived, a zero (0) was used to indicate discontinuation or nonpersistence.

Club participation: This variable was used to determine the impact club combinations had on persistence. Individuals can participate in one of the three modes or a combination of community and specialty clubs. A coding system was created based on the information listed in this category in the data received from the state 4-H office. This variable was used as a summary of combinations of overall club involvement as it relates to the ability to predict persistence. The independent variable was coded as follows:

- 0 = No club indication
- 1 = Community club only
- 2 = Speciality/project club only
- 3 = Combination community club and specialty/project club
- 4 = Independent member only
- 5 = Combination of independent member, but attend project meetings.



### **Population and Sample**

The population of the study consisted of individuals who were in sixth through eighth grades during the 2009–2010 4-H membership year. The same census of 4-H members was used during the second year of the study to determine whether they re-enrolled in the 4-H program. Individuals in this census would have been in the seventh through ninth grades during the 2010–2011 4-H membership year. The census sample consisted of all intermediate 4-H members in the database who fit the descriptive criteria listed above; these members were from all 100 extension districts across the state of Iowa. The total census size of this study was 7,849 (N = 7,849) active 4-H members enrolled for the 2009–2010 program year.

### **Data Analysis**

The existing data were analyzed to explore the correlations between persisted and nonpersisted individuals. After data were entered into the statistical program, the investigator conducted an initial review to check for missing data, wrong coding, and duplicate entries. After verification of correct entry, the overall numbers in each of the variables were analyzed to determine frequencies and percentages for each variable in the study. Specific comparisons were used to look at the demographic areas where membership is the strongest. Additional analysis used descriptive statistical measures to determine the mean, mode, range, and standard deviation of the continuous variables: grade in 2009–2010 and years in 4-H in 2009–2010. Further investigation into the percentages and frequencies of the individual 4-H members who persisted and did not persist in each variable were analyzed. The use of

descriptive statistics provided the means to break down each variable and look at initial tendencies among variables.

Pearson's correlation statistic was used to determine and understand correlations among all variables in relation to the enrollment status of 4-H members in the 2010–2011 membership year. It is important to “control for the effects of the individual input variables” (Astin, 1993, p. 95) before looking at further correlations between other factors within the I-E-O model (i.e., environment and outcomes). This study controlled the type of inputs by using only those variables that were consistent and had to be answered by all intermediate 4-H members during enrollment. Further correlations within the dataset were used to determine potential positive or negative indicators of persistence in the sample.

This study sought to determine the extent to which continued 4-H participation can be predicted from demographic characteristics. Since the dependent variable of this study (persistence from 2009–2010 to 2010–2011) has a dichotomous outcome, a logistic regression was used to determine the ability to predict persistence given the independent variables (Peng, Lee, & Ingersoll, 2002). Continuous independent variables were included in the data. The logistic regression assisted in determining the “relationships between a categorical outcome variable and one or more categorical or continuous predictor variables (Peng et al., 2002, p. 4). Therefore, logistic regression reporting the odds ratios was used to compare the demographic variables that would possibly be identified as positive indicators (i.e., those of statistical significance) of persistence of intermediate 4-H members.

Overall, five different regression models were run using the independent variables listed in Table 3.1. The dependent variable in all five models was the enrollment status for each

member in the 2010–2011 year, which indicated whether they persisted from year 1 to year 2. All other variables within the models were considered independent variables. The formula used to determine logistic regression,  $Y = \beta + \beta_1(x) + \beta_2(x) + \beta_3(x) \dots$  (where  $Y$  = dependent variable,  $\beta$  = beta coefficient, and  $x$  = independent variable), was used to create the models to determine which independent variables can predict persistence. Table 3.1 aligns the independent variables used with the corresponding logistic regression model to determine any effect on the persistence of individuals in the census.

Table 3.1  
*Independent Variables Used in the Five Logistic Regression Models*

Independent variable	Model 1	Model 2	Model 3	Model 4	Model 5
Gender	X	X	X		
Residences	X	X	X		
Race	X	X	X		
Years4H0910	X	X	X		
Grade 0910	X	X	X		
Community club	X			X	
Specialty club	X			X	
Independent member	X			X	
Club participation	X		X		X

*Note:* Dependent variable = EnrollmentStatus1011.

All models were developed and examined to reveal the independent variables that point to characteristics of those who will or will not persist. The results from all five models are described in the findings section under the heading for Objective 3. Statistical numbers are presented for the two most useful models.

### **Limitations**

The data obtained from the Iowa 4-H program was determined to be valid because it was supplied to the organization from the individual participant. The total amount of information inputted at the county level may limit the overall responses received for specific variables and characteristics. Every county database manager uses the system to track many different characteristics of an individual's 4-H involvement.

Since 4-H does not have an enrollment deadline, a deadline was established for the purpose of this study. One county uses a different time frame for yearly membership enrollment periods. However, a large sample from this county was included in the data set and used in analysis of the statewide program.

### **Assumptions**

Within logistic regression, “the assumption implies that the same probability is maintained across the range of predictor values” (Peng et al., 2002, p. 9). Therefore, the variables within this study are independent of one another, which limits the assumptions to be made on this study.

Since February 1, 2011, was selected to collect information from the 4-H On-line enrollment database, it is assumed that youth who did not complete the enrollment process by that date would not re-enroll for the 2010–2011 membership year.

## CHAPTER 4: FINDINGS

### **Objective 1: Describe the demographics of intermediate 4-H members who were active during the 2009–2010 4-H membership year**

The population of this study consisted of intermediate 4-H members who were in grades 6, 7, and 8 during the 2009–2010 4-H membership year. The number of 4-H members in this census totaled 7,489. All 100 of Iowa's county Extension districts were represented in the sample. The range of members enrolled in each county varied considerably. Adams County had the lowest number of members ( $n = 16$ ), and Polk County had the highest number of members ( $n = 192$ ). The mean number of members was 74.89 members per county. There were 2,566 sixth grade members (34.26%), 2,622 seventh grade members (35.01%), and 2,301 eighth grade members (30.73%). Nearly all members (97.69%) had been involved in 4-H for 2 to 5 years. Table 4.1 displays frequencies and percentages for demographic characteristics of members enrolled in the 2009–2010 membership year.

In terms of gender, there were 3,171 (42.34%) male members and 4,318 (57.66%) female members. There were 7,372 members (98.44%) who classified themselves as White. Other racial categories indicated were Black ( $n = 14$ , 0.19%), Hispanic ethnicity ( $n = 52$ , 0.69%), Asian ( $n = 12$ , 0.16%), American Indian/Alaskan Native ( $n = 5$ , 0.07%) and Native Hawaiian/Pacific ( $n = 3$ , 0.04%). The remaining 31 members of the population did not have a listed racial background.

Table 4.1  
*Demographic Characteristics of Intermediate 4-H Members Enrolled in the 2009–2010  
 Enrollment Year (N=7,489)*

Variable		Census	
		<i>f</i>	%
Gender:	Male	3,171	42.34
	Female	4,318	57.66
Years in 4-H:	One	1	0.01
	Two	1,000	13.35
	Three	2,521	33.66
	Four	2,170	28.98
	Five	1,625	21.2
	Six	165	2.2
	Seven	4	0.05
	Eight	3	0.04
Grade:	Sixth grade	2,566	34.26
	Seventh grade	2,622	35.01
	Eighth grade	2,301	30.73
Residence:	Farm	4,201	56.1
	Town under 10,000	2,744	36.64
	Town/City 10,000–50,000	336	4.49
	Suburb of city >50,000	67	0.89
	Central city >50,000	141	1.88
Race:	Not listed	31	0.41
	White	7,372	98.44
	Black	14	0.19
	Hispanic	52	0.69
	American Indian/Alaskan		
	Native	5	0.07
	Native Hawaiian/Pacific Islander	3	0.04
	Asian	12	0.16

More than half ( $n = 4,201$ , 56.1%) of the members indicated they lived on a farm or in a rural area where agricultural products are sold. The second highest percentage for place of residence was a town under 10,000 and rural nonfarm ( $n = 2,744$ , 36.64%). Of the remaining members, 4.49% ( $n = 336$ ) listed town/city of 10,000–50,000 and its suburbs, 0.89% ( $n = 67$ ) listed suburb of city having more than 50,000, and 1.88% ( $n = 141$ ) listed a central city having more than 50,000 people. These data show that few intermediate 4-H members are from urban counties.

Years in 4-H and grade in 2009–2010 were used to indicate the average length of involvement and grade of members of the census (Table 4.2). The population had a mean grade of 6.97, meaning the average member in this population was close to the median grade. The mean number of years of 4-H membership was 3.66 and ranged from 1 to 8 years ( $SD = 1.035$ ).

Table 4.2  
*Descriptive Statistics for Each Continuous Variable in the Data Set*

Variable	Mean	Median	Mode	<i>SD</i>	Range
Grade in 2009–2010 <sup>a</sup>	6.97	7	7	0.805	6–8
Years in 4-H 2009–2010 <sup>a</sup>	3.66	4	3	1.036	1–8

<sup>a</sup> $n = 7,489$ .

**Objective 2: Using demographic characteristics, explore the differences between intermediate 4-H members enrolled in the 2010–2011 program year (persisted) and former 4-H members who did not re-enroll (non-persisted)**

Demographic characteristics were used to explore the differences between current and former 4-H members. For the purpose of this study, those who persisted into the 2010–2011

membership year from the previous year were considered members, and those who did not persist were considered former members. Frequencies and percentages for demographics of persisted members are reported in Table 4.3. A total of 5,863 members persisted into the 2010–2011 membership year. The overall persistence rate was 78.29%. A slightly higher percentage of males ( $n = 2,504$ , 78.97%) persisted into the 2010–2011 membership year than females ( $n = 3,359$ , 77.79%).

The findings for Objective 1 indicated the majority of intermediate members in the sample resided on farms (56.10%) and rural non-farms/towns under 10,000 (36.64%). The percentage of individual 4-H members residing in these locations was also high for persisted members (farm at 81.93% and town under 10,000 at 75.15%). Percentages for most other residence categories were similar to those in the original sample. However, the percentage of members who were involved in 2009–2010 and lived in a central city greater than 50,000 did not remain consistent. Even though the total number of members living in this residential area in 2009–2010 was small ( $n = 141$ ), only 51.77% ( $n = 73$ ) of the members from a central city persisted into the 2010–2011 membership year.

Three key statistics were identified when analyzing the percentage of persistence for racial background. Individuals who listed Asian (83.33%) on their enrollment form had the highest percentage of persistence. The percentage of persistence for individuals who listed White ( $n = 5,790$ , 78.54%) was similar to the percentage of persistence in the entire sample ( $n = 5,863$ , 78.29%). Hispanic members had the lowest percentage of persistence (55.77%).



Table 4.3  
*Demographic Characteristics of Intermediate 4-H Members Who Persisted from 2009–2010 to 2010–2011*

Variable	<i>n</i>	Persisted	
		<i>f</i>	%
Total sample	7,489	5,863	78.29
Gender:			
Male	3,171	2,504	78.97
Female	4,318	3,359	77.79
Years in 4-H 2009–2010:			
One	1	1	100.00
Two	1,000	644	64.40
Three	2,521	2,016	79.97
Four	2,170	1,766	81.38
Five	1,625	1,308	80.49
Six	165	122	73.94
Seven	4	3	75.00
Eight	3	3	100.00
Grade in 2009–2010:			
Sixth grade	2,566	2,054	80.05
Seventh grade	2,622	2,066	78.79
Eighth grade	2,301	1,743	75.75
Residence:			
Farm	4,201	3,442	81.93
Town under 10,000	2,744	2,062	75.15
Town/City 10,000–50,000	336	235	69.94
Suburb of city >50,000	67	51	76.12
Central city >50,000	141	73	51.77
Race:			
Not listed	31	20	64.52
White	7,372	5,790	78.54
Black	14	9	64.29
Hispanic	52	29	55.77
American Indian/Alaskan Native	5	3	60.00
Native Hawaiian/Pacific Islander	3	2	66.67
Asian	12	10	83.33

Table 4.3 (Continued)

Club participation:	No indication	3	3	100.00
	Traditional/Community	6,771	5,344	78.92
	Specialty/Project	377	243	64.46
	Community and Specialty	319	263	82.45
	Independent member	16	9	56.25
	Independent member in specialty/project	3	1	33.33

The most prevalent delivery mode within the Iowa 4-H program is club involvement. Of members participating in a community club, 78.92% (n = 5,344) persisted, compared with 64.46% (n = 243) persistence of members in a specialty/project club. Members who were involved in both a community club and a specialty/project club persisted at a much higher percentage than members in any other category within this variable. Of the members who enrolled as independent (n = 19), only 52% (n = 16) persisted within the program.

The years a member was in 4-H influenced persistence in the 4-H program from 2009–2010 to 2010–2011. The percentage of members who had been involved for 3 years and persisted into the fourth year was 79.97% (n = 2,016). Members who continued in their fifth year did so at the highest percentage, 81.38% (n = 1,766). A decrease in the percentage of members enrolled after five years and persisted was 80.49% (n = 1,308).

Members showed the highest percentage of persistence when enrolled during the sixth grade year and persisting into the seventh grade year (n = 2,054, 80.05%). The same persistence did not continue as the percentage of members in seventh and eighth grades dropped each year in percentage of persistence. The difference in percentage of members who persisted from sixth to eighth grade decreased by 4.3%.

Investigating the correlations between variables assisted in determining indicators of persistence in intermediate 4-H members. Table 4.4 provides a correlation matrix to identify variables that are co-related in determining an increase of persistence. The table includes all variables used throughout the study.

According to the Pearson correlations, several pairs of variables had a positive or negative indicator of persistence. The most identifiable positive relationships involved the variables focusing on the type of club and the involvement each member had among all club opportunities. The highest correlation involved club participation and specialty/project clubs ( $r = 0.89, p < .01$ ). Club participation and independent member also shared a positive correlation of  $r = 0.32$  ( $p < .01$ ). This coefficient indicates that independent members would be more like to persist if involved in one of the club settings. Also, members not involved in a community club were more likely to be involved in a specialty club ( $r = -0.70, p < .01$ ) or enroll as an independent member ( $r = -0.21, p < .01$ ).

The variables of years in 4-H in 2009–2010 and grade showed a significant correlation ( $r = 0.61, p < .01$ ). The correlation indicates as the individual member advances through school, there is an increase in the number of years they have persisted in the 4-H program.

There was a direct relationship between enrollment status and residence. A coefficient of  $r = -0.12$  ( $p < .01$ ) indicates a correlation between those who do not persist and residential location.

Table 4.4  
*Correlation Matrix Showing the Relationship Between Independent Variables of This Study*

	1	2	3	4	5	6	7	8	9	10
1 Enrolled201011	--									
2 Gender (1 = Female)	-0.01	--								
3 Residence	-0.12**	0.10**	--							
4 Race	-0.02*	-0.01	0.06**	--						
5 Grade2009–10	-0.04**	-0.01	-0.01	0.01	--					
6 Years4H2009–10	0.08**	-0.03**	-0.14**	-0.02	0.61**	--				
7 Community club (1 = Yes)	0.08**	0.03**	-0.09**	-0.07**	-0.013	0.06**	--			
8 Specialty club (1 = Yes)	-0.04**	-0.05**	0.06**	0.07**	-0.01	-0.05**	-0.70**	--		
9 Independent club (1 = Yes)	-0.03**	-0.01	0.02	-0.00	0.03*	-0.01	-0.21**	0.01	--	
10 Club participation	-0.03*	-0.05**	0.04**	0.05**	-0.01	-0.04**	-0.47**	0.89**	0.32**	--

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\*p < .05 and \*\*p < .01.

**Objective 3: Determine the extent to which continued 4-H participation can be predicted from demographic characteristics**

To accomplish this objective, five logistic regression models were used to determine the predictability of the independent variables as indicators of persistence (Table 4.5 contains the equations for each logistic regression model). All models used the variable of enrollment status (persisted or not persisted in 2010–2011) as the dependent variable. All other variables were listed as independent variables within each regression model.

Table 4.5  
*Binary Logistic Regression Model Equations*

Model 1	$Y(\text{Enrollstatus}) = \beta + \beta_1(\text{gender}) + \beta_2(\text{residence}) + \beta_3(\text{race}) + \beta_4(\text{years4H0910}) + \beta_5(\text{Grade0910}) + \beta_6(\text{club}) + \beta_7(\text{specialty}) + \beta_8(\text{Independent}) + \beta_9(\text{clubparticipate})$
Model 2	$Y(\text{Enrollstatus}) = \beta + \beta_1(\text{gender}) + \beta_2(\text{residence}) + \beta_3(\text{race}) + \beta_4(\text{years4H0910}) + \beta_5(\text{Grade0910})$
Model 3	$Y(\text{Enrollstatus}) = \beta + \beta_1(\text{gender}) + \beta_2(\text{residence}) + \beta_3(\text{race}) + \beta_4(\text{years4H0910}) + \beta_5(\text{Grade0910}) + \beta_6(\text{clubparticipate})$
Model 4	$Y(\text{Enrollstatus}) = \beta + \beta_1(\text{club}) + \beta_2(\text{specialty}) + \beta_3(\text{Independent})$
Model 5	$Y(\text{Enrollstatus}) = \beta + \beta_1(\text{clubparticipate})$

*Note.* Y = dependent variable;  $\beta$  = beta coefficient; x = independent variable.

The logistic regression models used to determine the predictors of persistence were run with coding for the dependent variable (enrollmentstatus1011) being 1 = Persist. Throughout all models, the independent variables of residence, grade as of 2009–2010, and years in 4-H in 2009–2010 were all statistically significant at  $p < 0.05$ . The specific statistical numbers related to the fit (Pseudo  $R^2$ ) and the significance of the model (Prob>chi2) appear in Table 4.6.

“A logistic regression model allows us to establish a relationship between a binary outcome variable and a group of predictor variables” (Introduction to SAS, 2011, p. 3). The results of two logistic regression models are discussed in this section. The models examine whether the independent variables in the model are predictors for persistence in the 4-H program. Key statistics are presented in Table 4.6.

Table 4.6  
*Logistic Regression Results of Models 3 and 4*

	Model 3			Model 4		
	<i>Odds Ratio</i>	<i>SE</i>	<i>p</i>	<i>Odds Ratio</i>	<i>SE</i>	<i>p</i>
Gender	0.99	0.06	0.84			
Residences	0.76	0.03	0.00*			
Race	0.91	0.08	0.31			
Years4H0910	1.38	0.05	0.00*			
Grade 0910	0.69	0.03	0.00*			
Community club				2.53	0.45	0.00*
Specialty club				1.23	0.18	0.15
Independent member				0.73	0.35	0.52
Club participation	0.91	0.05	0.09			
Number of observations		7489.00			7489.00	
LR chi2 (6)		215.72			48.78	
Prob > chi2		0.0000			0.0000	
Pseudo R <sup>2</sup>		0.0275			0.0062	

\*p < .05.

Interpreting the models requires determining the variables that are statistically significant. As indicated earlier, the independent variables of statistical significance within the third logistic model were residence ( $p < 0.001$ ), years in 4-H ( $p < 0.001$ ), and grade as of 2009–2010 ( $p < .001$ ). These variables also were significant throughout model 1 and model 2.

The odds ratio statistic is used for predicting the probability that  $Y = 1$ , given  $x$  when there is a dichotomous dependent variable. The odds ratio for gender indicates that the odds of persisting for a female were 0.99 times larger than the odds for a male. A similar interpretation can be made for Years in 4-H. The odds ratio of 1.38 indicates that an individual is 1.38 times more likely to persist the more years they are involved in 4-H.

Finally, the odds of persisting for a member who is involved in a club were 0.91 times as large as the odds for a member who is not participating in any of the clubs.

According to Model 3, the variables of years in 4-H, gender, race, and club participation have the strongest ability to predict persistence.

When the independent variables of traditional/community club, specialty/project club, and independent members were pulled into the fourth model, there was a statistical significance for members involved in a traditional/community club in regard to their persistence in the program  $p < 0.001$ . The odds ratio of 2.53 for this variable suggests that individuals who participate in this type of club atmosphere are 2.53 times more likely to persist in the 4-H program than those who are not involved in a community club.

When accounting for possible combinations of involvement in more than one club, the single independent variable of club participation was statistically significant ( $p = 0.013$ ) in

predicting persistence. The odds ratio of 0.87 indicates that individuals participating in a club are 0.87 times more likely to persist than members with other types of involvement.

### **Summary**

The study examined data from 7,489 intermediate Iowa 4-H members. A large percentage of the members had been involved in the program for 2 to 5 years, and a community club was the most common form of participation. There were slightly more females than males. The majority listed a racial origin of White and lived in a rural location (farm or a town less than 10,000).

Of those who participated in 2009–2010, 78.29% persisted to the next year. A large percentage of the persisted 4-H members lived on a farm or in a rural/nonfarm setting, and few persisted members lived in a central city. There was a negative relationship between residence and persistence, which means that individuals who are not from a farm or a town/nonfarm setting less than 10,000 did not persist to the same extent as those who lived in these locations.

Regression models revealed some independent variables that indicate greater persistence. For example, an individual participating in a community club is more likely to persist. Residence, grade, and years in 4-H were also indicators of persistence. Residence location was a strong indicator of persistence in this census of intermediate 4-H'ers. As individuals advanced in school, the numbers of those persisting in the 4-H program declined steadily. And as individuals stayed involved in the program, they were more likely to persist from year to year.



## CHAPTER 5: DISCUSSION

The first part of this study looked at the overall demographic makeup of intermediate Iowa 4-H members using data from an existing membership database. All 7,489 individuals in the data set were 4-H members in 2009–2010. The mean number of years in the program was 3.66, which is expected and typical since the individuals in this study were in grades 6 to 8 (mean = 6.956). Given that 4-H participation in Iowa can begin in fourth grade, the members in this study would be in their third (sixth graders) or fifth (eighth graders) year of participation. The percentage of individuals who persisted more than 2 years in the program was 84%. The majority of members in this study (93%) lived on farms or in rural areas and towns less than 10,000. This indicates an opportunity for program growth and participation in other residential areas.

Simpkins, Ripke, Huston, and Eccles (2005) used demographic variables to predict participation in a number of out-of-school-time (OST) programs, clubs, and youth groups and determined there were no differences in participation based on gender and that such programs “appeal to both boys and girls” (p. 66). In the present study, there was a higher percentage of females, and there is evidence that this difference was consistent across all age levels of the Iowa 4-H program (including clover kids) in 2009–2010 (n = 27,482; males = 11,369, 41%; females = 16,112, 59%) (Iowa 4-H Youth Development, 2011a). However, gender difference did not have a statistical impact on persistence in this study.

More than 98% of the individuals in this study listed their race as White. All other ethnic and racial backgrounds were present at very low percentages, which is not representative of the

overall population in Iowa. Increasing the diversity of the Iowa 4-H program could be an area of focus and opportunity for the future.

The second objective of this study was to investigate differences between individuals who persisted and did not persist in 4-H for the 2010–2011 program year. Of the 7,489 intermediate members enrolled in 2009–2010, 78% (n = 5863) re-enrolled for the 2010–2011 program year. The high percentage of persistence could indicate the 4-H program is meeting the needs of youth. There were minimal demographic differences between persisted members and members of the original census. For example, 43% (n = 2,504) of persisted members were male, and 57% (n = 3,359) were female. These percentages are almost equal to those in the original census. Members who persisted in the 4-H program and those who did not had similar demographic characteristics. In fact, the percentages of members in grades 6, 7, and 8 in 2009–2010 were equal to the percentages of members persisting into 2010–2011 for each grade level.

There was an important correlation between grade level and persistence. The increase in individuals not persisting once they reach ninth grade was directly related to the decrease in numbers of those persisting. The number of members decreased as grade in school increased. The number of those persisting decreased from 2,566 (sixth grade) to 2,054 (seventh grade). Similarly, the number of those persisting decreased by 588 members from their eighth to ninth grade year. Research on the participation rates of 4-H members in Colorado revealed similar results (Harder et al., 2005). Colorado witnessed a steady decline in the 4-H population of youth age 12–18; this range includes intermediate 4-H members.

The goal of the 4-H program is to create long-term learning experiences for youth, and members need to persist for this to occur. In this study, 22% of intermediate 4-H members did not persist to 2010–2011. Identifying specific reasons for this non-persistence was outside the scope of this study but should be a focus for future research.

Norland and Bennett (1993) identified independent variables that serve as predictors of satisfaction. Three of those predictors (tenure in 4-H, gender, and residence) overlap potential indicators of persistence identified in the present study. But despite this similarity, the two studies had different results. Gender had a positive relationship with satisfaction and persistence in Norland and Bennett's study but was not a significant variable for predicting persistence in the current study. The present study revealed a statistical significance for the variables of years in 4-H (referred to as tenure by Norland and Bennett) and residence. Neither variable was a predictor of persistence Norland and Bennett's research.

There was a 78% persistence rate for intermediate 4-H members in this study. Percentages of several independent variables were similar for the original census and persisted members. For example gender percentages were identical for the original census and persisted members (42% male, 57% female) and similar for persisted and non-persisted members (non-persisted = 41% male, 59% female).

The variable of type of club participation/involvement was used to determine differences among members who persisted into 2010–2011. There are three categories of participation: community club, specialty/project club, and independent membership. Individuals can participate in one of the three modes or a combination of community and specialty clubs. For this simple descriptive analysis, the combination option was not taken into consideration.

Therefore, the number of total intermediate members in 2009–2010 may be higher than 7,489. Participation in a community club represented the largest percentage of involvement (78%). Specialty/project clubs had the next highest level of participation, followed by independent membership. Community and specialty/project clubs also had a higher percentage of persistence than independent membership. Only 10 of 19 independent members persisted into the 2010–2011 4-H membership year, indicating that independent membership is not a useful method for increasing persistence of members.

Pearson's correlation identified several independent variables with significant relationships. The strong correlation between the grade and years of 4-H membership is logical. If an individual persists in the program, their years of membership would increase as they advance in school. Another correlation involving community clubs indicated the potential to be involved in a specialty club or as an independent member not involved in a community club. Since there are only three modes of delivery, this correlation makes sense.

The final objective was designed to determine what demographic characteristics indicate persistence in the 4-H program. A logistic regression analysis with odds ratios was used to determine the probability of increased persistence from the independent variables. Five logistic models were analyzed. The five individual models were grouped into two sets of results for simplicity of explanation since, as previously mentioned, a large correlation was evident from the Pearson's correlation test. The results of the three models using the demographic variables of grade in 2010–2011, gender, years in 4-H in 2010–2011, residence, and race were the independent variables used against the enrollment status of members who

persisted into the 2010–2011 4-H program year. The results of the regression model indicated that grade, years in 4-H, and residence were statistically significant.

The final models investigated how type of participation (i.e., community club, project club, independent membership) affected persistence. The regression analysis was done in two different forms to get an accurate measure of the impact of individual type of club and combinations of participation types. Individually, only community club participation was significant ( $p = 0.000$ ,  $\alpha < .05$ , odds ratio = 2.538). Members involved in a community club were 2.53 times more likely to persist than those not participating in a community club

### **Implications**

It is evident that Iowa 4-H staff and program leaders need to maintain a strong focus on positive youth development (PYD) and program growth by increasing the willingness of 4-H members to persist over a longer period of time. This study provides valuable information to help them do so. First, results from this study describe the demographics of intermediate Iowa 4-H members. Youth development professionals can use this demographic information to identify gaps in delivery locations and member diversity. For example, a small percentage of members in this study live in suburban or urban settings, and the intermediate 4-H population in Iowa consists almost completely of White youth. Residence (particularly urban settings) and race (particularly underserved audiences) could also be areas for future research. Determining whether (and if so, how) these variables inhibit 4-H participation is important to advancing the 4-H program's goal of PYD for all youth. The Iowa 4-H program must make a valiant effort in urban and rural areas of the state to work with minority populations and underserved audiences.

Astin's I-E-O (input-environment-outcome) model was adapted to the 4-H program and used to frame and guide this study. Previous research has focused on how the environmental aspects of the 4-H experience affect satisfaction and retention. This study examined demographic inputs and persistence. It is important for 4-H staff and researchers to consider all components of the model and their implications for satisfaction, persistence, and achievement of outcomes.

### **Recommendations**

Future research should examine input variables not included in the present study, such as whether enrollment in particular project areas affects persistence.

Another future study should explore the satisfaction of 4-H members who have participated in the program for a significant time period. A possible population is the group of intermediates from the present study. Such a study should focus on determining reasons for satisfaction or dissatisfaction of involvement and encompass all environmental aspects of the 4-H program. Examples of these aspects include county activities, club atmosphere (including relationships with leaders and adult mentors), competition, recognition, satisfaction (e.g., experiences versus expectations, concepts learned), and family/parent involvement and support. A study of this type would extend the current research and could also build on the literature review presented in the present study.

Hartley (1983) investigated the impact of exhibiting at the fair and receiving a ribbon on persistence of first-year members. Replicating this study with intermediate members would provide additional information about this important age group.

To further explore the differences in participation and persistence among type of involvement (i.e., community club, specialty club, independent membership), researchers should investigate the environment and educational experiences offered in each. The independent membership category should be analyzed in terms of its impact on overall growth of the 4-H program, and program staff should ensure that members and their mentors are focused PYD and the stated program outcomes.

## CHAPTER 6: SUMMARY

This study used a quantitative, exploratory approach to identify indicators of persistence in intermediate Iowa 4-H members. Demographic information supplied by the 4-H members on annual enrollment forms was used to accomplish the following objectives:

1. Describe the demographics of intermediate 4-H members who were active during the 2009–2010 4-H membership year.
2. Using demographic characteristics, explore the differences between intermediate 4-H members enrolled in the 2010–2011 membership year (persisted) and former 4-H members who did not re-enroll (non-persisted).
3. Determine the extent to which continued 4-H participation can be predicted from demographic characteristics.

The review of literature indicated a strong focus on the area of retention to assist with maintaining and growing overall enrollment in out-of-school-time activity, specifically 4-H, and a positive approach to developing adolescents' life skills. The present study conceptualized 4-H using Astin's I-E-O (input-environment-outcome) model and then looked at the inputs of demographic characteristics and how they could be used to indicate persistence of intermediate Iowa 4-H members. Results in the present study support previous research indicating that individuals have a greater chance of persisting in the program the longer they are involved.

Membership data and information for this study were received from the Iowa 4-H program 4-H On-Line enrollment database. The demographic enrollment data were inputted into



STATA, a statistical analysis program, using the enrollment status of the member in the subsequent year of membership as the dependent variable.

The sample size of this study reflected membership numbers of other states, specifically Colorado (Heinsohn and Lewis, 1995). Heinsohn and Lewis (1995) reported that 9- to 11-year olds (e.g., juniors) represented more than half of total enrollment. The intermediate members in the present study represented almost 31% of total Iowa 4-H membership during the 2009–2010 program year. If typical annual 4-H membership is half junior members, the remainder would be intermediate and senior members.

According to the adaptation of Astin's I-E-O model, the independent variables for this study are considered the member's inputs into the 4-H program. The independent variables consisted of gender, grade in 2009–2010, years in 4-H in 2009–2010, residence, race, type of participation (community club, specialty club, and independent membership), years in 4-H up to 2010–2011, and grade in 2010–2011.

To complete the first two objectives of the study, descriptive statistics were used to provide a general overview of the entire sample of intermediate 4-H members and identify demographic differences between members who persisted from one year to the next and between persisted and nonpersisted members. There were slightly more females than males in the sample. Members in the 2009–2010 program year were likely to have been involved in the 4-H program for 3–5 years. The most common residence type was a farm or rural setting, and more than 98% of the sample was White.

Members who persisted into the 2010–2011 year had demographic characteristics similar to those of members in the original census. Gender percentages were identical. Individuals living on a farm or in a rural area continued to persist, as did those who participated in a community club. In terms of race, the percentage of persistence was highest for Asian members (82%), most other race categories had at least 60% persistence, and there was 56% persistence for members who listed Hispanic ethnicity.

The overall percentage of members who persisted from 2009–2010 to 2010–2011 was 74.89%. Individual members were distributed relatively evenly throughout all demographic variables they were included in during the 2010–2011 program year. Persistence decreased once individuals reached ninth grade. However, closer analysis indicated that total decline in each of the grade categories dropped by approximately 500 individuals.

Logistic regression and odds ratios were used to determine key independent variables for indicating persistence. Grade in 2010–2011, years in 4-H in 2010–2011, and place of residence were statistically significant. Individuals who lived on a farm or in a rural area were more likely to persist than individuals who lived in a central city. Individuals who were involved in a community club were 2.53 more times likely to persist than those who participated in other ways. Also, members who participated in both a community club and project club continued to persist over a longer period of time.

The 4-H program has been around for more than 100 years. Over those years, the program has enriched many young people's lives. The 4-H program strives to teach youth leadership, citizenship, communication, knowledge, and personal life management. To achieve these outcomes, individuals must persist in the program. This study provided a closer look at

intermediate Iowa 4-H members' demographic characteristics and determined which of these could predict or indicate ongoing persistence. The Iowa 4-H program can use the results of this study and the framework of Astin's I-E-O model to guide future research and program planning in their efforts to continue providing positive youth development.



## APPENDIX B: INSTITUTIONAL REVIEW BOARD APPROVAL

IOWA STATE UNIVERSITY  
OF SCIENCE AND TECHNOLOGY

Institutional Review Board  
Office for Responsible Research  
Vice President for Research  
1138 Pearson Hall  
Ames, Iowa 50011-2207  
515 294-4566  
FAX 515 294-4267

Date: 4/7/2011  
To: Bryan Whaley  
112 N. Western Avenue  
Eagle Grove, IA 50533  
CC: Dr. Michael Retallick  
206 Curtiss Hall  
From: Office for Responsible Research  
Title: Indicators of Persistence Among Intermediate 4-H Members in Iowa

The Co-Chair of the ISU Institutional Review Board (IRB) has reviewed the project noted above and determined that the project:

- Does not meet the definition of research according to federal regulations.
- Is research that does not involve human subjects according to federal regulations.

Accordingly, this project does not need IRB approval and you may proceed at any time. We do, however, urge you to protect the rights of your participants in the same ways you would if IRB approval were required. For example, best practices include informing participants that involvement in the project is voluntary and maintaining confidentiality as appropriate.

Please also know that any change to this project must be communicated to the IRB to determine if the project has become research with human subjects requiring IRB approval.

## APPENDIX C: IOWA 4-H MEMBER ENROLLMENT FORM

Member - Enrollment Form (New Youth Member)		4-H Year: 2010-2011	
		<input type="checkbox"/> Postal Mail <input type="checkbox"/> Email	
Name	County	Family Email	Correspondence Pref.
Email		First Name	
Last Name	Address		
City	State		
Zip Code	Birth Date		
Gender	<input type="checkbox"/> Male <input type="checkbox"/> Female	Primary Phone	
Cell Phone	Years In 4-H		
<b>Parent / Guardian 1</b>			
First Name			Last Name
Cell Phone	Work Phone		
<b>Parent / Guardian 2</b>			
First Name			Last Name
Cell Phone	Work Phone		
<b>Second Household</b>			
Send Correspondence	<input type="checkbox"/> No <input type="checkbox"/> Yes	Correspondence Pref.	<input type="checkbox"/> Postal Mail <input type="checkbox"/> Email
Family Name	First Names		
Primary Phone	Address		
City	State		
Zip Code	Email		
<b>Emergency Contact</b>			
Name			Phone
Email	Relationship		
<b>Enrollment</b>			
Ethnicity	Are you of Hispanic ethnicity? <input type="checkbox"/> No <input type="checkbox"/> Yes		(please indicate both an ethnicity and race)
Race	<input type="checkbox"/> White	<input type="checkbox"/> Native Hawaiian or Pacific Islander	
	<input type="checkbox"/> Black	<input type="checkbox"/> Asian	
	<input type="checkbox"/> American Indian or Alaskan Native	<input type="checkbox"/> Prefer Not to State	
Residence	<input type="checkbox"/> Farm (rural area where agricultural products are sold)	<input type="checkbox"/> Suburb of city more than 50,000	
	<input type="checkbox"/> Town under 10,000 and rural non-farm	<input type="checkbox"/> Central city more than 50,000	
	<input type="checkbox"/> Town / City 10,000 - 50,000 and its suburbs		
Military	<input type="checkbox"/> No one in my family is serving in the military		<input type="checkbox"/> I have a parent serving in the military
	<input type="checkbox"/> Myself, and/or my spouse, is currently serving in the military		
Branch / Component	<input type="checkbox"/> Air Force <input type="checkbox"/> Army <input type="checkbox"/> Coast Guard <input type="checkbox"/> Marines <input type="checkbox"/> Navy / <input type="checkbox"/> Active Duty <input type="checkbox"/> National Guard <input type="checkbox"/> Reserves		
Grade	School Name		
School Type	<input type="checkbox"/> Public School	<input type="checkbox"/> Homeschool / Alternative	
	<input type="checkbox"/> Private School	<input type="checkbox"/> Magnet / Specialized School	
	<input type="checkbox"/> Special Education	<input type="checkbox"/> Charter School	
	<input type="checkbox"/> Vocational Education		

**Clubs**

Enroll Club Volunteer Title

(Enroll)

(New Club)

**Projects**

Enroll Project Club Volunteer Title Years In

(Enroll)

(New Project)

(New Project)

(New Project)

(New Project)

(New Project)

(New Project)

(New Project)

(New Project)

(New Project)

**BEHAVIOR EXPECTATIONS:** As a 4-H member: It is important to follow the directions of the 4-H Club leader(s) at all times. As a 4-H member and guardian: I understand that as a participant and/or guardian I have the responsibility to help make all 4-H activities a safe experience for everyone through my behavior and conduct. I also understand the importance of following rules, directions, and policies and agree to follow them.

Member Signature \_\_\_\_\_ Date \_\_\_\_\_

Parent / Guardian Signature \_\_\_\_\_ Date \_\_\_\_\_

County Only					
Fee Paid	Date	Cash/Check No.	Medical Release	Ethics Form	Photo Permission

**Project Choices**

**Animals**

- Beef
- Dairy Cattle
- Dairy Goats
- Dogs
- Horse & Pony
- Meat Goats
- Pets
- Poultry
- Rabbit
- Sheep
- Swine
- Veterinary Science

**Agriculture & Natural Resources**

- Crop Production
- Environment & Sustainability
- Horticulture
- Outdoor Adventures
- Safety & Education in Shooting Sports

**Creative Arts**

- Music
- Photography
- Visual Arts

**Family & Consumer Sciences**

- Child Development
- Clothing
- Consumer Management
- Food & Nutrition
- Health
- Home Improvement
- Sewing

**Personal Development**

- Citizenship
- Communication
- Leadership
- Self Determined

**Science, Engineering, & Technology**

- Mechanics
- Woodworking
- Science, Engineering & Technology
  - Aerospace
  - Biological & Chemical Science
  - Computers & Networking
  - Digital Storytelling
  - Earth & Climate
  - Geospatial Mapping (GPS/GIS)
  - Robotics
  - Science in our Everyday Lives

## REFERENCES

- Acosta, D. T., & Holt, B. A. (1991). Give teens the programs they want...and need. *Journal of Extension*, 29(1). Retrieved from <http://www.joe.org/joe/1991spring/a8.php>
- Alberts, A. E., Christiansen, E. D., Chase, P., Naudeau, S., Phelps, E., & Lerner, R. (2006). Qualitative and quantitative assessments of thriving and contribution in early adolescence: Findings from the 4-H study of positive youth development. *The Journal of Youth Development*, 1(2), 22. Retrieved from [http://data.memberclicks.com/site/nae4a/JYD\\_060102final.pdf](http://data.memberclicks.com/site/nae4a/JYD_060102final.pdf).
- Albright, M.B. (2008). *Here today, gone tomorrow: An investigation into why older youth leave the 4-H program* (Unpublished doctoral dissertation). The Ohio State University: Columbus.
- Albright, M.B. (2010). "Push" and "pull": A qualitative study of factors that contribute to older youth leaving the 4-H program. *Journal of Youth Development*, 5. Retrieved from [http://data.memberclicks.com/site/nae4a/JYD\\_100503final.pdf](http://data.memberclicks.com/site/nae4a/JYD_100503final.pdf)
- Anderson-Butcher, D. (2005). Recruitment and retention in youth development programming. *The Prevention Researcher*, 12(2), 3–6.
- Arnold, A. (1999). *Retention and persistence in postsecondary education: A summation of research studies*. Texas: Texas Guaranteed Student Loan Corporation. Retrieved from the Texas Guaranteed Student Loan Corporation website: <http://www.tgslc.org/pdf/persistence.pdf>.
- Astin, A. W. (1985). *Achieving educational excellence*. San Francisco, CA: Jossey-Bass.
- Astin, A. W. (1993). *What matters in college? Four critical years revisited*. San Francisco, CA: Jossey-Bass.
- Astroth, K. A. (1985). The challenge of retaining 4-H members. *Journal of Extension*, 23. Retrieved from <http://www.joe.org/joe/1985fall/sa4.html>.
- Balsano, A., Phelps, E., Theokas, C., Lerner, J., & Lerner, R. (2009). Patterns of early adolescents' participation in youth development programs having positive youth development goals. *Journal of Research on Adolescence*, 19(2), 249–259.



- Bankston, J. (1992). *Factors related to recruitment and retention of ethnic minority youth in the Ohio 4-H program* (doctoral dissertation). Retrieved from: <http://etd.ohiolink.edu/send-pdf.cgi/Bankston%20Joanne.pdf?osu1202401443>.
- Brendtro, L.K., Brokenleg, M., Van Bockern, S. (2002). *Reclaiming youth at risk our hope for the future*. Bloomington, IN: Solution Tree Press.
- Borden, L. M., Perkins, D. F., Villarruel, F. A., & Stone, M. R. (2005). To participate or not to participate: That is the question. In H.B. Weiss, P. Little, & S.M. Bouffard (Eds.), *New directions for youth development: Participation in youth programs enrollment, attendance, and engagement* (pp. 33-49). Wilmington, DE: Wiley Periodicals Inc.
- Bouffard, S., Wimer C., Caronongan, P., Little, P., Dearing, E., & Simpkins, S. (2006). Demographic differences in patterns of youth out-of-school time activity participation. *Journal of Youth Development*, 1(1). Retrieved from [http://www.nae4ha.org/directory/jyd/jyd\\_article.aspx?id=ac838aeb-7ab2-4cal-bac0-26cca...](http://www.nae4ha.org/directory/jyd/jyd_article.aspx?id=ac838aeb-7ab2-4cal-bac0-26cca...)
- Boyd, B., Herring, D., & Briers, G. (1992). Developing life skills in youth. *Journal of Extension*, 30(4). Retrieved from <http://www.joe.org/joe/1992winter/a4.php>
- Cano, J., & Bankston, J. (1992). Factors which influence participation and non-participation of ethnic minority youth in Ohio 4-H programs. *Journal of Agricultural Education*, 33(1), 23-29.
- Catalano, R. F., Berglund, M. L., Ryan, J., Lonczak, H., & Hawkins, J. D. (1998). *Positive youth development in the United States: Research and findings on evaluations of positive youth development programs*. Seattle, WA: Social Development Research Group, School of Social Work, University of Washington. Retrieved from <http://aspe.hhs.gov/hsp/PositiveYouthDev99/>
- Cole, S. E., & Waters, R. G. (2001). *Factors influencing the retention of senior 4-H members in rural Tennessee: A focus group study*. Unpublished research. Retrieved from <http://secole.myweb.uga.edu/research.htm>
- Eccles, J. S., & Midgley, C. (1989). Stage-environment fit: Developmentally appropriate classrooms for young adolescents. *Research on Motivation in Education*, C. Ames and R. Ames (eds.), p 139-186. In National Research Council and Institute of Medicine. (2002). *Community programs to promote youth development*. Committee

- on Community-Level Programs for Youth. Eccles, J. and Gootman, J.A. (eds.). Board on Children, Youth, and Families, Division of Behavioral and Social Sciences and Education. Washington D.C.: National Academy Press.
- Ferrari, T. M., & Turner, C. L. (2006). An exploratory study of adolescents' motivations for joining and continued participation in a 4-H afterschool program. *Journal of Extension*, 44(4). Retrieved from <http://www.joe.org/joe/2006august/rb3.php>.
- Gemelli, R. (1996). *Normal child and adolescent development*. Washington, DC: American Psychiatric Press.
- Gregoire, H. (2004). Gathering wisdom from 4-H youth development clubs. *Journal of Extension*, 42(3). Retrieved from <http://www.joe.org/joe/2004june/a5.php>.
- Gressley, K., Tessman, D., Hall, L., & Parrott, A. (2009). *Essential elements of the 4-H experience: Overview* (Publication AZ 1495). Tucson, AZ: The University of Arizona Cooperative Extension. Retrieved from <http://cals.arizona.edu/pubs/family/az1495.pdf>.
- Harder, A., Lamm, A., Lamm, D., Rose, H., & Rask, G. (2005). An in-depth look at 4-H enrollment and retention. *Journal of Extension*, 43(5). Retrieved from <http://www.joe.org/joe/2005october/rb4.html>.
- Hartley, R. S. (1983). Keeping 4-H members. *Journal of Extension*, 21(4). Retrieved from <http://www.joe.org/joe/1983july/a4.php>.
- Heinsohn, A. L., & Lewis, R. (1995). Why do teens drop out?: A developmental view. *Journal of Extension*, 33(1). Retrieved from <http://www.joe.org/joe/1995february/comm1.php>.
- Homan, G., Dick, J., & Hedrick, J. (2007). Youth perceptions of Ohio 4-H. *Journal of Extension*, 45(4). Retrieved from <http://www.joe.org/joe/2007august/rb3.php>.
- Introduction to SAS. Los Angeles, CA: UCLA Academic Technology Services, Statistical Consulting Group. Retrieved from <http://www.ats.ucla.edu/stat/stata>.
- Iowa 4-H Youth Development. (2003). *The Iowa 4-H youth development experience* (Publication 4H 3020A & 3020B). Ames, IA: Iowa State University Extension.

- Iowa 4-H Youth Development. (2005). *Iowa 4-H youth development plan: How we achieve our mission* (Publication 4H-3036B). Ames, IA: Iowa State University Extension.
- Iowa 4-H Youth Development. (2006). *Participation policy* (Publication 4-H 14). Ames, IA: Iowa State University Extension.
- Iowa 4-H Youth Development. (2011a). 2009–2010 youth/grade/gender/residence by county/youth region. Retrieved from <https://www.extension.iastate.edu/4h/restrict/statisticals.htm>
- Iowa 4-H Youth Development. (2011b). 4-H Educators. Retrieved from <http://www.extension.iastate.edu/4h/adults/Educators>
- Iowa 4-H Youth Development. (2011c). Explore 4-H. Retrieved from <http://www.extension.iastate.edu/4h/explore/>
- Jacobs, F., Wertlieb, D., & Lerner, R. (Eds.). (2003). *Handbook of applied developmental science: Promoting positive child, adolescent, and family development through research, policies, and programs* (Vol. 2). Thousand Oaks, CA: Sage.
- Lauver, S., & Little, P. M. D. (2005). Recruitment and retention strategies for out-of-school-time programs. In H.B. Weiss, P. Little, & S.M. Bouffard (Eds.), *New directions for youth development: Participation in youth programs enrollment, attendance, and engagement* (pp. 71-89). Wilmington, DE: Wiley Periodicals Inc.
- Lerner, R., Lerner, J., Phelps, E. & Colleagues. (2009). *The positive development of youth*. Retrieved from the Tufts University Institute for Applied Research in Youth Development: <http://ase.tufts.edu/iaryd/documents/4HStudyAnnualReport2008.pdf>
- Lochner, A., & Nall Bales, S. (2006). Framing youth issues for public support. In D.A. Blyth & J.A. Walker (Eds.), *New directions for youth development: Rethinking programs for youth in the middle years* (pp. 11-23). Wilmington, DE: Wiley Periodicals Inc.
- Mulroy, M. T., & Kraimer-Rickaby, L. (2006). *The impact and sustainability of 4-H youth development programs*. Storrs, CT: University of Connecticut, Center for Applied Research.
- National 4-H Council. (2011). <http://www.4-h.org/youth-development-program/>.
- National Research Council and Institute of Medicine. (2002). *Community programs to*

- promote youth development*. Committee on Community-Level Programs for Youth. J. Eccles & J. A. Gootman (Eds.). Board on Children, Youth, and Families, Division of Behavioral and Social Sciences and Education. Washington, DC: National Academy Press.
- Norland, E., & Bennett, M. (1993). Youth participation. *Journal of Extension*, 31(1). Retrieved from <http://joe.org/joe/1993spring/a5.php>
- Pascarella, E. T., & Terenzini, P. (1991). *How college affects students: Findings and insights from twenty years of research*. San Francisco: Jossey-Bass.
- Peng, C., Lee, K., & Ingersoll, G. (2002). An introduction to logistic regression analysis and reporting. *Journal of Educational Research*, 96(1). Retrieved from <http://bit.csc.lsu.edu/~jianhua/emrah.pdf>.
- President & Fellows of Harvard College. (2004). Moving beyond barriers attracting and sustaining youth participation in out-of-school time programs. Harvard Family Research Project, (6). Retrieved from <http://www.eric.ed.gov/PDFS/ED483274.pdf>.
- Radhakrishna, R. B., Everhart, L., & Sinasky, M. (2006). Attitudes of 4-H participants about 4-H competitive events. *Journal of Extension*, 44(6). Retrieved from <http://www.joe.org/joe/2006december/rb3.shtml>
- Restuccia, D., & Bundy, A. (2003). *Positive youth development: A literature review. Learning in Communities/Providence*. Providence, RI: Rhode Island KIDS COUNT.
- Ritchie, R. M., & Resler, K.M. (1993). Why youth drop out of 4-H. *Journal of Extension*, 31(1). Retrieved from <http://www.joe.org/joe/1993spring/rb3.html>
- Roth, J. L., & Brooks-Gunn, J. (2003). What is a youth development program? Identification of defining principles. In *Handbook of applied developmental science* (Vol. 2, pp. 197-224). Thousand Oaks, CA: Sage.
- Russell, S. T. (2001). The developmental benefits of nonformal education and youth development. [monograph]. Davis, CA: 4-H Center for Youth Development, University of California, Davis.
- Scales, P. C., & Leffert, N. (2004). *Developmental assets: A synthesis of the scientific research on adolescent development* (2nd ed.). Minneapolis, MN: Search Institute.

- Sheehan, T., & Harrington, R. (2010, May). *Minnesota 4-H retention study*. Research poster presented at CYFAR 2010 Conference, San Francisco, CA.
- Simpkins, S., Ripke, M., Huston, A., & Eccles, F. (2005). Predicting participation and outcomes in out-of-school activities: Similarities and differences across social ecologies. In H.B. Weiss, P. Little, & S.M. Bouffard (Eds.), *New directions for youth development: Participation in youth programs enrollment, attendance, and engagement* (pp. 51-69). Wilmington, DE: Wiley Periodicals Inc.
- Steinberg, L., & Morris, A. S. (2001). Adolescent development. *Annual Review of Psychology*, 52, 83–110.
- Terenzini, P.T., & Reason, R.D. (2005, November). *Parsing the first year of college: A conceptual framework for studying college impacts*. Paper presented at the annual meeting of the Association for the Study of Higher Education, Philadelphia, PA
- Thompson, P. L. (1998). Factors related to the retention of Ohio teen 4-H members (Master's thesis). Retrieved from [http://etd.ohiolink.edu/view.cgi?acc\\_num=osu1273777198](http://etd.ohiolink.edu/view.cgi?acc_num=osu1273777198)
- Thurmond, V. A., & Popkess-Vawter, S. (n.d.). Examination of a middle range theory: Applying Astin's input-environment-outcome (I-E-O) model to web-based education. Retrieved from [http://ojni.org/7\\_2/thurmond.htm](http://ojni.org/7_2/thurmond.htm)
- Tinto, V. (1997). Classrooms as communities: Exploring the education character of student persistence. *Journal of Higher Education*, 68, 599–623.
- Upcraft, M. L., & Schuh, J. H. (1996). *Assessment in student affairs*. San Francisco, CA: Jossey-Bass.
- Weiss, H. B., Little, P. M.D., & Bouffard, S.M. (2005) More than just being there: Balancing the participation equation. In H.B. Weiss, P. Little, & S.M. Bouffard (Eds.), *New directions for youth development: Participation in youth programs enrollment, attendance, and engagement* (pp. 15-31). Wilmington, DE: Wiley Periodicals Inc.
- Wingebach, G. J., Meighan, T., Lawrence, L. D., Gartin, S. A., & Woloshuk, J. M. (1999). Associated factors in recruitment and retention of 4-H members in West Virginia. *Journal of Agricultural Education*, 40(1), 23–29. Retrieved from <http://www.jae-online.org/attachments/article/486/40-01-23.pdf>

## ACKNOWLEDGMENTS

Only a few people know the effort and time put into this project, and none know more than my wife, Allison, and children, Shea and Quinn. Thank you for being so supportive and understanding when I had to miss many of the things I would have liked to attend or be a part of. All three of you have taken this journey with me, and I am very appreciative and thankful for all your support and sacrifice to make this possible. Allison, you have had to take on a bigger load at home and with the kids. Trust me, the extra effort and sacrifice you made did not go unnoticed. Shea and Quinn, for two young children you were incredibly forgiving and understanding when I had to tackle class work, assignments, or this paper. My wish is you saw through your eyes the value of a good education and the qualities it takes (industriousness, initiative, confidence, poise, self-control, and competitive greatness) to accomplish anything you want to. Always do it to the best of your ability and you will be a success.

Thank you to my parents, Dale and Connie Whaley, for instilling in me a hard work ethic and the importance of being a lifelong learner. The lessons you taught me early in my educational journey played a huge part in accomplishing this task. I know you were on the sidelines supporting me.

Dr. Michael Retallick, you have been a tremendous asset and teacher as my major professor throughout this process. You pushed through to the end with me. I greatly appreciate all you have done to make me a better scholar and student. Very few educators have ever taken the extra time, above and beyond what was necessary, in order to see one of their students succeed as you did with me.

Thank you to Dr. Chuck Morris and Dr. Janet Melby for serving on my committee as well.

Dr. Morris, thanks for giving me my chance in Extension, you knew I had found my passion.

I want to acknowledge the effort Becky Nibe, State 4-H Specialist, took time out of her schedule to brainstorm with me and gather the data needed to complete this project. Thank you to everyone who supported me during this process.