AN INTEGRATED APPROACH TO PROGRAM DEVELOPMENT: A CASE STUDY
OF A FAMILY-BASED OBESITY PREVENTION PROGRAM

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AN INTEGRATED APPROACH TO PROGRAM DEVELOPMENT: A CASE STUDY
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Abstract

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The development, implementation and evaluation of evidence-based programs are fundamental priorities for the field of prevention science and of growing focus for public health research. Little research directly addresses how to approach program development as an organization or provides information about how to promote effective collaborative relationships between researchers and practitioners. Many studies (Berkel, Mauricio, Schoenfelder & Sandler, 2010; Castro, Barrera, Martinez, 2004; Spoth et al., 2013; Wandersman, Duffy, Flaspohler, Noonan et al., 2008) have called for an integrated approach to program development, utilizing key principles from top-down and bottom-up approaches that would also address many factors that have been found to impact the quality of implementing evidence-based programs.

The current study describes a case study of the development of SEEDS, a family-based obesity prevention program for preschool-age children and their mothers, which utilized an integrated approach to program development. The lessons learned throughout the process of developing SEEDS and recommendations of team members are discussed in the current study, and are integrated into a proposed model of program development.
The proposed integrated model of program development aims to integrate research and practice by utilizing the university extension system and promoting collaboration between research and extension faculty. The proposed model incorporates recommendations from the literature on high-quality program implementation, program planning and evaluation that can be applied during program development, increasing the chance for program success.

The proposed model presents eight stages of program development including: project planning and proposal, community needs assessment, establishing program theory and rationale, develop curriculum, pilot program curriculum, revise curriculum, efficacy trial-research implementation, and finally dissemination of program. Each of the proposed stages are discussed, as well as their relationship to the literature and the experiences of the SEEDS project. Strengths and limitations to the proposed integrated approach to development as well as future considerations for research and extension collaborations are also discussed.
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Dedication

This dissertation is dedicated to the members of the SEEDS Program Development Team for everything they taught me about collaboration, and about the many applications of research through practice.
CHAPTER ONE
INTRODUCTION

Over the last few decades, prevention scientists have demonstrated that research-based prevention programs are effective in preventing behavioral and health problems and promoting well-being (Gorman-Smith, 2014; Gottfredson, Cook, Gardner, Gorman-Smith et al., 2015). Program developers are tasked with translating research-based knowledge of risk and protective factors into prevention and intervention programs (Gorman-Smith, 2014). Translating this knowledge is the focus of the field of translational research and is of high priority for both researchers and practitioners. The National Institutes of Health identifies two areas of translational research. “Type I translation” refers to basic science and research related to the development and testing of preventative interventions (Rohrbach et al., 2006). “Type II translation” focuses on research aimed at enhancing the adoption, implementation, and sustainability of effective programs in communities (Rohrbach et al., 2006).

Another priority in the field of prevention science is the use of evidence-based programs and developing programs that have an evidence-base. Programs are considered evidence-based if they have been tested in well-designed studies demonstrating improvements in health (Spoth, Rohrbach, Greenberg, Leaf, et al., 2013) without causing harmful effects (Flay, 1986). Traditionally, the standard in the field is that programs are developed by researchers and tested under highly controlled conditions in efficacy trials (e.g., randomized control or quasi-experimental designs), and then further tested in effectiveness trials (e.g., evaluation of programs as they are implemented in community
settings). To meet the criteria to be considered evidence-based, positive results are required in both efficacy and effectiveness trials (NREPP Home, 2014).

In prevention science, the recommended approach for developing, evaluating, and disseminating programs to prevent the development of mental, emotional, and behavioral disorders is summarized as the “Prevention Research Cycle” (National Research Council and Institute of Medicine, 2009). Under this approach, programs are developed and disseminated through a seven-step process moving in a linear fashion through each step: pre-intervention, efficacy trials, effectiveness trials, dissemination and implementation studies, adoption, sustainability, and moving to scale (described in further detail in the following literature review). This approach is a top-down approach to program development and is driven primarily by researchers and then brought to communities.

Advantages to utilizing this traditional, top-down approach include the level of rigor in the methodology and the ability to attribute causal effects to the program. Moreover, this approach minimizes potential confounds by testing programs first on samples from a homogeneous population. A disadvantage of the Prevention Research Cycle is that the highly controlled nature of how programs are developed can create problems when programs are implemented under real-world conditions. It is especially problematic when programs are implemented in populations that differ significantly from the population for which the program was initially developed and tested, which is often the case.

Glasgow and colleagues (2003) argue that it may not be logical to expect that programs that are effective under controlled settings with a homogeneous sample will demonstrate effects in studies of effectiveness in communities (Glasgow, Lichtenstein,
Marcus, 2003). They argue that the assumption that prevention programs should progress from efficacy to effectiveness trials has resulted in a gap between research and practice, and a paucity of programs that can successfully move from research to practice. That is, the characteristics of programs that are successful in one setting may not be the same as those that are successful in another.

One strategy for narrowing the gap between research and practice is to develop programs from the bottom-up—i.e., grass-roots approaches where intervention programs or prevention efforts are community driven. Approaches under this philosophy are collectively referred to as Community-Based Participatory Research (CBPR). CBPR is a partnership approach that involves community members, researchers, and representatives from various organizations and agencies in all aspects of the project (Israel et al., 2011). CBPR is aimed at improving the cultural fit of programs and their long term sustainability (National Research Council and Institute of Medicine, 2009) utilizing varying levels of researcher involvement in program development (Minkler, 2004).

There are many advantages to a community-based approach to program development; the major concern about programs developed under the Prevention Research Cycle (i.e. generalizability) is addressed by CBPR. However, CBPR results in programs that have often not been evaluated using rigorous research methods, making it difficult to determine the effects of the program or to attribute causality, therefore not qualifying them as evidence-based.

Both approaches (Prevention Research Cycle and CBPR), while distinctly different, provide useful information about how programs should be developed. However, few resources specifically address how to approach program development,
including steps that should be taken during the process of program development. There are also few resources that provide information about how to promote effective collaborative relationships between researchers and practitioners. Many studies (Berkel, Mauricio, Schoenfelder, & Sandler, 2010; Castro, Barrera Jr, & Martinez Jr, 2004; Spoth et al., 2013; Wandersman et al., 2008) have called for an integrated approach to program development utilizing key principles from both top-down and bottom-up approaches. These researchers also called for addressing some of the many factors that impact the quality of implementation of evidence-based programs during program development.

Several integrated approaches for bridging the gap between research and practice have been proposed that involve collaborations between researchers, representatives of the target population and practitioners in the program development process. Examples of these integrated approaches can be found in the small literature on program development and program planning. Although the literature on program development is small, there are additional recommendations for bridging the gap from research to practice during program development in the literatures on program evaluation, implementation and sustainability (Bogenschneider, 1996; Castro, Barrerra, Martinez, 2004; Patton, 2008; 2011). Each integrated approach reviewed below encourages, as many have suggested, the involvement of community members, program participants and other stakeholders in the evaluation and planning of prevention programs. None of these approaches, however, provides a comprehensive, integrated approach specifically addressing the process of program development.

The purpose of this dissertation is to contribute an integrated model of program development to the literature that integrates research and practice by utilizing the
university extension system to foster collaboration between research and extension faculty. The proposed model also incorporates recommendations from relevant literatures (program implementation, evaluation and adoption) that can facilitate later program success by addressing certain issues in the program development stages. To illustrate this approach, I present a case study describing the development of SEEDS, a family-based obesity prevention program for preschool-age children and their mothers. I have organized the following chapter, the review of the literature, by first providing a brief review of the historical perspective on program development and prevention science, and by describing the primary approaches to developing programs. Next, I review literature from other areas that are incorporated into the proposed model, including insights from implementation science and university extension. Finally, I discuss the current study, providing a detailed description of SEEDS and provide a review of the context under which SEEDS was developed.
CHAPTER TWO

REVIEW OF THE LITERATURE

Historical Perspective on Prevention Science and Models of Program Development

Prevention science, though a relatively new field, has drawn on principles from other health sciences including health promotion and public health. One of the major contributions of prevention science has been determining standards of evidence for assessing programs and principles for conducting program research. The traditional prevention science paradigm for how programs are developed, implemented, evaluated and then disseminated is referred to as the “Prevention Research Cycle.” The Prevention Research Cycle is considered a top-down approach, relying primarily on the influence of researchers, and utilizing rigorous methodologies in pursuit of knowledge regarding program effectiveness.

Other important influences on prevention science methodology today are the works of Greenwald & Cullen (1985) and Flay (1986), establishing standards of evidence for the field. These standards, employed by prevention researchers including Greenwald, Cullen, and Flay, are thought by many (Glasgow and colleagues, 2003) to have had a positive effect on establishing standards of what are considered to be evidence-based practices. However, Glasgow and colleagues (2003) also suggest that establishing standards, specifically requiring efficacy and then effectiveness trials, may have had unintended negative effects resulting in few programs that are considered evidence-based based upon these standards. They suggest that the tradition of testing programs using this model, first testing efficacy, then expecting the same program to be successful in community effectiveness trials, is “inherently flawed, or at least incomplete” (p.1262).
In their historical review of Community-Based Participatory Research (CBPR), Wallerstein and Duran (2011), describe the origins of bottom-up, community-driven, or grass-roots approaches to research. They state that the bottom-up paradigm emerged to narrow the gap between research and practice. They also state that the goal of community-based programs was to solve some of the practical problems encountered by programs developed under the traditional top-down approach by focusing primarily on real-world applications during program development. They provide historical context stating that participatory research evolved from other areas of literature that were similar, and first gained popularity in Latin America, Asia, and Africa. In the 1970s, participatory research became more popular outside of academics and was used in communities to address social issues. In the 1980s researchers began using the term participatory action research, fundamentally similar to previous research in this paradigm, but not citing previous approaches as having influenced their development. These approaches are now referred to collectively as CBPR. This paradigm has challenged the traditional views of science and research in many ways including the role of the researcher, the role of the organization sponsoring program development, the participation of communities, and the importance of power relations (Wallerstein & Duran, 2011).

Another growing area of research that that was established over the last two decades to help researchers and communities better understand the gap between research and practice is the newly developing field of implementation science, or Type II translational research. Implementation science refers to the study of how programs are implemented in community settings, focusing on identifying the barriers that arise affecting implementation quality so we can better understand the gap between research
and practice. It also focuses on developing strategies for how to address these barriers.

**Approaches to Program Development and Prevention Research**

Theoretical approaches to developing programs, such as the Prevention Research Cycle and CBPR, are important and can be used to guide one’s approach to developing programs. While these theoretical approaches provide many useful strategies and general guidelines for developing programs, they provide little guidance in how to apply these strategies. The following section reviews the literature on top-down and bottom-up approaches to program development and prevention research, followed by reviewing integrated approaches to program development. I then review some of the applied resources that are available in the area of program development aimed at providing more detailed information to guide the development process.

**Top-down approaches.** Top-down approaches to program development are characterized as being driven primarily by scientific experts, tested under controlled settings, and then implemented in the field, and if shown to be effective, widely disseminated. They build heavily on the knowledge of researchers, and on theories of risk and protective factors and behavior change.

**Prevention Research Cycle.** The main top-down approach to program development and testing in the field of prevention science is the Prevention Research Cycle (National Research Council and Institute of Medicine, 2009). In following the Prevention Research Cycle framework, programs are developed by researchers, tested under highly controlled conditions, and then brought to the field. Under this approach (depicted in Figure 1) programs are developed and disseminated through a seven-step process. Programs move in a linear fashion through each step: 1) Pre-intervention, 2)
Efficacy Trial, 3) Effectiveness Trial, 4) Dissemination and Implementation, 5) Adoption, 6) Sustainability, and 7) Moving to Scale (National Research Council and Institute of Medicine, 2009). The cycle begins with “pre-intervention,” where research on risk and protective factors and the development of mental, emotional, and behavioral problems is conducted. This research provides a foundation of evidence upon which prevention programs are based. The pre-intervention phase also includes all program development and program selection activities, though not discussed in further detail in the Prevention Research Cycle literature.

Figure 1. Prevention Research Cycle

Directly following preintervention work is the “efficacy trial” phase. An efficacy trial tests whether an intervention has effects on targeted outcomes (i.e. changes in knowledge or behaviors) (National Research Council and Institute of Medicine, 2009),
and does more good than harm (Flay, 1986) when delivered under highly controlled conditions. Traditional efficacy trials are typically standardized in their delivery and delivered to a homogeneous sample (Glasgow et al., 2003), requiring a significant amount of resources. Efficacy trials are followed by “effectiveness trials,” which are designed to test whether an intervention has effects in real-world settings and conditions (Flay, 1986). Effectiveness trials typically use non-research staff and are conducted with limited community resources to create an environment similar to what would be expected from intended audiences for later program delivery and adoption (National Research Council and Institute of Medicine, 2009).

Demonstrated effects on intended outcomes in both efficacy and effectiveness trials are required for a program to be considered evidence-based under the standards of major evidence-based program databases such as Blueprints for Healthy Youth Development (Blueprints for Healthy Youth Development, 2015), and SAMHSA’s National Registry of Evidence-based Programs and Practices (NREPP Home, 2014). To be considered a promising program, Blueprints for Healthy Youth Development requires that programs have been tested in evaluation trials, with positive results from one high-quality randomized control trial or two high-quality quasi-experimental evaluations. To be considered a model program, Blueprints for Healthy Youth Development requires that programs complete either two high-quality randomized control trials, or one randomized control trial and one quasi-experimental evaluation. Model programs also have to show positive effects for a minimum of 12 months after the intervention takes place. SAMHSA’s National Registry of Evidence-based Programs also requires the use of randomized control trials or quasi-experimental research for inclusion in their registry.
Following initial prevention research studies of efficacy and effectiveness trials are studies of program dissemination and implementation, which include studies focused on program adoption, sustainability, and moving to scale (National Research Council and Institute of Medicine, 2009). The first stage of this part of the cycle is the study of “adoption” which involves learning about how an agency has incorporated an intervention into its delivery or service system (National Research Council and Institute of Medicine, 2009). The following stage is the study of “sustainability” which involves trials that determine if an intervention is maintaining its effects over the life of the program (National Research Council and Institute of Medicine, 2009), and if results are the same for those who receive the intervention earlier in the life of a program versus later. The final stage of the Prevention Research Cycle involves studies on “moving to scale” examining if an intervention maintains effects when its implementation is expanded across a system, such as a school district, community, or other existing infrastructure (National Research Council and Institute of Medicine, 2009).

There are many strengths to this approach to developing and testing programs. It provides an expectation and framework for rigorous testing of programs prior to dissemination and adoption. It also provides funders with specific guidelines for the criteria that programs must meet to be considered “evidence-based”. Since the use of evidence-based programs is of high priority to funders, consistency in the meaning of what it takes to be considered evidence-based is helpful and necessary. This approach also advocates integration of risk and protective factor research in program development, and intervention across multiple domains, which has been recommended by many developmental and prevention researchers.
While there are many strengths to this approach, there are also several limitations. One limitation, identified by Glasgow and colleagues (2003), is that few programs that are initially tested under these highly controlled conditions are then implemented consistently in the community. Characteristics of successful programs implemented under highly controlled settings are often not generalizable to different populations, or effective, when programs are implemented in community settings (Glasgow et al., 2003). Traditionally, programs undergoing efficacy trial research are developed and tested on populations of convenience, such as university towns of middle-class, European-American populations, resulting in programs that may not be generalizable to other populations of lower income or ethnic minority populations. The difference in populations and lack of generalizability make it difficult to move from efficacy trial to effectiveness studies in real-world settings with populations in need.

Another limitation is that during the earlier stages of the research cycle, often there is a lack of integration or planning for later stages. While some researchers may incorporate aspects of the program that are important during later stages, there is no explicit instruction on how programs should collect and integrate feedback into program planning and development, or how to plan for later stages in program development. This lack of explicit recommendations for integration causes difficulties moving across stages, maintaining the gap between research and practice. There is also very little information about the pre-intervention phase outlined in the Prevention Research Cycle model, and limited literature presenting guidelines for moving through the Prevention Research Cycle. Specifically, there is a lack of information available about the process of program
development that takes place before conducting efficacy studies; the cycle moves straight from pre-intervention to efficacy trials with little direction for completing the stage.

Another notable limitation of the Prevention Research Cycle is the significant cost required for a program to move through these various stages of testing. Initial research studies, specifically efficacy trials, require a great deal of funding to deliver under such controlled conditions. When programs are then implemented under real-world conditions, community organizations cannot afford to implement these high-cost programs in the same manner with fidelity to the original program.

**Diffusion of Innovations.** After a program or innovation has been developed comes the challenge of bringing it to the real world and facilitating its adoption by communities. The “Diffusion of Innovation” theory by Rogers (2002) extends the Prevention Research Cycle by focusing on diffusion of an innovation after it has been developed. Rogers proposes characteristics of innovations, or programs, which determine how quickly they are adopted into the system (Rogers, 2002). One characteristic of innovations related to successful adoption is *relative advantage* or the degree that consumers and other stakeholders perceive it as being a good idea. Another characteristic is *compatibility*, or the degree that the innovation is perceived as being consistent with the population’s needs and values. A third characteristic is *complexity*, or the degree that the innovation is perceived as being difficult or easy to understand. Another characteristic is *triability*, the degree that the innovation is seen as being able to be experimented with, or tried in the community on a limited basis. The final characteristic is *observability*, the degree that the results of the innovation are visible to adopters. Rogers (2002) suggests
that innovations that have each of these characteristics can be adopted more rapidly; he also provides specific strategies for facilitating this process.

Rogers’ (2002) suggested strategies for diffusing preventive innovations include: change the perceived attributes of preventive innovations; utilize champions, or advocating supporters, to promote preventive innovations; change the norms of the system regarding preventive innovation though peer support; use entertaining educational strategies to promote innovations; and utilize peer and community networks to diffuse innovations. While this information is primarily focused on the later stages of the life of a program (adoptions, sustainability and moving to scale), the characteristics and strategies for diffusing successful programs can be directly applied during the earlier stages of program development. The information provided can directly influence an integrated model of program development where developers incorporate individual characteristics and needs of communities. Considering these characteristics during the development of programs should theoretically increase their chances for success. In order to apply this information during the stages of program development, it is important to develop a detailed framework explaining specific program development tasks and framing strategies in the context of program development.

**Program Theory and Theory Driven Evaluation.** Other extensions of the Prevention Research Cycle are evaluation approaches that identify characteristics of successful programs in the context of program evaluation. One evaluation approach that provides strategies that are useful during program development is the work of Huey Chen (2005). Chen’s work on program theory and Theory Driven Evaluation extends the
typical Prevention Research Cycle by providing guidelines for tying the evaluation methods and program activities to the “program theory”.

Chen (2005) suggests that Program Theory can explain whether a program is effective and the reasons why. Program Theory involves two sets of assumptions that are made by the program stakeholders: descriptive and prescriptive assumptions. Descriptive assumptions are those regarding the causal processes of the social problems of focus that programs are trying to address, also referred to as the “change model” (Chen, 2005). Prescriptive assumptions direct the design of an intervention program and include the assumptions made by developers of the activities necessary to achieve the program’s goals, also referred to as the “action model” (Chen, 2005).

The change model is made of three parts. First, it involves identifying the program’s goals and outcomes, followed by the determinants of behaviors targeted for change, and finally, the intervention or treatment used to change the determinants. The action model represents a “systematic plan for arranging staff, resources, settings, and support organizations in order to reach a target population and deliver intervention services” (Chen, 2005, p. 23). The action model involves information about the intervention and service delivery protocols, information about the capabilities of implementing organizations and implementers, the establishment of collaborating partners, and information about the ecological context and the target population (Chen, 2005).

Program Theory stresses the importance of an ongoing cycle of evaluation and incorporating feedback. The action model also stresses involving multiple stakeholders in the evaluation process. It suggests that program development should include the
ecological context, information about the target population, and the implementing organization. The model also requires, consistent with other evaluation techniques and standards of evidence, that protocols be developed to ease the implementation process.

The language and clarity provided from Chen’s approach are very useful, and can be directly translated into the developmental phases of programs. Chen (2005) provides more detail in how programs should be developed in his book, “Practical Program Evaluation”. Specifically, he provides additional details on who should be involved in developing a program theory and the role of the evaluator in the developmental and evaluation process. This approach is an example of a model of program development that is moving toward integration of research and practice, though heavily drawing on the Prevention Research Cycle approach.

Chen’s program theory approach and his principles of theory driven evaluation center around the idea that programs are developed based on their program theory; however both bodies of literature (Program Theory and Theory Driven Evaluation) lack detail or explicit instruction on how programs should be developed. They also lack detail about the process of developing programs, the relationships among those involved in the development process, or the communication and infrastructure needed to complete the task of developing a program theory. Chen suggests that all programs have theories implicit in their work or explicit through documents such as logic models, but he provides little information about how programs should develop their theories beyond providing characteristics that should be included in the theory.

**Summary of top-down approaches.** The top-down approaches to testing interventions emphasizes a rigorous process of providing empirical evidence that the
program is effective in meeting its goals. While this provides the field with a consistent, high-quality standard of evidence, it has many limitations including potential lack of generalizability, significant cost, and a lack of planning for implementation or dissemination. Many researchers have discussed the gap in moving research to practice, and many have attributed this gap to the use of efficacy and effectiveness trails as the standard for determining an evidence-base. Glasgow and colleagues (2003) suggest that the system itself is broken and that how we develop and test programs needs to be substantially modified. This major gap in the field creates a distinct priority for the field of prevention science. Many people have proposed solutions to addressing this gap including the adoption of bottom-up and integrated approaches to prevention and community health and a focus on program implementation.

**Bottom-up approaches to program development.** Bottom-up approaches to program development are also referred to as *grass-roots* approaches. They are characterized as being community driven and allow communities to develop, select or implement programs that work to meet their needs. They build heavily on the decision making of local community leaders, with goals of increasing program relevancy (National Research Council and Institute of Medicine, 2009).

**Community-Based Participatory Research.** The most well-known, utilized, and documented *bottom-up* philosophy is collectively referred to as Community-Based Participatory Research (CBPR), a partnership approach that involves community members, researchers, and representatives from various organizations and agencies in all aspects of the project (Israel et al., 2011, p.54). CBPR is characterized as having equitable partnerships between partners. Minkler & Wallerstein (2011) describe CBPR as
being *based* in a community and its needs rather than being *placed* in a community. They explain that CBPR describes the philosophical approach of bottom-up research and encompasses many other approaches to research including: participatory action research, participatory research, action research, mutual inquiry, and feminist participatory research (Minkler & Wallerstein, 2011).

In a review of the common characteristics of CBPR approaches, leading researchers Israel and colleagues (2011) summarize nine principles that capture the key characteristics of CBPR approaches and the current state of the CBPR literature. These principles are presented in Table 1.

Table 1. Principles of Community-Based Participatory Research Approaches

<table>
<thead>
<tr>
<th>Community-Based Participatory Research Approaches…</th>
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</thead>
<tbody>
<tr>
<td>1. …recognize the community as a unit of identity. CBPR recognizes the community as the unit of focus to examine for needs and resources. Other examples of units would include families, neighborhoods, and other networks.</td>
</tr>
<tr>
<td>2. …build on the strengths and resources within the community. CBPR groups must determine both the needs and the resources of the community. CBPR aims to build upon community strengths to address areas of need.</td>
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<tr>
<td>3. …facilitate a collaborative, equitable partnership in all phases of the research. All members of a CBPR group are involved in all phases of the research process, and are involved in power-sharing processes.</td>
</tr>
<tr>
<td>4. …promote co-learning and capacity building among all partners. The emphasis of CBPR research activities includes building the capacity of all of those involved in the project.</td>
</tr>
<tr>
<td>5. …integrate and achieve a balance between research and action while benefiting all partners. CBPR strives to build a broad body of knowledge related to health and well-being, while balancing the knowledge gains and the concerns of the communities. Involvement of researchers in CBPR varies from minimal to highly involved (Minkler, 2004).</td>
</tr>
<tr>
<td>6. …emphasize local relevance of public health problems as well as identify and focus on the multiple determinants of health problems from an ecological perspective.</td>
</tr>
<tr>
<td>7. …involve developing systems through an interactive cycle. The focus of this process includes partnership development and maintenance, community assessment, problem definition, development of research methodology, data collection and analysis, interpretation of data, determination of action and policy.</td>
</tr>
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</table>
Israel and colleagues (2011) also identify several common issues and challenges critical to CBPR functioning that should be addressed in conducting a CBPR project.

These critical issues are reviewed below in Table 2.

Table 2. Critical Issues from Community-Based Participatory Research Projects

<table>
<thead>
<tr>
<th>Community-Based Participatory Research groups must…</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. …recognize that there is no one set of CBPR principles that will work for all CBPR partnerships; principles must be revisited and evolve over time.</td>
</tr>
<tr>
<td>2. …carefully define the community of focus.</td>
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<tr>
<td>3. …decide what it means to have an equitable and collaborative partnership.</td>
</tr>
<tr>
<td>4. …discuss expectations, investment of resources, and inequities present within the group to determine how they affect the group.</td>
</tr>
<tr>
<td>5. …decide what it means to involve all members in their project activities; equitable partnerships involving all members in all phases does not mean involving them in all activities.</td>
</tr>
<tr>
<td>6. …establish procedures for dissemination including assessing which members of the group will be coauthors of publications, present at meetings, and who makes decisions about dissemination.</td>
</tr>
<tr>
<td>7. …recognize and value priorities of the community; it is important that groups follow the lead of the community in addressing specific tangible issues of interest to the community.</td>
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<tr>
<td>8. …work with the cultural diversity of the partners involved given the likely diversity of partners in ethnicity, gender, social class, sexual orientation, community or academic roles or academic disciplines.</td>
</tr>
<tr>
<td>9. …develop a common language, trust, mutual respect, understanding of the context of the project, and recognize each other’s differences in goals, experiences, and levels of commitment to the project.</td>
</tr>
<tr>
<td>10. …develop processes and procedures for ensuring that CBPR principles are followed.</td>
</tr>
<tr>
<td>11. …establishing principles for determining group membership, helping to open implication, dissemination of result, action taking, specification of learnings, and mechanisms for sustainability.</td>
</tr>
<tr>
<td>8. …involve dissemination of findings and knowledge gained to all partners and involves all partners in the dissemination process. This involves disseminating knowledge in a language that is understandable to all partners; all partners should be involved in the process of disseminating information through publications and meeting presentations.</td>
</tr>
<tr>
<td>9. …involve a long-term process and commitment by all partners. CBPR groups must have a commitment to the relationships that exist between the individuals and organizations involved and agreement that the collaboration will continue over the life of the project.</td>
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</table>

Note: This table was adapted from Israel et al., 2011.
gates for partnerships while protecting the best interests of the group and its partners.

12. … determine a size of the partnerships, which should be appropriate for the community involved with the project.

Note: This table was adapted from Israel et al., 2011.

Israel and colleagues (2011) state that CBPR is an approach and does not dictate a specific methodology, and that it is important that the design and methods are appropriate for the specific research question or goal as well as the context (Israel et al., 2011). They suggest that ongoing evaluation is extremely important in determining the extent that CBPR principles were abided by to ensure that the group is functioning in an effective way (Israel et al., 2011). They also stress the importance of integrating feedback from evaluation to continually adapt their partnerships.

CBPR has been praised by many, and is gaining increasing recognition. Minkler & Wallerstein (2011) state that CBPR has expanded and now addresses methodological challenges that make it possible to employ more rigorous methodology in CBPR projects. Some of the additional strengths include the involvement of researchers and practitioners, and the detailed instructions for relationships between the two in CBPR groups. The attention to community needs is also a major strength of the CBPR approach, which can greatly influence other models of program development.

CBPR, however, has many shortcomings. CBPR heavily relies on principles of equality and empowerment, which may be impractical for some types of research projects. It may be difficult with larger development teams to have many people of equal authority. For some research projects tasked with a specific goal and objective, or under grant funding, it would make sense that there is a central authority ultimately responsible for leading the group. CBPR also emphasizes the needs of the community as being the
first priority, and the importance of not imposing research on the communities. While this creates buy-in from the community, and may be effective in meeting community goals, it could neglect important areas of influence determined by research. It is important to recognize the strengths of CBPR, as well as the limitations to the approach, in the development of an integrated model.

**Summary of bottom-up approaches.** Bottom-up approaches to developing and testing intervention programs emphasize community involvement, needs, and power sharing between researchers and community partners. The key principles of bottom-up approaches such as CBPR can directly be applied and addressed in an integrated model by providing detailed instruction for how programs can incorporate the needs and resources of the communities. This approach aims to bridge the gap between research and practice caused by top-down approaches by taking the opposite approach in constructing programs. While the bottom-up approach addresses many shortcomings of the Prevention Research Cycle, and top-down principles, it is difficult to maintain the high levels of rigorous methodologies, and fails to provide direction for developing programs that are based on research, while still addressing community needs. What is needed is an integrated model of program development that employs strengths of each of the top-down and bottom-up models, and addresses their limitations as they relate to prevention science.

**Integrated models of program development.** As the attention to the critical issue of addressing the gap between research and practice has grown, there have been several suggestions to employ a more integrated model to address the limitations of the traditional top-down and bottom-up approaches. For the purpose of this study, integrated
models are those where the development process is characterized by influence from community practitioners, researchers, and other stakeholders and by incorporating relevant research on program content, community needs, and program strategies. Many researchers (see Glasgow, et al. 2003) have called for a new type of model that would serve to bridge this gap. Green (2001) even goes as far as to propose that an evidence-base should really be determined by assessing how the program was planned and developed, as opposed to building an evidence-base on the effects of programs themselves. Glasgow and colleagues (2003) also suggest that in order to narrow the gap, more attention needs to be paid to the process of developing programs.

Several integrated models and approaches to program development and evaluation are reviewed below along with their strengths and limitations. While none of these models clearly articulates an integrated approach between researchers and practitioners in navigating the process of program development, these approaches all provide useful information that can be incorporated into a more comprehensive model of program development. An integrated approach to program development can provide a framework for researchers and practitioners to work together to develop programs for their communities. While not meant to be exhaustive, this review is intended to review components of different models useful for the process of program development and are similar in theory to the model proposed in the current study.

**Developmental Evaluation.** Developmental Evaluation (DE) is an approach to evaluation and program development that falls under the broader Utilization-Focused Evaluation (UFE) framework (Patton, 2008; 2011). UFE is based on the primary assumption that evaluations should strive for utility to the users and program
stakeholders, and the actual use of the findings of the evaluation. The role of the
evaluator in a utilization-focused evaluation is to facilitate the evaluation process
considering how each aspect of the design will affect use. Developmental Evaluation was
identified by Michael Quinn Patton (2008, 2011) for use in innovative settings that are in
a state of continuous development and adaptation. The goal of DE is to bring data
forward to make decisions and guide choices throughout the process of program
development (Patton, 2008). It is meant for program developers who are committed to
ongoing development, and never want to achieve a fixed-state (Patton, 2008). DE also
involves the participation of a variety of stakeholders in the development process and
requires a commitment from stakeholders to a culture of innovation (Patton, 2011).

Patton conceptualized this approach through his work with a program that used
evaluation data to guide their program in a continuous manner, never reaching a fixed, or
final state (Patton, 2008). This idea was innovative—historically, evaluation data had
been used to improve programs, or to determine if programs were effective in achieving
their goals. As his goals as an evaluator were to make evaluation data useful for its
intended users, he adapted his way of thinking and the idea of Developmental Evaluation
emerged.

DE was proposed by Patton as an alternative to the major distinction between
types of evaluation in the field—i.e., formative versus summative as originally
conceptualized by Scriven (1967) (Patton, 2008). Summative evaluations were conducted
at the end of a program; the use of the information was intended for decision makers to
determine if they should continue, expand, or end specific programs (Scriven, 1991a,b).
Scriven (1991a,b) described formative evaluations as the preparation for summative
evaluations, by working through problems with implementation identified during the implementation phase of a program. Patton (2008) framed formative evaluation at the time as any evaluation that was not summative and contributed to improving a program. When Patton conceptualized Developmental Evaluation he proposed that there was a third aspect of this historical distinction that had previously not been considered—where program developers never expect to arrive at a fixed state. Evaluation of programs of this nature could not be summative, as the evaluation process and program would not end and would only adapt to feedback. Evaluations of this nature could not be considered formative either in that formative evaluations aim to fine-tune a program and developmental evaluation would support a more ongoing process of constant adaptation (Patton, 2011).

This approach is distinctively integrative—by definition it involves feedback from intended users and stakeholders and is not characterized as being developed in isolation of either the community or researchers, and later evaluated. While this approach is integrative and creates an atmosphere in which those involved in the development and evaluation need to be open to communication and feedback, it fails to identify key players that should be involved in the development process. It also provides little information about the relationships among stakeholders besides the role of the evaluator. This evaluation technique lends itself readily to the formation of an integrated model that can be utilized by practitioners and researchers to guide them through the process of program development. It advocates an atmosphere in which there is a constant collection and integration of feedback, merging the process of program development and evaluation.
Ecological risk/protective theory for building youth programs. The Ecological Risk and Protective Factor Theory for building youth programs proposes a perspective that is grounded in ecological theory and theories of developmental context (Bogenschneider, 1996). The goal of the model is to provide a framework of principles that can guide the development, implementation and evaluation of programs. There are 12 principles that make up the ecological risk and protective factor framework proposed by Bogenschneider (1996). It specifically aims to help practitioners by providing a framework that could guide the development of prevention programs and policies and to support youth and families. Each of these principles is defined in the table below (Table 3).

Table 3. Principles for Building Prevention Programs Based on Ecological Risk/Protective Model

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<tbody>
<tr>
<td><strong>1.</strong> Identify the real issues or problems facing local youth. The problems facing youth and the most appropriate responses may vary for different communities.</td>
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<tr>
<td><strong>2.</strong> Establish well-defined goals that target the risk and protective processes associated with the identified youth issue or problem. Without clear direction a program is less likely to be successful and is extremely difficult to evaluate in terms of its effectiveness.</td>
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<tr>
<td><strong>3.</strong> Be comprehensive in addressing both risk and protective processes in several levels of the human ecology. Theory suggests that development does not occur in isolation; programs are more likely to be successful if they address multiple risk and protective factors across multiple domains.</td>
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<tr>
<td><strong>4.</strong> Collaborate with stakeholders in the community or neighborhood. Involving community members in the planning process helps to ensure that programs fit the needs of the community and invests stakeholders in maintaining the life of the program.</td>
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<tr>
<td><strong>5.</strong> Educate coalition members on current theory and research on adolescent development, prevention programming, and community process, which helps coalitions to break down the complex problems facing youth into manageable pieces.</td>
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<tr>
<td><strong>6.</strong> Tailor the plan to the community, reducing risks that exist locally and building protective processes that do not exist. This idea helps communities target their efforts to the gaps between their areas of need and the assets of their community.</td>
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</table>
7. **Involve the target audience in program design, planning, and implementation.** Involving participants in the development of programs will help make programs more relevant for the intended audience.

8. **Be sensitive to cultural, ethnic, and other forms of diversity in the neighborhood or community,** helping to gain support in the community, and increase the relevance of programs.

9. **Intervene early and continuously** due to the early onset of problem behaviors and risk factors, and the idea that the earlier the onset the more powerful the effects (Dryfoos, 1990).

10. **Select developmentally appropriate prevention strategies.** Applying information about youth development, and knowledge of the different influences on development at different levels and over time is an important part of planning the intervention timing, or selecting or developing the type of intervention and its focus.

11. **Anticipate how changes in one part of the system may affect changes in the system or other settings.** This is an important consideration in the planning and evaluation of programs. It is important that unintended effects in multiple domains are assessed.

12. **Evaluate effectiveness by monitoring changes in risk and protective processes.** Due to the nature of prevention efforts targeting long-term outcomes, it is impractical to wait to assess the targeted outcomes, and is necessary to assess risk and protective factors before and after the program.

Note: This table was adapted from Bogenschneider (1996).

Each of the twelve principles recommended by Bogenschneider (1996) provide important direction for groups to consider when attempting program planning and development. This model is an excellent example of a model that integrated research and practice, as well as existing literature and community information, into the development of programs. What this model is lacking, however, is further detail on how to approach or accomplish each of these tasks. Bogenschneider (1996) does not provide detail about who should be involved in the development of a program beyond involving stakeholders from the community. She also does not provide specific details about the process of accomplishing these tasks or how to go about them.
Culturally tailored programs. Another model gaining attention is that of “culturally tailoring” programs (Castro et al., 2004). Castro and associates (2004) recommend an expansion on standard scientific models, such as the Prevention Research Cycle, to include planning for cultural issues that are later the focus of implementation research. They also suggest the development of “hybrid” (or integrated) programs with built-in levels of adaptation, stating that this type of model would enhance program fit, and maximize the fidelity and effectiveness of programs (Castro et al., 2004). Castro and associates strongly advocate for the idea of cultural relevancy, where the population is clearly defined, and the programs are appropriate and relevant for that population. They also suggest that prevention science must offer strategies that are based on scientific studies that regulate adaptation both in the areas of content modification and in delivery modification (Castro et al., 2004).

The idea of an integrated or hybrid model of developing programs that is culturally tailored, and relevant, is an innovative one. This provides a way of bridging the gap between research and practice based on the lessons that have been learned from the study of program implementation. Though this idea is a compelling one, Castro and his colleagues do not provide a detailed model on how to achieve this, or on what the program might look like, justifying again the need for an integrated model of program development that is based on the prevention science literature, and the lessons learned from more established areas of research.

Summary of integrated programs. There have been several suggested strategies for reducing the gap between research and practice that provide examples of how programs can be developed or tested with both rigorous research methodologies as well
as community involvement. What is lacking is a model that guides the program development process, while providing detailed information about the key stakeholders and their relationships with other collaborating team members, as well as their functional roles in the development process. The proposed model incorporates key components from each of these models, while focusing specifically on the process of program development.

Program development primers and other resources. Outside of the realm of prevention science literature there are various guides to program development and program planning. These resources are categorized into two areas for the purpose of the current study, the first being program development textbooks and primers, the second being program planning resources from agency funders. Examples of resources available in each of these areas and their approaches to program development are described below.

Intervention mapping. One widely cited resource available on program planning and development that comes from the field of Public Health and Health Promotion is referred to as Intervention Mapping (Bartholomew et al., 2006). The textbook, and its three versions dating back to 2006, has been cited 987 times as of December 23, 2014. The purpose of this approach is to provide program planners with a framework for effective decision-making during each step of intervention program planning, implementation, and evaluation. The approach attempts to provide specific tasks and strategies for applying behavioral theories, the existing literature and knowledge of the target community, along with community input, into the planning and development of intervention programs. The approach was established out of a desire to help health
educators create programs that are based on literature and theory, yet are feasible and likely to be effective (Bartholomew et al., 2006).

Intervention Mapping is broken down into six steps, each with several primary tasks. Each step and the primary tasks involved in each step are presented in Figure 2. The six steps for intervention mapping are: 1) needs assessment, 2) matrices, 3) intervention methods and practical applications, 4) program, 5) adoption and implementation plan, and 6) evaluation plan. Bartholomew and colleagues (2006) describe the Intervention Mapping process as iterative. Though the completion of tasks within each step is necessary to move to subsequent steps, program developers often move back and forth through the process as more information becomes available.

Each of these steps is meant to be completed by using several prescribed core processes. Each defined process is listed in Figure 3. These core processes, and detailed instructions provided by Bartholomew and colleagues (2006), provide program planners with explicit instructions for how and when to integrate data into their decision-making.

There are many strengths to the Intervention Mapping approach including the focus on multidisciplinary workgroups, and incorporating a variety of stakeholders in the planning process, specifically those delivering the program and participants. There are also several recommendations consistent with those made from other approaches including incorporating evaluation from the beginning of a project, making data-based decisions by incorporating research, building a program logic model and rationale, and utilizing a variety of data sources.

Some of the weaknesses for utilizing this approach include an overwhelming amount of detail in some areas. In an effort to provide a comprehensive approach, the
authors have provided great detail including areas such as behavioral theory, developing matrices to organize data, logos and materials and many examples of programs that have been developed. What is lacking from this approach is information about how the developer should judge the quality of data or theory and its relevance to the project. For a practitioner with little research experience, it could be difficult to judge the quality of the data being considered.

This approach is also missing an emphasis on how to go through the process of Intervention Mapping—what are the relationships among team members, how many team members should be involved, how do collaborative groups work together to accomplish the task of program development? While this approach has many strengths, there is the potential for error in carrying through with these steps. It is also unknown exactly how professionals have used this resource, how closely they have adhered to its many steps, and whether its use results in more effective programs.
Step 1: Needs Assessment
- Establish a participating group
- Conduct the needs assessment
- Assess community capacity
- Specify program goals for health and quality of life

Step 2: Matrices
- State outcomes for behavior and environmental change
- State performance objectives
- Select important and changeable determinants
- Create matrices of change objectives

Step 3: Theory-Based Intervention Methods and Practical Applications
- Generate program ideas with the planning group
- Identify theoretical methods
- Choose program methods
- Select or design practical applications
- Ensure that applications address change objectives

Step 4: Program
- Consult intended participants and implementers
- Create program themes, scope, sequence, and materials list
- Prepare design documents
- Review available program materials
- Draft program materials and protocols
- Pretest program materials and protocols
- Produce materials and protocols

Step 5: Adoption and Implementation Plan
- Identify potential adopters and implementers
- Reevaluate the planning groups
- State program use outcomes and performance objectives
- Specify determinants for adoption and implementation
- Create a matrix of change objectives
- Select methods and practical applications
- Design interventions for adoption and implementation

Step 6: Evaluation Plan
- Review the program logic model
- Write effect evaluation questions
- Write evaluation questions for changes in determinants
- Write process evaluation questions
- Develop indicators and measures
- Specify evaluation design
<table>
<thead>
<tr>
<th>Core Processes for Using Intervention Mapping: How to Use Theory, Literature, and New Data</th>
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<tbody>
<tr>
<td>Pose the question.</td>
</tr>
<tr>
<td>Brainstorm a provisional list of determinants.</td>
</tr>
<tr>
<td>Review the literature related to the <em>topic</em> at hand.</td>
</tr>
<tr>
<td>(Some of the findings from the literature will be strictly empirical. Others will be based on theory.)</td>
</tr>
<tr>
<td>Review the literature specifically for theory using the <em>concept</em> and <em>general theories</em> approaches.</td>
</tr>
<tr>
<td>Assess and address needs for new data.</td>
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<tr>
<td>Formulate a working list of answers to the posed question.</td>
</tr>
<tr>
<td>(based on relevance and changeability)</td>
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</tbody>
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Note: This figure is taken directly from Bartholemew et al., 2006, pg. 37.
Agency program planning and development resources. The Centers for Disease Control and Prevention (CDC) is on the cutting edge of agency funders in establishing standards for utilizing evidence-based practices. The emphasis on this standard has led CDC to support prevention and health workers in their endeavors to develop, implement, and evaluate programs. Aiming to support program development and planning, CDC has made recommendations for the necessary program planning steps including completing a strategic plan, logic model and workplan. They have also made resources available guiding the completion of each of these tasks and on the overlap between each task.

CDC advocates utilizing a strategic plan to describe the broad strategies that a program will use to achieve its program goals. While CDC describes the strategic plan as a five-year plan, the same planning steps can be taken for a short-term project. The logic model is a visual diagram displaying the components of the program and the presumed effects of utilizing the strategic plan. A workplan is a guide to walk program staff through the specific objectives, timeline, and the individual tasks and activities for program staff. Other resources provided by CDC are available to support programs in creating logic models and writing goals and objectives to build workplans. Table 4 displays similarities among strategic plans, logic models and workplans.

Table 4. Similarities Among the Five-Year Strategic Plan, Logic Model, and Components of the Workplan

<table>
<thead>
<tr>
<th>Strategic Plan Components</th>
<th>Logic Model Components</th>
<th>Workplan Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable</td>
<td>Overall program goal</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Five-year program goals</td>
<td>Long-term outcomes</td>
<td>Five-year program goals</td>
</tr>
<tr>
<td>Strategies</td>
<td>Strategies/activities</td>
<td>Strategies</td>
</tr>
<tr>
<td>Rationale for program strategies</td>
<td>Logical links between strategies/activities and intended outcomes</td>
<td>Not applicable</td>
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<tr>
<td>Timeline for Implementation of strategies</td>
<td>Outputs and short-term, intermediate, and long-term</td>
<td>Strategies</td>
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CDC advocates an overall framework for program planning that uses strategic plans and logic models that is very common in health promotion, prevention science, and public health. They are also a very common tool in guiding extension programming. There are many advantages to completing a program logic model including aiding evaluation planning and guiding the development of a project workplan.

In spite of the potential impact that logic models can have in guiding program development, resources available for completing them do not provide adequate information about how and where to integrate research and existing literature into the model. CDC materials state that other data sources should be utilized to complete the logic model, but do not explain what those data sources are, or how to integrate them.

Based upon the components of the planning process presented in Table 4, it is appropriate to utilize research to build rationale for program strategies by focusing on strategies that have been shown to be, or have the potential to be, effective in achieving targeted outcomes. By basing program planning decisions such as the selection of program strategies on existing research, and gathering new data on community need or interest, programs have a greater potential to be successful than those that are planned in isolation without incorporating other data sources.

**Program planning primers.** In addition to the Intervention Mapping textbook, “Planning Health Promotion Programs: An Intervention Mapping Approach” by Bartholomew and colleagues (2006), there are also a handful of other texts, and primers available that focus on program planning. These texts vary in their amount of depth,
integration and citation of academic literature in their recommendations, and the emphasis that they place on utilizing research to design programs.

One recently published program planning text is called “Designing and Managing Programs: An Effectiveness-Based Approach” by Kettner and colleagues (2013). The authors emphasize the need to design programs in a systematic way that supports the evaluability of programs. They stress the importance of anticipating the data collection efforts to take place at the end of a program during the beginning stages of planning. Their approach supports principles of accountability by ensuring that design elements are tied to targeted program outcomes and are incorporated from the beginning of the planning stages. They suggest that by the time program planning begins, the program developers should have a deep understanding of the relevant literature on the issue and approaches, as well as the community, and have a commitment to collecting any new data needed to inform decision-making. Kettner and colleagues (2013) describe this approach as being effectiveness-based.

Effectiveness-based program planning incorporates a popular evaluation step that was first introduced by the Urban Institute referred to as an “evaluability assessment” (Kettner, Moroney, Martin, 2013). Evaluability assessments ensure that programs meet specified criteria so that they can be evaluated on their effectiveness or on achieving targeted goals. Outside of Kettner and colleagues’ (2013) book, there is a growing body of literature on evaluability. Leading evaluability researcher Laura Leviton describes evaluability as having been originally developed as a pre-evaluation activity to help programs prepare for further evaluation efforts (Leviton et al, 2010). Leviton and colleagues (2010) also describe evaluability assessment as serving several purposes
including: helping program staff to develop realistic objectives; helping to translate research into practice by examining the feasibility, acceptability and adaptation of evidence-based practices with new populations in new settings; and translating research to practice by identifying promising new approaches to achieve goals.

The evaluability assessment process is presented in Figure 4. This process is cyclical and iterative, building rational for program design, and identifying opportunities for evaluation as well as opportunities to improve program design (Leviton et al, 2010). Steps in the evaluability assessment begin by involving multiple stakeholders in conversations about the scope of the project. The assessment team then reviews program documentation, grant proposals, goals and objectives, and other documents and revises logic models with project stakeholders to resolve disagreements and provide clarity. The results of the evaluability assessment provide programs with information about the plausibility of the program design, areas in need of development, feasibility of the evaluation process and a critique of the quality and availability of the data currently or potentially collected (Leviton et al, 2010).

Similar to the CDC guidelines, Intervention Mapping and many other approaches, Kettner and colleagues (2013) advocate for the use of logic models to display the program rationale. They also suggest that program developers spend a great deal of effort gaining knowledge about the history of the targeted problem, related theories about the problem, and evidence of the problem and the population of focus. By gaining this background information, they suggest that program developers are in a position where they can propose appropriate intervention strategies that have the potential to be successful. One very useful component of Kettner and colleagues (2013) book is a self-
guided assessment asking program developers if they have completed each of the recommended topics and steps. Each topic area is presented in table 5. Detailed supplemental information is also provided in the book to elaborate on the steps necessary to complete each of these planning stages.

Kettner and colleagues (2013) argue that the purpose of their program planning activities is to guide the development of programs that have the best possible chance of achieving their objectives. The steps that they recommend are useful for grounding program strategies and objectives in data, the literature and the community of focus. Their book provides detailed steps of working through each component of the process. What is missing from this text is the information about the relationships and infrastructure involved in planning a program. It is unclear how to integrate multiple perspectives into the planning process, and that it is important to do so.

Table 5. Effectiveness-based Program Planning Topics

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<table>
<thead>
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<tbody>
<tr>
<td>1.</td>
<td>Defining programs</td>
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<td>2.</td>
<td>Assessing diverse populations</td>
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<td>3.</td>
<td>Problem analysis</td>
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<td>4.</td>
<td>Needs assessment</td>
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<td>5.</td>
<td>Selecting a strategy and establishing objectives</td>
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<td>6.</td>
<td>Program design</td>
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<td>7.</td>
<td>Data requirements for performance measurement</td>
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<td>8.</td>
<td>Monitoring, using information technology</td>
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<td>9.</td>
<td>Program evaluation</td>
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<td>10.</td>
<td>Budgeting</td>
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Note: Kettner, Moroney, and Martin, 2013
Figure 4. Evaluability Assessment Process

Note: This figure is taken directly from Leviton, Khan, Rog, Dawkins, and Cotton (2010).
**Summary of program development.** The program development resources reviewed above represent the diversity of the program development literature. These resources vary in their content and recommendations, and in their utility in guiding program development. One important recommendation that can be gathered from these resources is that they all consistently recommend the use of a logic model to represent the program theory and rationale. They also consistently recommend the integration of multiple stakeholder perspectives in the process of development. Where these resources vary is in their recommendations for integrating research into program development and planning, and on how to facilitate the process of program development. They also greatly differ in the language used to describe program planning and development. The literature on program development would greatly benefit from more consistent use of terminology, as well as more guidelines on how to integrate research into the program development process, and suggestions on the best time points of when for integrating research and practice. Another important area that needs to be further explored is the use of multiple sources of data to inform decision-making during the program development process.

**Insights from Implementation Science**

In addition to the models and approaches to program development, much can be learned and applied from the field of implementation science or Type II translational research. Two areas of translational research have been identified by the National Institutes of Health, the first “Type I translation,” refers to the basic science and research related to the development and testing of preventative interventions (Rohrbach et al., 2006). The second type of translational research, “Type II translation,” focuses on
research aimed at enhancing the adoption, implementation, and sustainability of effective programs in communities (Rohrbach et al., 2006).

Insights from the literature on type II translational research, also referred to as *implementation science*, are of particular focus for this section. Implementation science examines how evidence-based programs function when implemented in communities, providing important directions for developing programs that can be successfully implemented. Researchers in this relatively new field have identified numerous factors that promote high quality implementation, sustainability and program success. This information is very valuable, and should be considered during the early stages of program planning and development to improve the program’s chances for success. Specific characteristics of high-quality implementation are reviewed below, along with information on a specific program implementation model (Berkel, 2011) and implications for program development.

**Implementation quality.** Implementation quality is defined as the extent to which a program or innovation is implemented in a way that meets the standards needed to achieve desired outcomes (Meyers, Durlak, Wandersman, 2012). Many researchers have identified factors that influence implementation quality, and although these factors are often given different names, some overlap across studies is emerging. In one widely cited meta-analysis, Durlak and DuPre (2008) identified twenty-three factors that influence implementation quality, and categorized these factors into the areas of communities, providers, innovations, aspects of the prevention delivery and prevention support systems. These factors are provided in Table 6. Each factor included in the table
was related to implementation quality in at least five studies in Durlak and DuPre’s (2008) meta-analysis.

<table>
<thead>
<tr>
<th>Table 6. Factors Affecting the Implementation Process</th>
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<tr>
<td><strong>I. Community Level Factors</strong></td>
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<tr>
<td>a. Prevention Theory and Research</td>
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<tr>
<td>b. Politics</td>
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<tr>
<td>c. Funding</td>
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<tr>
<td>d. Policy</td>
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<tr>
<td><strong>II. Provider Characteristics</strong></td>
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<tr>
<td>a. Perceived Need for Innovation</td>
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<tr>
<td>Extent to which the proposed innovation is relevant to local needs</td>
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<tr>
<td>b. Perceived Benefits of Innovation</td>
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<tr>
<td>Extent to which the innovation will achieve benefits desired at the local level</td>
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<td>c. Self-efficacy</td>
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<td>Extent to which providers feel they are will be able to do what is expected</td>
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<td>d. Skill Proficiency</td>
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<td>Possession of the skills necessary for implementation</td>
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<tr>
<td><strong>III. Characteristics of the Innovation</strong></td>
</tr>
<tr>
<td>a. Compatibility (contextual appropriateness, fit, congruence, match)</td>
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<tr>
<td>Extent to which the intervention fits with an organization’s mission, priorities, and values.</td>
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<td>b. Adaptability (program modification, reinvention)</td>
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<tr>
<td>The extent to which the proposed program can be modified to fit provider preferences, organizational practices, and community needs, values, and cultural norms</td>
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<tr>
<td><strong>IV. Factors Relevant to the Prevention Delivery System: Organizational Capacity</strong></td>
</tr>
<tr>
<td>a. General Organizational Factors</td>
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<tr>
<td>i. Positive Work Climate</td>
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<tr>
<td>Climate may be assessed by sampling employees’ views about morale, trust, collegiality, and methods of resolving disagreements</td>
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<tr>
<td>ii. Organizational norms regarding change (a.k.a. openness to change, innovativeness, risk-taking)</td>
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<tr>
<td>Collective reputation and norms held by an organization in relation to its willingness to try new approaches as opposed to maintaining the status quo</td>
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<tr>
<td>iii. Integration of new programming</td>
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<tr>
<td>Extent to which an organization can incorporate an innovation into its existing practices and routines</td>
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<tr>
<td>iv. Shared vision (shared mission, consensus, commitment, staff buy-in)</td>
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<tr>
<td>Extent to which organizational members are united regarding the value and purpose of the innovation</td>
</tr>
<tr>
<td>b. Specific Practices and Processes</td>
</tr>
<tr>
<td>i. Shared decision-making (local input, community participation or involvement, local ownership, collaboration)</td>
</tr>
<tr>
<td>Extent to which relevant parties (e.g., providers, administrators,</td>
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researchers, and community members) collaborate in determining what will be implemented and how

ii. Coordination with other agencies (partnerships, networking, intersector alliances, multidisciplinary linkages)
Extent to which there is cooperation and collaboration among local agencies that can bring different perspectives, skills, and resources to bear on program implementation

iii. Communication
Effective mechanisms encouraging frequent and open communication

iv. Formulation of tasks (workgroups, teams, formalization, internal functioning, effective human resource management)
Procedures that enhance strategic planning and contain clear roles and responsibilities relative to task accomplishments

c. Specific Staffing Considerations
i. Leadership
Effective leaders who set priorities, establish consensus, offer incentives, and manage the overall process of implementation

ii. Program champion (internal advocate)
An individual who is trusted and respected by staff and administrators, and who can rally and maintain support for the innovation, and negotiate solutions to problems that develop

iii. Managerial/supervisory/administrative support
Extent to which top management and immediate supervisors clearly support and encourage providers during implementation

V. Factors Related to the Prevention Support System

a. Training
Approaches to insure provider proficiencies in the skills necessary to conduct the intervention and to enhance providers’ sense of self efficacy

b. Technical Assistance
Resources offered to providers once implementation begins, and may include retraining in certain skills, training of new staff, emotional support, and mechanisms to promote local problem solving efforts

Note: Table adapted from Durlak and DuPre, 2008

Durlak and DuPre (2008) state that it is unlikely that these factors are independent of one another. Studies are beginning to examine the relationships between these constructs, the overlap between them and their relationships with different aspects of program implementation and outcomes. One widely recognized model of implementation, that incorporates findings from these studies, is presented next (Berkel et al., 2011).
Relationships between dimensions of implementation quality and program outcomes (Berkel model). In an effort to expand upon Durlak and DuPre’s (2008) review, Berkel and colleagues (2011) focused on four dimensions (fidelity, quality, adaptation, and responsiveness) which occur within the delivery of the program itself. Many of these areas have been widely researched, resulting in mixed results, causing debate about the effect of each on program outcomes. Berkel and colleagues (2011) model, Figure 5, provides a possible explanation for the mixed results of previous studies. Specifically, it draws attention to an understudied area—the relationships between dimensions of implementation quality and program outcomes. The model suggests that the effects of facilitator behaviors (such as fidelity, quality of delivery and adaptation) on program outcomes are mediated or moderated by participant responsiveness. This would mean that participant responsiveness affects the strength and direction of the relationship between implementation factors and outcomes (moderation), or that participant responsiveness is entirely responsible for the relationship (mediation). Each of the four dimensions (fidelity, quality, adaptation, and responsiveness) and their relationships to participant outcomes are reviewed below.

Figure 5. Integrated Theoretical Model of Program Implementation (Berkel et al., 2011)
**Fidelity.** Fidelity refers to whether program components were delivered in a way that maintained the program protocols (Berkel et al., 2011). Berkel and colleagues (2011) note that other researchers label fidelity as adherence, compliance, integrity, faithful replication, and completeness. Fidelity involves determining core components of a program, and then assessing the percentage of adherence to the core components, or sometimes the time spent on the core components. Few studies have empirically validated the core components of programs (Berkel et al., 2011); however, program developers are encouraged to identify core components to support implementation.

There is a consensus among implementation scientists about the importance of fidelity in positively influencing program effects, although few studies report links to outcomes (Durlak & DuPre, 2008; Berkel et al., 2011). Only 12% of studies reviewed by Durlak and DuPre (2008) assessed the relationship between fidelity and outcomes. In these studies, 76% found that higher levels of fidelity were associated positively with program effects, whereas the remaining studies reported negative or null effects on program outcomes. While there is general agreement in the importance of fidelity, the research is not clear enough to draw conclusions about the direction of the effects of fidelity on program outcomes.

**Quality of delivery.** Quality of delivery refers to the skills with which the program was implemented by facilitators (Berkel et al., 2011). In their review, Berkel and colleagues (2011) identified several aspects of quality including facilitators’ use of interactive teaching methods, enthusiasm, clarity of content delivery, reflective listening, summarizing, fostering cohesion and several clinical processes including empathy and
acceptance. In their reviews of implementation research, Rohrbach and colleagues (2010) and Berkel and colleagues (2011) both present empirical research demonstrating that quality of delivery is associated with participant responsiveness.

Few studies have examined the direct relationship between quality of delivery and program outcomes; in their review of 59 studies examining the links between implementation and program outcomes, Durlak and DuPre (2008) only cite six studies examining the relationship. In the small number of studies examining the relationship, high quality of program delivery was associated with positive program outcomes (Berkel et al., 2011).

**Adaptation.** Adaptation refers to additions made to the program during implementation; other terms used to represent the same concept include modification and reinvention (Berkel, et al., 2011). Historically, implementation researchers have stressed that program adaptation reduces a program's effectiveness (Elliott & Mihalic, 2004; Berkel et al., 2011). Berkel and colleagues (2011) attribute this belief to the idea that adaptation reduces program fidelity and therefore reduces program effects. More recently researchers have suggested that perfect levels of fidelity are impossible to achieve (Durlak & DuPre, 2008), and that adaptation may lead to more positive program outcomes (Berkel et al., 2010; Durlak & DuPre, 2008). The tension between the desire to maintain high levels of fidelity versus the need for adaptation has received a great deal of attention in research, and is arguably the biggest debate in the field of implementation science.

One study, reviewed by Berkel and colleagues (Kerr et al., 1985; Berkel et al., 2011), examined the relationship between program adaptation and participant
responsiveness. Kerr and colleagues (1985) found that over time fidelity to the program went down while participant responsiveness still increased. The decrease in fidelity was due to facilitators dropping program strategies that they felt were ineffective and adding strategies that they acquired based upon previous experiences with the population.

Research studies that have examined program adaptation have consistently found that it results in more positive program outcomes; they have also found that reductions in program adaptations were related to less impact on program outcomes. The relationship between program adaptations and program outcomes (reduction in adaptations resulting in less impact on program outcomes) suggests that the reasons for adaptation are important in determining their relationship to program outcomes, and that these reasons can be influential for program planning and development. For example, reducing the number of program adaptations made to increase participant engagement, might lead to worse program outcomes. Castro and colleagues (2004) suggest that the reasons for adaptation are often due to cultural differences between the audience that the program was originally designed for and the audience the program is being delivered to.

Given the widely accepted view of the importance of fidelity, the positive impact of adaptation on program outcomes has been the source of debate amongst researchers. Durlak and DuPre (2008) suggest that the central fidelity vs. adaptation debate in implementation science is inappropriate despite the attention that it receives. Researchers (Backer, 2002; Durlak & DuPre, 2008) suggest that the focus should be on finding the balance between fidelity and adaptation. Some (Castro et al., 2004) have taken this a step further by suggesting that programs should be created that have built-in flexibility and opportunities for adaptation. The idea of built-in flexibility provides facilitators with
choices for some aspects of the program that could be selected to make the program fit
the needs of the facilitator and participants, while maintaining fidelity to the core
concepts of the program.

As reviewed in Durlak and DuPre (2008), several researchers have suggested that
more research attention needs to be directed toward identifying the core components of
programs through monitoring program delivery (Backer, 2002; Durlak, 1998; Dusenbury
et al., 2003; Mowbray et al., 2003) so that implementers can become aware of which
aspects of the program can be adapted if necessary. This recommendation has received
even more attention and support from other prevention science researchers since Durlak
and DuPre’s (2008) review. The recently updated standards of evidence for prevention
science research (Gottfredson et al., 2015) recommend that when programs are developed
or described, core components must be identified clearly in the program description, a
change from the previous version of the same standards (Flay et al., 2005). The change in
standards and recommendations demonstrates an increased recognition of how program
development can impact implementation, adoption and sustainability.

**Participant responsiveness.** Responsiveness refers to participants’ involvement
and interest in the program, and is often measured as engagement, attendance, retention,
satisfaction, home practice completion, and dosage (Berkel et al., 2011). Berkel’s model
proposes that the effects of factors related to facilitators (e.g., fidelity, quality, and
adaptation) are moderated or mediated by participant responsiveness, and may interact
with one another. They also propose that quality of program delivery may moderate the
association between fidelity and program outcomes. Such interaction effects may help
account for the differing views on the importance of fidelity. For example, even when
fidelity is high, low participant responsiveness or lower quality of delivery may lead to weak or even negative associations with program outcomes.

Additionally, Berkel and colleagues (2011) propose a meditational influence of responsiveness in the relationships between adaptation and program outcomes. They cite research linking program adaptation positively to both responsiveness and outcomes. Research on program adaptation shows that making changes to increase the relevance to participants’ values and culture may increase participants’ attachment to the program (McGraw et al., 1996; Berkel et al., 2011). They suggest that this impact on responsiveness may in turn make the program more effective in achieving desired outcomes.

Finally, they propose a mediational influence of participant responsiveness on the relationship between quality of delivery and outcomes. They suggest that while relatively little research has been done in this area, some researchers have found a direct link between the quality of delivery and positive effects on participant responsiveness. They also suggest that improving the quality of delivery, especially for programs targeting low-income and minority populations may be critical to increase participant responsiveness and positive outcomes.

**Other contextual factors related to program outcomes.** In addition to the aspects of implementation quality that were reviewed by Berkel and colleagues (2011), and reviewed by Durlak and DuPre (2008), other contextual factors have been found to predict high-quality implementation. Stith and colleagues (2006) reviewed the importance of community coalitions and involving stakeholders in the design and implementation of programs for implementation quality. They found several factors that
related to implementation quality including: preparing for community readiness; utilizing a champion and community coalitions; and involving program stakeholders in the development and implementation of programs (Stith et al., 2006). Preparing for community readiness involves enhancing community capacity by bringing together community stakeholders, and determining if the community recognizes the need for the program as well as identifying a champion to gain support in communities (Stith et al., 2006). They state that involving stakeholders (including program participants and implementers) in the process of planning for programs is crucial for the success of a program, helping to increase the cultural fit of a program and its acceptance in communities (Stith et al., 2006; Collins et al., 2004). Additionally, they recommend that programs be developed based on local needs assessment data, be responsive to the needs of the community and be cost-effective to be considered a good fit.

Stith and colleagues (2006) also emphasize the importance of having adequate resources, training, technical assistance, and attention to evaluation during program implementation. They argue that for a program to be successful, those implementing the program need adequate resources for implementing it including reliable funding and resources to sustain the life of the program. They also note that technical assistance is necessary to support program fidelity through the life of the program. Their stance on the importance of providing technical assistance during implementation is consistent with other researchers (Sloboda, Dusenbury, Petras, 2014). Given the importance of providing ongoing technical assistance, program developers should make plans to develop materials that can support implementation and plan to provide ongoing technical assistance during dissemination of the program in communities.
**Implications for program development.** Expecting perfect or near perfect implementation is unrealistic for programs, and impossible to achieve (Durlak & DuPre, 2008). In their review, Durlak and DuPre (2008) found that no study has documented 100% implementation for all providers and that few studies reported greater than 80% fidelity. Characteristics of high-quality implementation (e.g. compatibility and adaptability) can provide specific directions for program developers as to components to incorporate into programs, improving chances of successful implementation.

Another way that program development can be informed by implementation science is by planning for program adaptations. Given the struggle between the desire to maintain fidelity and the reality of the need for adaptation, program developers can support implementation by building adaptations into the program. Developers should identify the core components of programs that implementers should be discouraged from adapting, enabling implementers to make other changes that support culturally relevancy and program success.

Applying the information found in the implementation science literature during program development is not without its challenges. One barrier is the language used in the literature and the context of its examples. While implementation scientists make explicit suggestions about program development, the field is still fundamentally focused on (and framed around) improving the quality of implementing existing programs after development has taken place. For example, Spoth and colleagues (2013) provide a detailed research agenda challenging researchers to develop infrastructures and capacity to support implementation during research and community implementation. Other recommendations include moving away from traditional efficacy trials under highly
controlled settings. Instead researchers (Glasgow et al., 2003; Rohrbach, 2006) suggest studying implementation in multiple sites, and more real-world settings during research phases—suggesting that research implementation under more naturalistic settings could help to close the gap between research and practice.

While these recommendations directly reference implementation research, each task (i.e. efficacy trials, and providing support during implementation at the research and community level) refers to work that takes place during the program development stages by the program developers. Developers can address these recommendations by utilizing multiple sites in their initial program research, by developing program curricula that are relevant for (or can be adapted to) multiple community audiences, and by planning to provide ongoing technical assistance. By addressing the recommendations of researchers, and integrating aspects of quality implementation into a model of program development, programs have the potential for more successful community implementation.

**Research and Community Collaboration: University Extension**

Another body of literature that can greatly influence the development of an integrated model of program development is that involving the university extension system. The role of the extension system, referred to historically as the “Cooperative Extension System” (NIFA, n.d.), is to bring the knowledge established from university research to local communities based on the needs of local communities. Extension of research to communities is one of the central missions of the more than 100 land-grant universities in the United States (NIFA, n.d.). A few researchers have developed models depicting the collaboration between university researchers, extension faculty and other stakeholders (Small, 1995; Spoth, 2000; Spoth & Molgaard, 1999; Spoth & Greenberg,
These collaborative extension-based models also propose utilizing the extension system as a mechanism for program delivery. Below, I review the historical role of extension, a review of relevant collaborative extension-based program models, and the potential role of extension in program planning and delivery.

**History of extension.** The history of extension in the agricultural field goes back to the early years of the United States as a country beginning with the creation of agricultural societies and the “Farm Journal” in the early 1800s. Farmers used these networks to share their solutions to common problems and to report their achievements. Following these early efforts to establish a network of farmers, the Morrill Act of 1862 established land-grant universities to educate citizens in areas relevant to their community such as agriculture, home economics and other topics. To extend these advances in agricultural work, *extension* was formally established in 1914 through the Smith-Lever Act. The Smith-Lever Act established a partnership between those doing agricultural work in colleges and the United States Department of Agriculture (USDA), and established a funding structure bringing money from the USDA to the land-grant institutions (NIFA, n.d.).

The extension system has served many roles in U.S. history including meeting wartime needs for World Wars I and II, and facilitating the increase in food production and preservation (NIFA, n.d.). Since its creation, the extension system has changed drastically, adapting to the many technological changes in agricultural work, and broadening its scope to meet the ever-changing needs of communities. Today extension continues to meet the needs of both rural and urban communities, and includes six major areas of focus: 4-H youth development, agriculture, leadership development, natural
resources, family and consumer sciences, and community and economic development (NIFA, n.d.). In each of these areas, extension brings research-based knowledge to the communities through programming efforts.

Today’s extension also includes the *eXtension* website. The goal of the eXtension system is to develop an internet-based system of providing information to community members on a variety of topics. Information provided from this system is provided through peer-reviewed research by faculty and other experts from land-grant universities (NIFA, n.d.). Given the mission of extension of bringing research to practice, the vast experience of extension educators in developing and implementing programs for their communities, as well as the established eXtension communication system, it seems logical that the extension system could play an integral role in narrowing the gap between research and practice.

**Extension and program planning.** Local and state-wide extension systems vary in their approaches to program planning and evaluation, as well as the training and resources provided to extension faculty. One of the most widely utilized resources in the extension system for program planning and evaluation comes from University of Wisconsin-Extension. Their website, [http://www.uwex.edu/ces/pdande/](http://www.uwex.edu/ces/pdande/), provides extension faculty, and the public, with training and technical assistance for planning, implementing, and evaluating programs. They describe program development as being an ongoing systematic process, taking place as they plan, implement and evaluate programs. They also explain that the same principles can apply to programs of varying scope, from a single training workshop to a larger scale community program (Program Development & Evaluation Home, 2010).
The program development model proposed by University of Wisconsin-Extension includes four steps: situational analysis, priority setting, program action (or logic models), and evaluation (Program Development & Evaluation Home, 2010). Their program development model is presented below in Figure 6, and is formatted in the structure of a program logic model. Each step in their program development process model is described further in Table 7, as well as things to consider when completing each step. University of Wisconsin-Extension provides detailed materials and resources for accomplishing each of these steps, and incorporating the community perspective into program planning. Their description of the planning process and publicly available resources provide a useful foundation upon which to develop programs.

The resources provided by University of Wisconsin-Extension explicitly reference the priorities of their institution in integrating research into their community practice and program development through their priority setting efforts. Through these references they acknowledge the potential role that extension faculty can play in bridging the gap between research and practice. They state that at their institution, “Collaboration between county and campus faculty is the hallmark of Cooperative Extension in Wisconsin.” (Gibson, 2001 p.13). They also provide references on how to incorporate research into the various steps of the model including conducting the situational analysis, setting priorities, and planning and developing the program.

Another available resource for extension faculty is the Journal of Extension (JOE). JOE a peer-reviewed journal that provides opportunities for professionals and students to publish their intellectual work. It also provides opportunities to publish work meant to encourage professional development and advance the theory and practice of
Figure 6. University of Wisconsin-Extension Program Development Model
Table 7. University of Wisconsin-Extension Program Development Process Model: Step Descriptions

**Situational Analysis**

*Programs exist within a situation or environment that is complex and changing. The more we know about the situation, the more solid of a program foundation can be established. Situational analysis involves:*

- Analyzing needs and assets
- Problem diagnosis
- Examining relevant research, knowledge and experience

*Involving other stakeholders in situational analysis helps to build a better understanding of the context, and has the potential to make the program more useful and relevant for the community.*

**Priority Setting**

*Builds upon the foundation created by the situational analysis. Should be established with an understanding and consideration to each of the following:*

- Institution mission, vision, values
- Institutional mandates
- Resource availability
- Local perspectives and dynamics
- What other people and agencies are doing
- Research and knowledge base

*The process of priority setting leads to identification of intended outcomes.*

**Program Action-Logic Model**

*Describes what the program is and will do-how investments link to results. Used to facilitate program planning, implementation, evaluation and communication.*

Core Components of a Logic Model:

- Inputs: resources, contributions, investments that go into the program
- Outputs: activities, services, events and products that reach targeted participants
- Outcomes: results or changes for individuals, groups, communities, or systems
- Assumptions: the beliefs we have about the program, the people involved, and the context and the way we think the program will work
- External Factors: the environment in which the program exists includes a variety of external factors that interact with and influence the program action

*Involves examining research at the situational analysis, priority setting, inputs, and assumptions.*

**Evaluation**
extension. Within JOE are resources on a variety of topics including program development and evaluation. These resources vary in the depth of information they provide, but are generally easy to follow and understand with minimal jargon so that they can be applied to extension programming regardless of the topic. There are several articles that describe program development tasks from a variety of perspectives, often providing a case example or a list of tasks or steps that should be accomplished during development. Several articles are also available that provide examples of programs that utilize the extension system as a mechanism for program delivery such as those reviewed in the following section.

**Extension and program delivery.** Many researchers and extension faculty have discussed the extension system as a mechanism for program delivery, suggesting ways to build successful collaborations, and build upon or utilize the extension infrastructure for program dissemination. Existing models including those used in the “Capable Families...
and Youth,” and the “PROmoting School/Community Partnerships to Enhance Resilience” projects described below.

**Capable Families and Youth Project (CaFaY).** One of the first projects to document extension, university, and community partnerships was completed by researchers at Iowa State University in collaboration with Iowa State University Extension faculty as a part of the CaFaY project. As described by Goldberg and colleagues (2001), the first goal of the CaFaY project was to evaluate the efficacy of two universal family-based programs targeting adolescent substance abuse—SFP and Life Skills Training—results of which are reported in numerous papers (Epstein, Botvin, & Spoth, 2003; Griffin, Epstein, Botvin, & Spoth, 2001; Spoth, Redmond, Trudeau, & Shin, 2002). The second goal of the project was to develop strategies for extension, university researchers, and community collaboration in the diffusion of evidence-based programs (Goldberg, Spoth, Meek, & Molgaard, 2001).

The primary focus of Goldberg and colleagues in their Journal of Extension article (2001) was to describe the second goal of this project. They explained that the collaboration with extension faculty began in the planning of project meetings, and in preliminary work prior to receiving their grant to complete the CaFaY project. They also detailed the involvement of the extension faculty’s role in project recruitment and program implementation and identified benefits of the collaboration with extension (Goldberg et al., 2001).

In the area of school recruitment, extension faculty met with administrators, informed them about the project and met with individual teachers completing focus groups in collaboration with university researchers on the concerns and barriers of the
project. Programs were pre-selected, presumably by the project director and university researchers; schools were then randomly assigned to one of three groups, each receiving different programs. Schools were assigned to receive the Life Skills Training Program (Botvin, 1996; 2000), Strengthening Families Program: 10-14 (Molgaard, Kumpfer, Flemming, 1997) or were assigned to a control group. Extension faculty and staff were involved in several aspects of the project implementation including: authoring materials provided to the control group; preparing aspects of the family-focused SFP: 10-14; delivering and observing the SFP: 10-14 program; and creating local community resource directories (Goldberg et al., 2001).

A major benefit to this model of collaboration presented by Goldberg and colleagues (2001) was the important information provided by extension staff regarding the local community needs and resources. The benefits also included the important linkages that extension staff provided between other community stakeholders and university researchers. Finally, the involvement of extension faculty contributed greatly to community investment in the selected evidence-based programs (Goldberg et al., 2001). While the information provided from this model is valuable in describing some of the potential areas of collaboration regarding program implementation, and some of the important benefits to program dissemination and sustainability, there is little detail provided about the relationships between researchers and extension faculty including the frequency and type of contact throughout the project processes, and their level of influence and involvement in program planning.

**PROmoting School/Community Partnerships to Enhance Resilience (PROSPER).** Building off of the CaFaY project described above, is a project that models
another type of extension and university faculty collaboration, with extension faculty
taking a leading role in carrying out prevention efforts (Spoth, Greenberg, Bierman, &
Redmond, 2004). This project team was made up of some of the same researchers
involved in the CaFaY project, but focused on extension leading the collaboration with
university faculty. The goal for the project was to build upon existing infrastructure and
incorporate strategies that would improve sustainability of the program (Spoth et al.,
2004).

In the seminal paper for the program, Spoth and colleagues (2004) describe the
model consisting of three components: local community teams, state-level university
researchers, as well as a prevention coordinator and team within the extension system.
The organizations that are involved in the PROSPER model represent land-grant
university extension systems and personnel, elementary and secondary school system
personnel, and community providers of prevention services (Spoth et al., 2004). They
describe the role each of these partners by assigning them to three teams: school/local
community-level strategic teams and linking agents; intermediate-level coordinating
teams of regional technical assistance and linking agents; and state-level teams consisting
of resource agents (Spoth et al., 2004).

The school/local community strategic teams are directly responsible for many
tasks including program selection, implementation and supervision. They also are
ultimately responsible for sustaining the life of the program. These teams represent the
level at which the “work gets done” (Spoth et al., 2004). Extension personnel serve on
this team, functioning as leaders and facilitators of local teams and play critical roles
linking school-based agents with other stakeholders and service providers (Spoth et al.,
One to two school district staff also serve on this team, working in collaboration with extension personnel as co-leaders. These local teams also include other local stakeholders such as parent and youth representatives (Spoth et al., 2004).

The intermediate-level coordination teams serve the function of linking the different teams, and are led by an *extension prevention coordinator* along with an educational technical assistance person (Spoth et al., 2004). These coordinators serve “as a liaison between the community-based teams and university researchers providing continuous, proactive technical assistance to community teams” (Spoth et al., 2007; p.397).

The state-level teams are made up of prevention scientists, university-based extension specialists, and other state-level collaborators from within the educational system. They provide support to the intermediate-level coordinating team, providing oversight and direction for teams, providing input on local data collection and performing analysis and preparing project reports (Spoth et al., 2004). The relationships between groups are depicted in Figure 7.

The PROSPER model has many strengths in its innovative approach to integrating research and practice, and in utilizing the extension infrastructure. It provides an excellent example of how to construct an integrated model, with specifics about relationships and key players on teams. It offers an excellent example of an implementation process that supports sustainability of programs. It also addresses many of the potential barriers to effective functioning of programs within organizations (Spoth et al., 2004).
An additional strength is that it allows local community groups to make decisions such as program selection, recruitment, staffing, etc., based on their community’s needs and the fit of programs. This increases the likelihood that the program will be useful for participants, and creates buy-in at the community level. A key factor in this model is that the intermediate and state level groups provide assistance and training, and are not involved in implementation decisions directly but proactively assist community groups in the delivery of the program to increase fidelity and quality of implementation (Spoth et al., 2004).

Figure 7. PROSPER Relationships Between Groups.

Note: Dashed lines represent intermittent direct contact; solid lines represent regular direct contact. These partnerships are presently called PROSPER Partnerships (PROmoting School-community-university Partnerships to Enhance Resilience). This model has been replicated based on the model from Spoth, Greenberg, Bierman, & Redmond (2004).
An additional benefit of the PROSPER model is described in a Journal of Extension article by Mincemoyer and colleagues (2008). They found that the PROSPER model was successful in improving the reputation of the Cooperative Extension System. They suggest that improving the reputation of the extension system in communities and with policy makers will help sustain the life of the extension system itself, helping programs benefit the communities served (Mincemoyer, Perkins, Ang, Greenberg, Spoth, Redmond & Feinberg, 2008), thus preserving extension as an infrastructure and mechanism for program delivery and collaboration with university researchers.

A limitation of this approach is that it assumes development has already taken place, and provides little detail about the criteria for program selection and relevancy. It also relies heavily on the public educational delivery system which Spoth and colleagues (2004) point out may or may not be able to support an intervention as resource intensive as PROSPER.

**Research and extension faculty collaboration.** Radhakrishna and colleagues (2014) discuss the importance of integrating extension and research. They reinforce the importance of bridging the gap between research and extension, saying that doing so is of growing importance as the need for accountability and showing impact to stakeholders increases. They focus on the relationship between research and extension faculty as a key aspect of collaboration, and on the importance of integrating research and practice. In their study of extension and research faculty they identified several barriers to, and opportunities for, collaboration as reported by both groups of faculty. Barriers to collaboration included a lack of funding for collaborative efforts—internal funding was not designated toward collaboration. Another barrier was the institutions’ incentive
systems such as what was recognized or valued during the tenure process. Researchers involved in extension projects, unless resulting in a publication, typically were not acknowledged or rewarded. Lack of time was also a barrier reported by both research and extension faculty (Radhakrishna et al., 2014).

A key finding of Radhakrishna and colleagues (2014) was that both research and extension faculty recognized the value of integrated research-extension programs. Both groups also identified structural issues within the university and extension systems that were barriers to collaboration. Radhakrishna and colleagues recommend that the administrations of land-grant institutions provide more incentives to encourage collaborations that foster integration of research and practice (Radhakrishna et al., 2014).

In addition to the explicit barriers to and opportunities for collaboration, Radhakrishna and colleagues (2014) also identified several areas of concern regarding research and extension faculty collaborations. One concern was that extension faculty perceived that their partnerships with research faculty were superficial, often only being brought in toward the end of the proposal process and unable to provide a significant contribution to the study design or planning of a project. Although this led extension faculty to often feel insulted and undervalued, research faculty reported holding extension faculty in high regard. These feelings must be addressed by creating a culture of mutual respect, as well as by utilizing integrated model for developing programs that incorporate involvement of research and extension faculty from the start of a project.

_Extension as a mechanism for program delivery._ Another area of key importance are resources discussing the extension system being used as a mechanism for program delivery. In a study conducted by members of the SEEDS Program Development Team at
Washington State University (WSU), Drs. Laura Hill and Louise Parker (2005) discuss the strengths and barriers to utilizing the extension infrastructure to deliver prevention programs. For their study they surveyed extension county chairs, faculty, and program staff about their attitudes toward collaboration, perception of the need for different programs, program effectiveness, the role of extension in delivering best-practice programs, and other attitudes towards specific types of programs.

Some of the strengths of delivering evidence-based programs through extension included: extension’s commitment to serving youth and families; staff who are comfortable and confident in their abilities to implement prevention programs; and the high value faculty hold for collaboration (Hill & Parker, 2005). The barriers they identified to delivering evidence-based programs through extension included: limited time and funding within county extension offices; limited collaboration with university departments; and other community stakeholders or agencies.

Hill and Parker (2005) propose that to better utilize the extension infrastructure for program dissemination, programs must find ways: to integrate the traditional programs run by extension into a prevention framework; to draw parallels between extension programs and prevention, and to find new ways of articulating the work of extension within the prevention field. They also state that there is a need to develop strategies for the collaboration between extension and “campus-based” faculty on the development of new projects, and to integrate research and practice.

**Summary of extension.** The literature and infrastructure of extension can greatly contribute to an integrated model of program development. Given the mission of extension of bringing research to practice, the utilization of this system in the
development of research-based programs is a promising and logical solution to bridge the gap between research and practice. Several aspects of the extension system should be considered during the stages of program development including the relationship and collaboration process between research and extension faculty and utilizing the extension system as a mechanism for program delivery. There are also several extension-based programs such as CaFay and PROSPER that can serve as model programs to influence the development of other programs based on their strengths and weaknesses.

Additionally, being aware of the existing resources within the extension infrastructure such as JOE and individual university extension training resources can help to direct and establish a framework for areas in need of additional resources.

**Current Study**

The purpose of the current study was to contribute to an area in need of literature—program development—by describing the development of an obesity-prevention program and proposing an integrated model of program development. The current study had four primary goals. My first goal was to *describe the guiding principles and theoretical foundation* that contributed to the development of SEEDS. These principles were based on the collective knowledge and experience of the team members, and were taken from the principles of other programs including both *top-down* and *bottom-up* approaches to prevention science. They were also greatly influenced by the team members’ experience in the implementation of prevention programs and by their knowledge of the research on program implementation (including knowledge of specific barriers to implementation and strategies for overcoming them). The project also utilized the extension system as a
mechanism for program delivery by adopting a strategy for program development and evaluation that aimed to bridge the gap between research and practice.

My second goal was to describe the initial model of program development, and how it was applied in the development of SEEDS by presenting a case study of the SEEDS development process. My third goal was to discuss the lessons learned from this case study, and present some of the strengths and limitations as informed by members of the development team through individual interviews. Recommendations to inform the development of future programs are also included.

My final goal was to contribute an integrated model of program development to the prevention science literature. This model aims to narrow the gap between research and practice by utilizing the extension system as a mechanism for program development and delivery. I have incorporated lessons learned, and addressed weaknesses identified from the program development process for the SEEDS program into this integrated model. I have also provided justification for utilizing this integrated approach during the program development phase, and identified key aspects of the model aiming to narrow the gap between research and practice derived from literature on program implementation.

SEEDS Program Context

SEEDS (Strategies for Effective Eating Development) is a seven-week intervention program developed with the goal of preventing childhood obesity with African-American and Latino preschool-age children and their mothers. SEEDS was modeled after other family-based programs utilizing a structure incorporating individual child and parent components as well as a joint family component in each lesson. The
program strives to alter parental feeding practices, specifically parent feeding style and responsiveness to children’s internal cues of hunger and fullness and children’s self-regulation. These outcomes are targeted by guiding parent activities that are based on the principles of adult education and experiential learning as well as self-determination theory. SEEDS also strives to help children recognize their internal cues, and to increase their willingness to try new foods through play-based activities. Each of these areas are reviewed briefly below.

**Childhood obesity epidemiology.** Rates of obesity in children and adolescents ages 2-19 tripled between the years 1980-1999 (Ogden, Flegal, Carroll, & Johnson, 2002). They have since leveled off, but remain high at 16.9% (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010; Ogden, Carroll, Kit, & Flegal, 2012). These rates differ by ethnicity. Ogden and colleagues (2012) report that childhood obesity rates are 14% for non-Hispanic white, 24.3% for non-Hispanic black, and 21.2% for Hispanic children and adolescents.

There have been many efforts aimed at reducing the rates of obesity, some of which have shown moderate success (Khambalia, Dickinson, Hardy et al., 2012; Wang, Wu, Wilson, et al., 2013). Birch & Ventura (2009) reviewed obesity prevention programs and found that a majority of interventions have focused on school-aged children or adolescents and have targeted changing dietary behaviors and physical activity, and put emphasis on reducing weight. Since it is the first time that all children are required to be in schooling, elementary school is a popular point of intervention. With 25% of preschoolers already overweight, waiting to intervene until they are in the elementary school is too late (Birch & Ventura, 2009). It is the opinion of childhood obesity
researchers Birch and Ventura (2009) that the focus of research and intervention efforts should be on children prior to entering school because of the high levels of overweight and obesity in children ages 2-5 years.

**Parental responsive feeding.** The consensus among many researchers in the area of parental feeding is that responsive feeding practices reduce the risk of childhood obesity. In a review of responsive feeding and childhood obesity, Hurley and colleagues (2011) defined responsiveness in feeding as guidance provided to children, and parents’ recognition of children’s internal cues of hunger and of fullness. They defined non-responsive feeding as interactions that are dominated by either the child or the parent taking control, and a lack of reciprocity between the two.

Parents’ responsiveness has been related to child weight status in many different ways; the most common is that non-responsiveness, through restriction, is related to child weight gain (Hurley, Cross, & Hughes, 2011). Researchers have also found that indulgent feeding behaviors are related to child weight status (Hughes, Power, Orlet Fisher, Mueller, & Nicklas, 2005).

**Parents’ influence on self-regulation of caloric intake.** Many studies have examined parents’ effects on their children’s ability to self-regulate their caloric intake and have found that differences in parenting have significantly influenced children’s self-regulation (Castro et al., 2004; Fisher & Birch, 1999; Francis et al., 2001; Johnson & Birch, 1994). Several themes emerge from the information provided from these and other studies including parents’ responsive practices, external control strategies, indulgence, restriction, and overall feeding style.
**Responsiveness.** Parents’ responses to children’s eating behavior can either help children to self-regulate their caloric intake, or interfere with this process. Responding to children’s eating behavior with restriction contributes to deficits of children’s self-regulation of energy (Fisher & Birch, 1999). Responding with indulgence is related to children with the highest risk for childhood obesity (Hennessy et al., 2010; Hughes et al., 2005; Hughes et al., 2008; Olvera & Power, 2010).

**Control.** Parents’ use of control strategies may lead children to focus on external cues when eating such as directions from the parent, amount of food on plate, etc., instead of relying on their internal cues of hunger and fullness to direct their eating (Birch & Deysher, 1986; Faith et al., 2004). These control strategies, according to Birch and colleagues (2001), could result in children eating in the absence of hunger, and could lead to lower consumption of healthier foods and picky eating (Birch et al., 2001).

A common method of behavioral control is the use of rewards and punishments to motivate children’s behavior. Birch and colleagues (1997) found that children who were instructed to pay attention to their internal cues ate less than children who were told to finish their meal before receiving a reward. Rewards have a tendency to increase the amount of food that children consume (Frankel et al., 2012).

**Indulgence.** Hughes and colleagues (2011) report that children of indulgent parents are at greatest risk for childhood obesity (Hennessy et al., 2010; Hughes et al., 2005; Hughes et al., 2008; Olvera & Power, 2010). Longitudinal methods found that children of indulgent mothers were also the most likely to become overweight three years after an initial preschool assessment (Olvera & Power, 2010).
**Restriction.** Parents who use more restrictive feeding behaviors have children who eat more in the absence of hunger than children of parents who use less restrictive behaviors (Fisher & Birch, 2002; Birch et al., 2003). Parents who were either very restrictive or very low in restriction have children who consume more calories (Jansen et al., 2007). Hughes and colleagues (2011) also suggest that either too little or too much control can negatively affect children’s eating behaviors and self-regulation.

**Feeding style.** Researchers have identified 4 distinct feeding styles: authoritative (high on both demandingness and responsiveness), authoritarian (high on demandingness, low responsiveness), indulgent (low on demandingness, high on responsiveness), and uninvolved (low demandingness and responsiveness) (Hughes et al., 2011). As discussed previously, indulgent parents appear to have children with the highest risk of childhood obesity compared to children whose parents have utilize different styles. Children with indulgent parents tend to have a higher BMI than those with authoritarian parents (Hughes et al., 2005). Differences have been found in the parents who are more likely to have different feeding styles. Hispanics are more likely to be indulgent than African-American parents and African–American parents were more likely than Hispanic parents to be uninvolved (Hughes et al., 2005).

**Children’s eating behaviors.** In addition to focusing on parent feeding behaviors the SEEDS program also strives to influence children’s behaviors related to food preferences and self-regulation of caloric intake. Each of these areas are described below.

**Self-regulation (Caloric).** In order to fully understand responsive feeding, and its impact on childhood and eating behaviors, it is important to understand the concept of self-regulation. Self-regulation of caloric intake is defined as the ability to respond to
internal cues of hunger and fullness (satiety) (Baumeister & Vohs, 2004; Frankel, 2012). Lack of self-regulation of caloric intake is related to being overweight during childhood (Carnell & Wardle, 2008; Jansen et al., 2003). As described above, many studies have examined the impact of parents on their children’s ability to self-regulate their caloric intake and have found that differences in parenting have significantly influenced children’s self regulation (Johnson & Birch, 1994; Birch et al., 1987; Birch et al., 1997; Fisher & Birch, 1999; Francis et al., 2001).

**Food preferences.** Food preference refers to the selection of one food over another food (Birch, 1999). Birch (1999) explains that food preferences are determined both by a body’s need for nutrients, and the opportunities for selection. The wisdom that the body has to guide food selection (Davis, 1928; 1933; 1935) does not help children if they are offered with foods with little nutritional value. Birch also explains that people can learn to like new foods if they are exposed to them. Based on this logic, if children are exposed to healthier, less nutrient dense foods they will develop preferences for those foods early on, potentially preventing future obesity and other health problems associated with poor nutrition. Moreover, numerous experimental, survey, naturalistic studies show that at least for some novel foods, young children may need eight to 15 or more exposures before developing a preference for them (Cooke, 2007).

**Family-based prevention programs.** Parents play a significant role in their children’s eating behaviors; research suggests that family-based programs that aim to reach children across multiple domains are more appropriate than other approaches such as school-based or other programs that target only one domain (Birch & Ventura, 2009). Additional researchers have suggested that family-based prevention programs involving
parents or family members in the program instead of just youth are a more appropriate strategy for ethnic minority families (Boyd-Franklin, 2001; Mock, 2001). Kumpfer and colleagues (2002) also suggest that ethnic minority families and staff prefer family-based programs over those only for youth. Kumpfer and colleagues (2001) cite other researchers (Mock, 2001) in suggesting that this preference, and the cultural fit of family-based programs, is due to a more collective identity found with many cultures as opposed to the Western focus on individual identity. Additionally, researchers outside of obesity prevention have also found more sustainable long-term effects of family-based programs than school-based programs (Kumpfer, Alvarado, & Whiteside, 2003; Spoth, Redmond, & Shin, 2001).

One family-based program that has been extremely successful around the world in affecting parenting practices and preventing substance abuse is the Strengthening Families Program (SFP) for Parents and Youth 10-14 (Kumpfer, Molgaard, Spoth, 1996). SFP has been widely disseminated all over the world, including widely in the state of Washington. Many extension faculty involved with the development of SEEDS have completed projects on the implementation, evaluation, and cultural adaptation of the SFP program (Cantu, Hill, & Becker, 2010; Hill, 2005; Hill, Goates, & Rosenman, 2010; Hill, Rosenman, Tennekoon, & Mandal, 2013; Hill & Owens, 2013; Hill, Maucione, & K. Hood, 2007; Whitehall, Hill, & Koehler, 2012). Due to the success of SFP in Washington, and the familiarity and infrastructure in place in the state, SEEDS was modeled closely after this program including the same number of weekly sessions, and following the popular video-based instruction for parents. Both programs also contain a youth, parent and family component.
Self-Determination Theory. The content of SEEDS was guided by principles of self-determination theory brought to the program by researchers with expertise in the application of the theory. Self-determination theory is a theory of the social environments’ impact on human motivation and well-being (Deci & Ryan, 2008). It was selected as a guiding theory of behavior change for SEEDS during the initial planning stage by researchers and PIs because of its relevance for guiding parents’ interactions with their children to support self-regulation, and its relevance for motivating parent behavioral change.

Researchers Ryan and Deci (2000) propose self-determination theory as a means of examining processes that support the development of intrinsic motivation. They also examine the process of helping people to become autonomous and self-regulate behaviors that were previously externally motivated. Researchers (Grolnick, 2003; Ryan & Deci, 2000) have suggested that one can support intrinsic motivation by providing choices, acknowledging feelings, and providing opportunities to use self-direction. They have also suggested that intrinsic motivation is undermined when you provide tangible rewards, threats, demands, or imposing goals and evaluations.

This information can be directly applied to the research on parent feeding and parenting practices that are supportive of children’s self-regulation of caloric intake. When parents pressure children to eat certain foods they have less preferences for healthy foods and this pressure interferes with children’s responsiveness to internal cues of hunger and fullness (Birch & Fisher, 1998; Galloway, Fiorito, Francis, & Birch, 2006). Birch and Fisher (1998) suggest that the most supportive and successful strategies that parents can use in feeding their children involve little pressure: serving a variety of foods
and letting the child decide how much they are going to eat; model consumption of healthy foods; offering children choices of healthy food options that the parent pre-determines; and involving children in shopping and food preparation.

SEEDS provides parents with strategies for feeding their children that are consistent with the principles of self-determination theory such as the examples described above. Principles of self-determination theory were also applied in the approach to adult learning in the SEEDS curriculum and activities. This can be seen in the setting of goals, in the acknowledgement of the challenges and barriers to responsive feeding practices, and in providing parents with choices of strategies to utilize in their own families.

**Adult education-experiential learning.** SEEDS parent lessons and activities are also based on principles of adult education-experiential learning from the book, “From Telling to Teaching: A Dialogue Approach to Adult Learning”, by Joye Norris (2003). This approach recommends a 4-step “Learning Task Model” for structuring adult learning opportunities, which were applied to give structure to each lesson. The steps include: Anchor, Add, Apply, and Away. The Anchor is meant to ground the topic in the learner’s lives (Norris, 2003). SEEDS utilized this step by grounding activities in parents’ previous knowledge and experience. The Add is meant to provide new information to the learners (Norris, 2003). SEEDS utilized this step by providing parents with new information in each lesson, primarily through video-based scenarios and instruction. The Apply is meant to provide the learners with an opportunity to practice using the new information from the session (Norris, 2003). SEEDS provided activities that allowed parents to actively engage in their learning through the use of hands-on activities, such as activities to practice measuring out child and adult-size food portions. The final step is
the Away, which is meant to encourage learners to practice using and move information into their future (Norris, 2003). SEEDS incorporated this step by having parents set goals each week, and following-up with them the following week. In addition to the 4-step Learning Task Model, SEEDS was also developed using activities that represented multiple learning styles: auditory, visual and kinesthetic.

“From Telling to Teaching: A Dialogue Approach to Adult Learning” also provides information that was consistently used to drive training efforts for facilitators during the program pilot and efficacy trial. Norris (2003) presents information about setting the learning environment and making the learner feel comfortable, suggesting strategies such as how the tables should be arranged, using nametags, and setting ground rules to help learners feel safe. Norris’ (2003) approach also recommends several fundamental facilitation strategies that were introduced to facilitators and were consistently encouraged throughout the SEEDS pilot and efficacy trial phases. Examples of these facilitation strategies include asking open questions, allowing the learner to reflect at a deeper level, not being quick to answer questions and allowing other learners to answer questions. Additional strategies were encouraged such as using words of affirmation like “thank you”, rather than words implying judgment such as “good job” “that’s right.”
CHAPTER THREE

METHOD

Case Study Methodology

This dissertation presents a case study of the development of SEEDS. A case study design allows the user to present an in-depth understanding of one or more cases and their context (Yin, 2014). Yin (2014) explains that case study methods are useful and appropriate for answering questions that are descriptive (aiming to answer what happened in a given case) or explanatory (aiming to answer why something happened). Though generalizability is often a concern in regard to case study methods, methodologists suggest that this approach provides the level of detail necessary to answer descriptive and explanatory questions as in the current case study.

According to Yin (2014), a case study is conducted in three steps: first, the researcher defines the case of focus for the study. The case for the current study is the process of developing SEEDS. The initial process of program development occurs once in the life of a program and provides the foundation upon which all future program activities take place. My extensive role in the development of SEEDS provided a unique opportunity, and access to information, for an in-depth look at the steps taken to develop the program.

The second step is selecting the type of case study design. Case studies can take on several forms, including single and multi-case designs. This case study provides a single-case study of the development of SEEDS. The third step is using theory and literature to prepare for the design of the case study. This last step is a topic of debate among qualitative researchers. Silverman (2010) states that the historical view of
qualitative researchers was to postpone reviewing the literature until the researcher formed their own views and opinions based solely on the data and their interpretation. Alternatively, modern researchers state that theory can be useful in developing research questions, selecting a case, designing a study and defining the data to be collected (Yin, 2014). Due to the nature of the current case study, and the role that literature played in the development of SEEDS, it was necessary to consider the literature and theory in planning this case study. Several areas of literature, reviewed previously, were considered when planning the current study, and were integrated into the proposed model addressing goal four of the current study.

Yin (2014) proposed six major sources of data that can be used to conduct case studies. These data sources include: documentation, archival records, interviews, direct observations, participant observation, and physical artifacts. Yin stated that these sources are complementary in nature, providing multiple perspectives, and that a good case study should use as many sources of data as possible. The current study utilizes documentation analysis, participant observation and interviews as data sources selected based upon the study goals and my role and access to information and team members.

“Case” of study: the SEEDS program. The current case study was part of a large ongoing study focused on developing a family-based, childhood obesity prevention program: SEEDS (introduced previously). SEEDS was implemented through WSU Extension in Pierce and Franklin counties, and in Houston, Texas through Baylor College of Medicine’s Children’s Nutrition Research Center. SEEDS is a five year project that involved different phases including pre-intervention work (conceptualizing the project, establishing a team, community needs assessment research), program development and
planning (setting goals and objectives and developing curriculum), program piloting, and its current efficacy trial phase. During its current phase, SEEDS has been implemented 20 times over a two-year period spanning 2014-2015. A timeline for SEEDS is provided in the results chapter of this study (see Table 14).

Participants were recruited through Head Start and other programs: local schools, child-care centers, and community agencies serving low-income families. Recruited participants were screened to ensure that they met eligibility requirements of income, ethnicity, and age of children. Programs were held in local child-care and other community centers. Six to eight mothers and their preschool-aged children attended each session led by experienced adult and child educators. Parent sessions had a different focus each week: an introductory session, trying new things, internal cues, portion size, structure of the eating environment outside of the home, structure of the eating environment inside the home, and a review session. Parent sessions used video-based instruction portraying common feeding situations to provide feeding strategies based on research. Sessions also involved group activities and individual goal setting providing guided opportunities for applying program content.

Child sessions involved a series of short play-based activities providing children with opportunities each week to explore new foods, and to learn about internal cues. These sessions also included weekly routines focusing on two specific goals each week through repeated activities. Family activities provided mothers and children with opportunities to participate in short activities applying concepts discussed in both sessions. SEEDS is one of few obesity prevention program to-date that utilizes a family-
based format for targeting preschool-age children. It is also one of few programs that focus primarily on changing parents’ feeding practices instead of their nutrition practices.

**Document analysis.** Document analysis for the current study included analysis of emails, calendars, notes, other personal documents and meeting agendas related to developing SEEDS. Data were gathered from my own notes and records having served in the role of Integrated Project Coordinator, as well as from shared project notes and files and PI notes. Document analysis can be an important contribution to a case study and can be used to corroborate other sources of data and to correct specific information from other sources of data such as names and other details (Yin, 2014). Documents are particularly useful when examining programs and organizations (Patton, 2002). Patton explained that programs and organizations produce large amounts of records that can be used to supplement other methods providing a behind-the-scenes look at processes and how they were derived. Yin (2014) suggested that given the overwhelming amount of documentation that can be involved in a case study it is important to focus efforts on items that are most central to the research focus. Therefore, I focused on analyzing documents that were directly relevant to the process of developing SEEDS.

**Participant observation.** Participant observation data was gathered from my own observations as a participant in the program development process. My role in the project and my focus on the current study made me both a participant and an observer of the process. Participant observations provide unique opportunities for data collection (Guest, Namey, & Mitchell, 2012; Mack, Woodsong, MacQueen, Guest, & Namey, 2005; Yin, 2014). Many researchers feel that participant observations provide invaluable insight and accurate portrayal of a case studies (Yin, 2014). Data that otherwise may be inaccessible
to observers outside of the project are available to participant observers (Becker & Geer, 2009; Yin, 2014; Guest, Namey, & Mitchell, 2012; Mack, Woodsong, MacQueen, Guest, & Namey, 2005; Patton, 2002). In a comparison of participant observation and undirected interviewing, Becker & Geer (2009) state that strengths of participant observations include researchers’ exposure and familiarity with the language and context of the data. This allows for richer data and a greater understanding of the possible implications of the findings.

While this approach is strong, its limitations involve potential for biased results. There are several opportunities for bias according to Yin (2014); observers may have to assume positions that are contrary to the interests of best practices introducing bias. Observers are also likely to become supporters of the subject of the study by becoming invested in the program creating an opportunity for bias. Another possibility is that my role as a participant in the process may have at times taken precedence over my role as an observer. My responsibilities as a participant potentially impacted the time needed to take notes, or to perform other observational tasks. Additionally, participant observation data were collected through the documentation of the program development process without the original intention of including the data in a case study analysis. There is a possibility that some events were not documented, were forgotten or left out of the analysis. To address this source of bias, I conducted in-depth interviews with project PIs to identify or fill in any identified gaps in my analysis. Bias also has potential to occur when organizations involved in a case study project are located in different places. Observers may miss opportunities to participate, or to observe some activities or events that occur. To address this source of bias I relied on the project PIs and in-depth interviews to help
identify and fill gaps where I may not have observed certain events. I also asked PIs to review my findings providing them with an opportunity to identify gaps or potential questions about my findings.

As a participant in the process, I provide my own perspective of relationships between group members, the context of the development process and occurring issues as well as group members’ activities and involvement in program development. I took several steps to address potential opportunities for bias such as utilizing multiple methods of data collection (e.g., analysis of documented notes, schedules and communications) to triangulate information for accuracy. I also used in-depth interviews with key informants to discuss program development activities and further develop my observations.

**Interviews.** Interviews were conducted with members of the development team in order to get their perspective on the strengths and limitations to the process of and the approach to developing SEEDS. Interviews are a widely used source of data collection; they often supplement survey data as well as other forms of data in case studies (Yin, 2014).

Two types of interviews were conducted: in-depth and structured. In an *in-depth interview*, key respondents are interviewed about facts, as well as their opinions about events, following a consistent line of questioning rather than structured questions (Yin, 2014). A consistent line of questioning involves asking interviewees questions aimed at providing information related to a specific topic area, yet allowing flexibility to explore and ask additional questions to gain more detail and clarification (Patton, 2002). In-depth interviewing is often used in case studies (Rubin & Rubin, 1995; Yin, 2014) and was used with project PIs for the current study in order to fill gaps in other sources of data.
One limitation to in-depth interviewing is the potential for interviewers to be influenced by interpersonal relationships with interviewees. Yin (2014) suggests that this issue can be addressed by collecting information from other sources that support the information collected, or provide contrary evidence. If an interview resulted in a sequence of events, meetings, or other tasks that took place, that information was confirmed by examining other documents, emails, calendars and other notes. If contradicting information was provided through interviews, I looked for additional data from other sources regarding that topic. Another limitation to in-depth interviews is the amount of time it may take to conduct interviews as they are less structured and should follow the flow of a conversation (Patton, 2002). In-depth interviews may take place over multiple sittings, taking more time to gain more detailed information or follow-up information during analysis.

*Structured interviews* involve asking interviewees the same, predetermined, carefully worded questions in the same order for each participant. One advantage to utilizing a structured interview approach is that it provides consistency when utilizing multiple interviewers such as in the current study. It also generates data that, because of the organization and structure of interview questions, are easier to find and compare during analysis than data resulting from other types of interviews (Patton, 2002).

One weakness of structured-interviewing is that it does not allow interviewers to pursue topics that were not anticipated when questions were written (Patton, 2002). Additionally, a structured interview approach reduces the extent to which differences between interviewees can be examined (Patton, 2002). Due to the consistent line of questioning interview responses are likely to result in less variation than those of in-
depth, unstructured interviews. Structured interviews were conducted with all members of the program development team regarding the process of developing SEEDS rather than specific events that occurred, which were the focus of the in-depth interviews. Table 8 identifies which members of the program development team received in-depth and structured interviews. SEEDS Program Development Team members were questioned about their reactions to the development process, their involvement, and the strengths and limitations to this approach to development. Detailed information about the interview participants, procedures and analysis are provided below.

**SEEDS Development Team Members**

The backgrounds of SEEDS Program Development Team members who were invited to interview are presented in detail in Appendix A, as well as descriptive characteristics about each member and their role in the development process. Members were assigned titles based on their roles on the project, and are identified throughout this dissertation by their title in order to maintain their individual anonymity.

**Classifying participant groups.** SEEDS program development team members were classified into five groups based on their descriptive titles, backgrounds and their roles in the program development process. The five groups include: Integrated Project Management, Project Managing Extension Administrators, Project Managing Researchers, Community Practitioners, and Consulting Content Experts. The purpose of introducing these groups now is to connect the specific team members that make up each group (see Table 8). These groups also guided which participants received in-depth vs. structured interviews. Integrated Project Management as well as Project Managing Extension Administrators were asked to participate in in-depth interviews based on their
level of involvement in the development process and their individual leadership roles.

The remaining groups were asked to participate in structured interviews. The role that each group served in the development process, as well as the tasks accomplished by these groups of team members, are described in further detail later in Chapter Five.

<table>
<thead>
<tr>
<th>Table 8. Program Development Team Participant Groups and Interview Type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Integrated Project Management</strong></td>
</tr>
<tr>
<td>• Principal Investigator (PI)</td>
</tr>
<tr>
<td>• Principal Investigator WSU (PI-WSU)</td>
</tr>
<tr>
<td>• Integrated Project Coordinator</td>
</tr>
<tr>
<td><strong>Project Managing Extension Administrators</strong></td>
</tr>
<tr>
<td>• WSU Extension Faculty Leader</td>
</tr>
<tr>
<td>• Extension Faculty- Early Childhood Education</td>
</tr>
<tr>
<td>• Extension Faculty-Washington County 1</td>
</tr>
<tr>
<td><strong>Project Managing Researchers</strong></td>
</tr>
<tr>
<td>• Co-I University of Colorado- Denver (Co-I UCD)</td>
</tr>
<tr>
<td>• Co-I North Carolina State University (Co-I NCSU)</td>
</tr>
<tr>
<td><strong>Consulting Content Experts</strong></td>
</tr>
<tr>
<td>• Extension Faculty-Program Evaluation</td>
</tr>
<tr>
<td>• WSU Research Faculty</td>
</tr>
<tr>
<td>• Video Producer</td>
</tr>
<tr>
<td>• Extension Faculty-Nutrition</td>
</tr>
<tr>
<td>• WSU Child Development Specialist</td>
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</tbody>
</table>

**Protocols and Procedures**

**Participant observation data collection procedures.** Participant observation data included my notes collected during the program development process, and my reactions and thoughts to specific aspects of the process documented in memos.
throughout analysis. Additional observational data was collected simultaneously as other forms of data were collected and analyzed, and was logged by typing memos and saving them in the case-study database while citing other sources of data linked to the memos. Information derived from the observations was corroborated by information from other sources of data including document analysis and interview data, and was used to answer questions related to the process of program development, specific activities and events that were part of the development process, as well as some of the strengths and challenges of the process.

**Participant observation data collection schedule.** Participant observation data were collected and stored from January 2011 through January 2015. Documents related to my personal observations were organized and filed into the project database beginning in October 2014. Organization of these data involved examination of personal documents, notes and communications taken during the program development process, and cataloging data based on relevancy to the study goals. Data organization and analysis continued through February 2015 were analyzed throughout this process and were completed in February 2015. Draft reports of findings were presented on an ongoing basis to the PI-WSU during January and February of 2015. After his review and discussion of the results, I then addressed any issues of concern or gaps identified in my analysis with further data collection and analysis as necessary. I continued this process until the project PI and myself were confident in the findings.

**Document analysis data collection procedures.** Documents included in analyses were calendars containing meetings and events that took place during the development of SEEDS, as well as agendas from meetings, meeting notes, and other communication (e-
mail and phone notes) regarding the program development process. This excluded my personal communication and notes regarding the SEEDS program development process, which were included as participant observational data. The first step in collecting data was to locate relevant documents in the program’s shared Dropbox, and personal files of the observer and project PIs. The documents were sorted and stored in network folders, each one annotated in terms of the content.

**Interview protocol.** All SEEDS Development Team members, 26 in total, were emailed and invited to participate in this study with a goal of conducting 2-4 interviews per participant group (previously described) for a total of 15-20 interviews (5 in-depth, and 15 structured). A total of 18 interviews were conducted. Interviews were scheduled and conducted by me and by a research assistant who was familiar with the program development team, but did not serve in a leadership role on the project. A research assistant conducted the structured interviews to minimize participant discomfort in discussing sensitive project issues. I conducted in-depth and structured interviews with program development team members who served in leadership roles in the program development process (Integrated Project Management and Project Managing Extension Administrators).

Before beginning the interview, the research assistant informed the participants of the purpose of the interviews, informed them that their participation was optional, and told them that their responses, should they choose to participate, would be kept confidential. The only people that would see their responses by name would be the author and the research assistant. In future reports of this information they would be assigned to a group and their responses would be presented with others in their assigned group.
Interviews ranged from 15-90 minutes and were conducted by phone. Interviews were recorded using a digital recorder, and then transcribed and reviewed by the research assistant to make sure that they were accurately transcribed. Once transcriptions were complete they were analyzed by the author, and reviewed by the research assistant.

**Structured interview questions.** Interview questions for structured interviews are presented in Table 9. Probes were asked if necessary to clarify participants’ responses. Probes included rewording the initial question or partial repetition or rewording of any questions left out of a participant’s response.

<table>
<thead>
<tr>
<th>Table 9. Questions for Structured Interviews</th>
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<tbody>
<tr>
<td>Please describe your role in the program development process for SEEDS?</td>
</tr>
<tr>
<td>PROBE: In what ways did you participate in the development of the SEEDS program?</td>
</tr>
<tr>
<td>How effective do you feel the process of program development process for the SEEDS program was?</td>
</tr>
<tr>
<td>PROBE: How well did the process of developing the SEEDS program, including group collaboration, development and revision of lesson plans and activities, and other development processes, work?</td>
</tr>
<tr>
<td>What were some of the things that worked well in developing the SEEDS program?</td>
</tr>
<tr>
<td>PROBE: What were some of the things that worked well regarding lesson development, group communication or other processes?</td>
</tr>
<tr>
<td>What were some of the challenges that you faced in the program development process?</td>
</tr>
<tr>
<td>PROBE: What were some of the challenges regarding lesson development, group communication or other processes?</td>
</tr>
<tr>
<td>Please describe how the SEEDS program integrated research and practice?</td>
</tr>
<tr>
<td>PROBE: How was current research on obesity prevention, parent feeding and parent education, theory and knowledge of best practices of parent education and prevention/intervention programming integrated in the SEEDS program?</td>
</tr>
<tr>
<td>Based upon the experience that you had with the SEEDS program development process, what are the most important things that you’ve learned?</td>
</tr>
<tr>
<td>PROBE: What are some of the most important things that you’ve learned about the development process?</td>
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</table>
What was the most valuable thing that you learned working with researchers/practitioners?

PROBE: What were some of the things that you learned about the process of working with researchers/practitioners, or about developing programs?

If you were to develop another program, what are some of the things that you would do differently, or that you would recommend to others developing a program?

PROBE: What are some of the things that you would change about how the SEEDS program was developed if you were to develop another program?

**In-depth key-informant interview questions.** Table 10 presents goals and guiding questions for key-informant interviews. Interviews with key-informants followed a consistent line of guiding questions and took place over multiple sittings. They also included specific questions for clarification that arose throughout the data collection and analysis process.

<table>
<thead>
<tr>
<th>Table 10. Goals for In-Depth Key-informant Interviews</th>
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<tbody>
<tr>
<td>Provide information about how the program was developed, what events took place and why.</td>
</tr>
<tr>
<td>Supplemental questions and discussion topics:</td>
</tr>
<tr>
<td>• What were some of the things that worked well in the program development process?</td>
</tr>
<tr>
<td>• What were some of the challenges that arose during the program development process?</td>
</tr>
<tr>
<td>• What were the plans or goals for program development prior to starting the project?</td>
</tr>
<tr>
<td>• How have these changed across the life of the project?</td>
</tr>
<tr>
<td>• How did the development process for the SEEDS program integrate research and best practices in parent education?</td>
</tr>
<tr>
<td>• What were some of the challenges of researchers and extension practitioners collaborating?</td>
</tr>
<tr>
<td>• If you were to develop another program, what are some of the things that you would do differently or that you would recommend to others developing a program?</td>
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</table>
Reliability and validity. There are two primary types of validity including internal and external validity (Shadish, Cook & Campbell, 2002). Reliability and validity are important concepts that can be used to determine the quality of research designs, including the design of case studies (Yin, 2014). Lincoln & Guba (1986) suggest that reliability, validity and objectivity are commonly used to judge the quality of traditional quantitative research. The term validity refers to the accuracy of attempts to measure a particular concept. External validity refers to the generalizability of the results of a study. Internal validity refers to the rigor of a study’s design and measurement, and the extent to which researchers have ruled out alternative explanations for causal relationships in the results (Shadish, Cook & Campbell, 2002). Internal validity is further broken down into several additional types of validity including construct and measurement validity. Reliability refers to degree to which results are consistent and can be repeated (Shadish, Cook & Campbell, 2002). Objectivity refers to the degree to which the data is free of bias (Lincoln & Guba, 1985). While these criteria are established in the area of quantitative research, and are widely agreed upon and utilized, there is much debate about whether it is appropriate to impose the same constructs when determining the quality of qualitative research.

To address the concerns of qualitative researchers, several methods for assessing the quality of qualitative work have been suggested. The most widely accepted and utilized constructs come from the work of Lincoln and Guba (1985; 1986) and their alternative criteria of “trustworthiness”. Lincoln and Guba propose five constructs which include: credibility, transferability, dependability, confirmability and authenticity. Credibility refers to ones’ confidence in the “truth of the findings”. Transferability
involves demonstrating that findings are applicable in other contexts. Dependability refers to the consistency of findings and the ability to repeat findings. Confirmability refers to the degree of neutrality of findings—shaped by respondents and not researcher bias. Authenticity refers to the extent to which researchers fairly demonstrate a range of realities.

While Lincoln & Guba (1986) make some comparisons between internal and external validity and their constructs (credibility as the alternative for internal validity; transferability for external validity; dependability for reliability, and confirmability for objectivity), they strongly argue that reliability and validity are not the appropriate terms for qualitative work. They argue that utilizing a framework that was developed under a different paradigm of inquiry, one appropriate for conventional quantitative studies, is inappropriate. They suggest that the alternative paradigm of conducting naturalistic studies requires a parallel level of rigor that is uniquely established to meet the needs and challenges of naturalistic research (Lincoln & Guba, 1986).

To address these concerns, I have established trustworthiness of my research by utilizing several techniques in my study design, data collection, and analysis as suggested by Lincoln & Guba (1986). I have established credibility by engaging in prolonged contact with the subject of my study, being persistent in my in-depth pursuit of salient categories of data and ideas, utilizing multiple sources of data from different methods, and utilizing a secondary coder to triangulate or cross-check the data. To establish transferability, I utilized descriptive data to provide the context for the study and its findings allowing readers to determine how findings apply to others.
To establish dependability and credibility I established case study protocols as suggested by Yin (2014). I also utilized a database organizing case study data, notes and other documents, and made it available to external audiences (Yin, 2014). Providing the protocols, and a chain of evidence detailing the steps taken allow for an external observer to look at the data and draw their own conclusions which can be compared to my own (Yin, 2014). Lincoln & Guba (1986) refer to this process as establishing an audit trail, and allowing for an external audit of findings. To establish authenticity, I utilized multiple perspectives about the topics, and integrated information from different sources in the development of a theory of program development and in describing the strengths and weaknesses of its processes.

**Ethical Considerations**

Over the course of this study I utilized many strategies to reduce opportunities for harm or discomfort and to protect the confidentiality of participants, especially members of the program development team. This project was discussed extensively with the Leadership and Coordinating Committee of the SEEDS team. I provided details about the methodology and the nature of the study as well as a discussion of the study goals. In these discussions I explained that my research assistant would be asking for personal opinions and experiences of individual team members, and asking key informants for more extensive information about program planning and program development activities. I discussed with members of the Leadership and Coordinating Committee that depending on individual responses there may be instances where they disagree with the responses and experience some discomfort regarding study findings. I also discussed my plans to
share the findings of this study through possible presentations or publication while maintaining confidentiality of the individual team members.

With full support of the Leadership and Coordinating Committee, I invited all team members to participate in the study. I then contacted team members by email, and let them know that their participation was optional, and that their perspectives on the development of the program would contribute to a more holistic view representing multiple perspectives of the program’s development. I also utilized key informants, the project PIs and other members of the project leadership team, on a more in-depth and ongoing basis to learn about specific program planning and development tasks. I informed team members that their confidentiality would be protected, and that I would group their interview responses with others who served in similar roles on the project. Protecting the confidentiality of the team members was very important so that participants would feel more comfortable sharing their opinions and perspective.

Another concern in conducting this study was that I might receive some guarded responses in fear of repercussion. To address this concern I utilized a research assistant who was familiar with some of the project staff, but did not serve in a leadership role, to conduct the majority of the interviews for me. I conducted interviews only with those who were members of the Integrated Project Management and Project Managing Extension Administrators groups. I informed participants that the research assistant would be contacting them to set up a time to conduct interviews, and that we would protect their confidentiality by reporting their responses by their group assignment and not by name. Finally, I let them know that none of their responses would be identifiable, or tied to them as an individual.
Case Study Data Analysis

**Grounded theory.** To approach data analysis for this project I relied on the principles of grounded theory. Grounded theory is a method that was originally developed by Glaser and Strauss (1967) to support the development of theories grounded in data. It provides systematic guidelines for collecting and analyzing data that are also flexible and interactive allowing the researcher to go where the data takes them (Charmaz, 2014). Grounded theory can be applied when conducting studies in any discipline. Traditionally, grounded theory is applied in studies that are primarily qualitative in nature (Charmaz, 2014; Glaser, 1998; Glaser & Strauss, 1967) though it can be applied in the analysis of quantitative data as well (Glaser, 2008). Principles of grounded theory utilized in the current study included: initial (open) coding, concurrent data collection and analysis, memoing, focused/selective coding, theoretical sampling, theoretical saturation, and theoretical integration. These principles are described further in the table below (see Table 11).
Table 11. Principles of Grounded Theory

<table>
<thead>
<tr>
<th><strong>Principles of Grounded Theory</strong> (Charmaz, 2014)</th>
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<tbody>
<tr>
<td><strong>Initial (Open) Coding:</strong> Initial examination of data involving concise labeling of segments in such a way as to summarize, categorize and account for data. By taking data apart and determining what they mean analysis begins to take shape by beginning to make sense of data.</td>
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<tr>
<td><strong>Concurrent Collection of Data and Analysis:</strong> Grounded theory involves an interactive relationship with data where data are initially collected and coded leading to additional research questions to be answered by collecting additional data or further analysis of supplemental data.</td>
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<tr>
<td><strong>Memoing:</strong> Writing memos, free flowing notes, thoughts, ideas or questions, is a crucial step of the grounded theory process taking place between collecting data and drafting theories. Writing memos throughout the process of collecting and analyzing data allows the researcher to be involved with the data in an interactive way capturing new ideas or questions as they arise.</td>
</tr>
<tr>
<td><strong>Focused/Selective Coding:</strong> Follow-up coding utilizing the most frequent or significant initial codes to organize large amounts of data. It requires the researcher to make decisions about which codes make the most analytic sense, and involved categorizing or coding the initial codes. This process makes it possible to check how various codes fit with the other data allowing determination of the utility of codes and further development of the most salient codes.</td>
</tr>
<tr>
<td><strong>Theoretical Sampling:</strong> In initial sampling researchers begin with established criteria for sampling; theoretical sampling guides the researcher to “where you go”. Theoretic sampling involves additional, strategic, systematic and specific sampling in a direction that follows the needs for additional data, and aims to further develop analysis.</td>
</tr>
<tr>
<td><strong>Theoretical Saturation:</strong> Theoretical categories are saturated when there are no longer new insights or properties of categories being developed by examining or gathering fresh data.</td>
</tr>
<tr>
<td><strong>Theoretical Integration:</strong> Sorting initial ideas found in coded data and memos allows researchers to compare categories and integrate information into their developing theory. While gathering and coding data “provides the bones of an analysis,” integrating memos allows researchers to “assemble the bones.”</td>
</tr>
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</table>
**Data analysis.** Given the amount of data available and collected, I began data analysis of documents by looking at the data related to one specific goal of the current project, as suggested by Yin (2014). I searched for and gathered information related to meeting the individual goal, and then repeated this process for each of the other study goals. This is referred to as relying on theoretical propositions (Yin, 2014). I relied on my assumptions from the reviewed literature, and initial planning, of this dissertation project to organize and begin analyzing data, focusing on information potentially relevant to the first goal, and excluding other information from further analysis. I then followed the information, questions and ideas found through the initial coding of all data and further refined the organization and identification of relevant data for each question.

Once document data were gathered I sorted them thematically, when relevant, or chronologically. For example, data relating to the process of program development were sorted chronologically and by workgroup to provide a clear picture of what the process looked like and how it was carried out. I then made notes of who was involved in specific activities and the function of the activities. This approach is described by Yin (2014) as being especially useful for studies that are descriptive in nature, and was utilized in the current study to guide the analysis of relevant documents answering questions related to the study goals.

I then used grounded theory principles (described previously) to approach the analysis of interview data. Once interviews were transcribed, I began by completing an initial (open) coding (Charmaz, 2014; Glaser & Strauss, 1967) of data by labeling each statement with a key word or phrase that categorized the statement. I then added each statement to a database meant to combine statements across transcripts by question asked.
This allowed me to develop initial categories and codes. It allowed me to determine which data were relevant for answering specific questions which I noted through the use of memos. I also used memos, a free writing approach documenting my thought process, to record my own reflections to data as I collect and analyzed data.

I also engaged in theoretical sampling, collecting additional data on an ongoing basis directed by identified areas in need (Jones & Alony, 2011). Theoretical sampling involved interviewing key informants to specifically address questions that arose about the process of program development during analysis or other questions that arose during memoing and analysis. One example of how theoretical sampling was utilized was in the construction of the project timeline and in the description of the workgroups. For two specific groups, the Focus Group Work Group and the Video Production team, I was not involved in the planning or carrying out of much of these groups’ activities; therefore, limited documentation was available to me. To fill gaps in these areas I contacted the lead for each of these workgroups and asked for them to provide me with a written account of their activities. This new information helped to clarify and triangulate information gathered from other sources including my own observations and analysis of documents available to me. Key informants, including project leadership, were also asked specific questions related to the development process in order to fill identified gaps. Examples of this information included that related to project conceptualization and establishing a development team, which occurred before I was brought on to the project.

I then conducted focused coding of interview data (structured and in-depth) that was most relevant to each specific question of focus, further refining and expanding codes as new information emerged. An example of focused coding was in the area of
challenges to the program development process. Through initial coding it was identified that there were several challenges in relation to the project timeline. These challenges were then examined in a more focused way by looking for any challenges that ultimately related to the project timeline. Within those challenges, several themes emerged. Two of the most prevalent themes were that one stage in the timeline, the community needs assessment, specifically the focus groups, took too much time for team members to feel that the stage was useful. Another related theme was that due to the length of the initial stages, an inadequate amount of time remained to complete the middle stages of program piloting and revisions. The focus coding of data resulted in categories of information including:

- perceived effectiveness of the SEEDS development process
- challenges to the SEEDS development process (project planning, project timeline, communication structure, meetings, integration of research and practice, team members and staffing, utilizing workgroups, training and implementation)
- specific aspect of the SEEDS development process that worked well (project planning, communication structure, meetings, integration of research and practice, team members and staffing, utilizing workgroups, training and implementation)
- and overall lessons learned in developing SEEDS.

Each of the previously listed categories were derived from participant interviews. They are also presented within the results section of this dissertation providing information
related to the SEEDS program development process and case study—goal two of the current study.

I then theoretically integrated previously identified categories, memos, and other sources of information and explored how they related to the literature on program development. Results of this theoretical integration of the information gathered from each of these sources contributed to an understanding of the model that was utilized to develop SEEDS. This information directly related to the third goal of this study and can be found in the results section of the current study.

To address the final goal of this study, a model was constructed based on the strengths and limitations found related to the SEEDS process model, as well as information and suggestions for an integrated model from the literature. This recommended model incorporated the program development tasks and processes that took place for the SEEDS project as well as some of the guiding principles based on what worked well for the SEEDS project. It incorporated or addressed the lessons learned throughout the process of program development and recommendations for future program development from program team members.

**Researcher Background**

As stated previously, I currently serve as Integrated Project Coordinator across the various sites for the SEEDS project coordinating activities in Franklin County, Washington and in Houston, Texas. I began working on SEEDS in January 2011, serving as a graduate research assistant as the project activities began; I also began serving as a member of the project’s Leadership and Coordinating Committee. Through the evolution
and development of this project over the past four years I participated in many different tasks, and have filled many roles.

During the first year of the project I was involved in preparing data for analysis from previous studies that were used to influence the program content and curricula. As the project entered the development stage, I was responsible for coordinating meetings and communication with group members, communicating tasks and carrying out the requests of the coordinating committee. As the development progressed, I was responsible for coordinating the development of individual sessions’ goals and objectives and the development of the parent curricula. I was heavily involved in the development of the child curriculum and the family curriculum, serving as an expert in early childhood education, and in integration of the parent curriculum. I then participated in the hiring and training of project facilitators followed by overseeing the coordination of the pilot in Washington and in Texas. During the pilot I served as technical support assisting in program delivery, answering questions about the curricula, troubleshooting problems and challenges, and reporting back to the coordinating committee on a bi-weekly basis. After completing the pilot, I was responsible for collecting feedback from facilitators and coordinators across sites, and coordinated the revision of the curricula based on feedback from the pilot. I then helped to plan the evaluation efforts for the upcoming efficacy trial, and continued training of facilitators based on curriculum revisions.

In addition to my experience working on this project, I have a personal interest in organizational structure and leadership, and a background in business management. I am interested in how networks function as a result of their leadership. I am also very interested in the processes of program development, evaluation and implementation.
More generally, I am interested in family functioning, and parenting, and the parent’s role in child development. I also have a background in early-childhood education having observed, taught and developed curriculum for preschool-age children. I am passionate about the quality of programming, and focusing prevention efforts on those in need, especially preschool-age children and their families.

My interest in this study was to retrospectively examine the efforts that were made in the process of program development, and to contribute to an area in need of attention in prevention science: program development. When we started this project, there was little information available directly about how to most effectively develop programs. The development of this project was based heavily on the team members’ experiences, and knowledge of the prevention science field. My experience on this project has provided me with a unique and rare perspective having been involved in each phase of the project. Having been involved in so many tasks gave me a detailed perspective of the events that occurred, and a holistic view of the development process.

**Reporting**

Reporting of this case study begins with a complete version of this dissertation presenting a linear-analytic and chronological structure of the development of SEEDS. Linear-analytic structures represent a standard approach to presenting research reports. These include subsections beginning with presenting the problem of focus, a review of relevant literature, methods, results of data collected and analyzed, conclusions and discussion of implications. It also includes a chronological presentation of some of the program development events of the SEEDS program.
The audience for my dissertation report includes my committee members. Additional reporting of this case study includes dissemination of my dissertation to other members of the SEEDS program development team. It also includes submission of one or more manuscripts to peer-reviewed journals in extension, prevention science and program planning.

Reporting procedures started by creating tables presenting information relevant for answering specific questions. Table 12 presents the study goals along with data that were analyzed and informed the results related to each corresponding goal. I then began summarizing and writing chronological components from the most recent to the earliest events that occurred. This act of working backwards helps maintain consistency in how much depth is presented from the end to the beginning instead of weighting presentation most heavily on the earliest events (Yin, 2014).

Table 12. Study Goals and Data Sources

<table>
<thead>
<tr>
<th>Study Goal</th>
<th>Data Source(s)</th>
</tr>
</thead>
</table>
| Goal 1: Describe the guiding principles that contributed to the development of SEEDS. | Key-Informant Interview  
Document Analysis |
| Goal 2: Present a case study and initial model of the process of developing SEEDS. | Document Analysis  
Key-Informant Interviews  
Participant Observations |
| Goal 3: Discuss the lessons learned in developing SEEDS. | Key-Informant Interviews  
Participant Observation |
| Goal 4: Contribute an integrated model of program development to the Prevention Science literature. | Key-Informant Interviews  
Participant Observation |
CHAPTER FOUR

RESULTS: GOAL 1 SEEDS GUIDING PRINCIPLES

The current chapter provides the results of the current study as related to the first goal—describing the guiding principles contributing to the SEEDS program development process. Results related to the remaining study goals are presented in each of the following three chapters.

The principles that guided the process of developing SEEDS were predetermined ideas, philosophies and assumptions that shaped the development process. In order to understand these principles I conducted a review of the grant documents as well as interviews with project PIs and leadership. By collecting and analyzing these data, several themes emerged revealing the overarching guiding principles. These principles included: integration and collaboration between research and practice, extension infrastructure, cultural relevance, and a culture of evaluation, each of which is described below.

Integration and Collaboration between Research and Practice

Interviews with project PIs revealed that the process used to develop SEEDS started with a pre-determined philosophy of integrating research and practice by utilizing the WSU Extension infrastructure. The project was conceptualized by a group of researchers who have collaborated on research related to parent feeding over a period of ten years resulting in numerous publications (Hughes, Anderson, Power, Micheli et al., 2006; Hughes, Power, Orlet Fisher, Mueller et al., 2005; Hughes, Power, Papaioannou, Cross, 2011; Johnson, Hughes, Cui, Li et al., in press) and contributions to the literature on childhood obesity and parental feeding practices. This group established a multi-
disciplinary team of researchers from nutrition, parenting and early childhood education, as well as practitioners and extension faculty from parent and early childhood education to conceptualize the grant proposal. The involvement of both researchers and extension faculty from the beginning of the project is one example of integration.

The importance of involving researchers and extension faculty for this project could also be seen in grant documents and requirements as it was funded as an integrated research- extension project. The funding from USDA (No. 2011-68001-30009) specifically required the integration of research and extension to address childhood obesity. According to grant documents, how projects approached integration of research and extension was at the discretion of project teams. In addition to grant documents, interviews with the project PIs revealed that it was of fundamental importance to the project leadership that extension and research faculty be involved during each phase of the project from the beginning stages through its duration.

Interviews with PIs also revealed their desire for the contributions of the researchers and extension practitioners to each be valued. To support this they fostered a democratic organizational structure and a culture of mutual respect of both groups. The PIs intentionally involved team members in decision-making throughout the process of developing SEEDS. As I observed, one example of this was seen in the involvement of both researchers and extension leadership in the Leadership and Coordinating Committee. Another example was in holding multiple in-person group meetings where decisions were made and discussed providing all team members with an opportunity to inform decision-making.
Extension Infrastructure

Another guiding principle was the use of WSU Extension as an infrastructure for integrating research and practice during program development and implementation. To reach the targeted populations in Washington, two extension locations and their staff were selected for involvement in program development: Yakima and Pierce counties. Interviews with the PIs revealed that the integration of WSU Extension into the project was determined in the early days of conceptualizing the project to meet the grant requirements of research and extension. Involving extension in the project was also prioritized because of a departmental priority for Human Development at WSU for supporting collaboration and involvement of WSU Extension in research projects.

Interviews with project team members, review of project documents and my observations revealed that extension faculty were involved in each aspect of program development from the start of project conceptualization through dissemination planning. SEEDS was developed through stages involving all team members in each phase guided by the project leadership. Involvement of extension practitioners was also used to access target populations through their connections and understanding of the local communities.

Cultural Relevance

Cultural relevance of the SEEDS program was a fundamental goal resulting in another principle that guided each aspect of program development. As low-income, African-American and Latino children are at high risk for becoming obese it was important to the SEEDS team that the program be appropriate and relevant for each of these populations. According to my observations, corroborated with other sources of data including interviews with project leadership, an effort was made to intentionally address
cultural relevance of the curriculum and activities on a regular ongoing basis. During each phase feedback was collected from the target population or representatives of the community and was incorporated into the program. Literature on the target populations was also used to inform program development. Team members also reported challenges and lessons learned related to cultural relevance highlighting its importance to the group.

**Culture of Evaluation**

The final overarching principle guiding the development of SEEDS was the culture of evaluation throughout the process. In order to make decisions throughout the project, information was collected from multiple perspectives that were considered before a decision was made. An important part of the evaluation culture for SEEDS was that evaluation was not looked at as one step in the process but as a thread that carried through each other step along the way. Information was collected with the intent of informing decision making and to inform the program curriculum and implementation as well as contributing to an evidence-base for the program.

**Chapter Summary**

Table 13 displays each of the four principles that guided the development of SEEDS as well as examples of the application of each principle and the corresponding data source. These four principles (integration and collaboration between research and practice, extension infrastructure, cultural relevance, and culture of evaluation) provide information about the underlying assumptions, philosophies and ideas that guided how SEEDS was developed. These principles also helped determine the specific tasks to be incorporated into the process of developing SEEDS.
Table 13. SEEDS Guiding Principles and Examples of their Application

<table>
<thead>
<tr>
<th>Principle</th>
<th>Example of Application Data Source (Interview=I, Document=D, Observation=O)</th>
</tr>
</thead>
</table>
| 1. Integration and Collaboration of Research and Practice | • Meeting Participation:  
  • Representatives from extension as well as researchers were involved in each committee including the Leadership and Coordinating Committee and project workgroups. (I, D, O)  
  • Large group meetings were held regularly, biannually where representatives of research and practice (extension) were present. (I, D, O) |
staff was integrated into adaptations of the program to increase relevance. (D, O)
- Two sets of videos were completed, one in Spanish and one in English, using different actors, foods and other differences to increase cultural relevance of the program while maintaining curriculum. (I, D, O)

| 4. Culture of Evaluation | • Data-based decision-making was used throughout the project.  
• Before developing the curriculum, the target population participated in focus groups, data were distributed to curriculum development committees and integrated into the program. (I, D, O)  
• Program pilot data were integrated into the adaptation of the program curriculum. (I, D, O)  
• Program implementation was monitored to determine the need for additional training, and make decisions about training content. (I, D, O) |
CHAPTER FIVE

RESULTS: GOAL 2 SEEDS PROGRAM DEVELOPMENT

In the current chapter I address the second goal of the study by providing a detailed description of the SEEDS program development process. The description includes a visual representation of the organizational structure, a timeline, including the major tasks that took place over the course of the five-year project, and a more thorough description of the steps taken to develop SEEDS. A description of each work group and their role in the process of developing SEEDS along with a graphic showing how communication across workgroups took place are also presented.

Information presented in this chapter was derived from numerous data sources including documents, interviews, and observations. In order to complete each presented model (organizational chart, timeline, communication structure, and process model) I began by addressing one area at a time thinking chronologically about the tasks completed and who completed them. Each piece of information was then confirmed through other sources of data. For example, I constructed the project timeline based upon my own notes and observations. I then examined project calendars and incorporated information into the timeline. When contradictory information was found, such as lack of clarity as to the order of which events occurred, additional data were gathered by interviewing project team members. The models presented provide visual representations of the tasks, individual team members and workgroups, and relationships linking different aspects of the project.
SEEDS Organizational Chart

The organizational structure for developing SEEDS stemmed from two groups established when applying for the grant: the project PIs (PI and PI-WSU) overseeing the Houston and the Washington sites and the Leadership and Coordinating Committee. These two groups determined that the best structure for involving such a large group of 26 team members by breaking down the group into subgroups and delegating responsibilities by assigning tasks. Based on the goals for the first year of the grant, two subgroups were initially formed during year one: the Parental Feeding Coding Workgroup and the Focus Group Workgroup. The remaining subgroups were then added as the need for workgroups became clear.

As conversations began about how to approach program development during year one, Individual Content Experts were identified to inform the group about the theoretical basis for the grant. Immediately after the first large group meeting was held, individual workgroups were established that focused on each specific lesson. Originally six workgroups were established to focus on each of the seven topics (introduction, trying new foods, self-regulation, portion size, structure of the eating environment, and wrapping up the SEEDS program). During the development, it was felt that one lesson, the structure of the environment, should be divided into two lessons. This resulted in the development of seven sessions by six workgroups. During this time the role of Integrated Project Coordinator was also established. It became clear to the project PIs and the Leadership and Coordinating Committee that there was a need for one person who could serve as a bridge between project leadership and the individual workgroups.
As development of the individual lessons took place, many challenges arose in bringing the work of the individual workgroups together in a cohesive way. Subsequent workgroups and meetings then became more targeted, utilizing fewer team members while still incorporating multiple perspectives for the purpose of integrating research and practice. The remaining workgroups were established over the course of the project as the development team moved through the process of developing SEEDS. A visual representation of the SEEDS teams—an organizational chart—is presented in Figure 8. Key functions and descriptions of each workgroup are provided later in the current chapter.
Figure 8. SEEDS Organizational Chart
SEEDS Program Planning Timeline

The process of developing SEEDS took place over a five-year period. Table 14 presents a timeline of each of the five years and the major activities that took place during that year. While this timeline is not exhaustive of every activity that took place over the five-year period, it does capture the major activities, and the timeline for which those took place. In addition to this table, the paragraphs below discuss the major activities.

The numerous individual meetings and conversations that took place during the major activities or the short-term milestones contributing to each activity were excluded from this timeline.

Table 14. SEEDS Timeline Graphic

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership Committee Meeting to discuss project planning, coding, lit review process (Feb. 2011)</td>
<td>Large Group meeting to discuss program development and present “community needs assessment” (Feb. 2012)</td>
<td>Develop Child Sessions (Jan. 2013-Sept. 2013)</td>
<td>Assessment training of all assessors and nutrition researcher (Feb. 2014)</td>
<td>Efficacy Trial Curriculum Revised (Feb. 2015)</td>
</tr>
<tr>
<td>Conduct Initial</td>
<td>Develop Child Sessions</td>
<td>Video Production</td>
<td>Finalize English</td>
<td></td>
</tr>
</tbody>
</table>

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### Year 1: February 2011-January 2012

Year one began with the receipt of grant funding from USDA. Prior to this, several program planning activities took place including conceptualizing the project, establishing a project team and gathering support from community partners. Major activities that took place during year one had to do with planning and carrying out the needs assessment stage of the program development process. These activities included an initial in-person meeting of the Leadership and Coordinating Committee to discuss project planning, coding videotapes of family mealtimes and conducting a review of the literature to inform program development. Another major activity during year one was to plan and conduct focus groups as part of the community needs assessment. Planning focus groups began when the grant was funded and were conducted over the rest of the year one into year two. The last major activity of year one was to hire local project coordinators for each site, and to work with

team members to begin building community partnerships for recruiting focus group, pilot and efficacy trial participants.

Year 2: February 2012-January 2013. Year two began with the first large group meeting of the SEEDS program development team. At this meeting results from the community needs assessment, focus groups and preliminary analyses of coded videotapes were presented along with information from relevant foundational areas of literature. Year two also involved several major activities related to developing the parent and child sessions including establishing goals and objectives, holding another group meeting to discuss goals and objectives, and completing lesson plans. Other major activities included coding of additional videotapes, and conducting additional focus groups to gain further an understanding of parental feeding practices.

Year 3: February 2013-January 2014. Development of session curricula that began during year two continued throughout year three and involved another large group meeting to present initial lesson plans and get feedback from the development team. During this group meeting plans were made to develop videos for the parent lessons. Video production, shooting, and post-production editing also took place during year three. All curricula and videos were complete by the fall of year three leading into another major activity—hiring and training program facilitators. Facilitators were then trained and the program was piloted, collecting feedback from facilitators and program participants.

Year 4: February 2014-January 2015. Year four of the SEEDS project focused on preparing for the efficacy trial and implementation of the program. This process involved revising the curriculum based on feedback from the pilot. In preparation for the
efficacy trial, assessment training was held at the start of the year. Additional activities included beginning the efficacy trial implementations at each site, and providing ongoing training and technical assistance to program facilitators to address concerns during implementation and provide clarity on the curriculum.

**Year 5: February 2015-January 2016.** Year five of the development process included ongoing implementation of the program to conclude the efficacy trial phase of the project. Other major activities included the development of training materials to support the dissemination of SEEDS. There was also a large group meeting to discuss plans for finalizing the curriculum, facilitator manuals and the training and dissemination plans.

**SEEDS Program Development Steps**

The process of developing SEEDS evolved as the team worked through the process and the need for additional steps evolved. A visual representation of the process of developing SEEDS can be found in Figure 9. The stages of the process included: conceptualizing the project and establishing a project team, and once the grant was awarded, it moved through the remaining stages (community needs assessment, setting goals and objectives, developing the curriculum, piloting the curriculum, revising the curriculum and implementing and disseminating the program). Each stage involved an iterative process of moving through each step and incorporating data and feedback before moving to the next stage. While the information in this section is similar to that presented in the timeline, the current section provides more detail about the steps taken, and their purpose.
**Conceptualize project.** The SEEDS project was conceptualized after the request for proposals for the USDA-AFRI grants targeting the prevention of obesity in preschool-age children through family-focused programs was announced. The PIs determined that based on their research on parental feeding, and the minimal success of other types of obesity prevention programs such as school-based programs, that developing a family-based obesity prevention program had the potential to be a promising strategy. The project PI-WSU was also familiar with a highly successful family-based program targeting substance abuse prevention, SFP (Molgaard, Kumpfer, Flemming, 1997) and proposed developing SEEDS utilizing the same structure including youth, parent and family components. The project proposal was based on an initial needs assessment including a review of the literature on risk and prevalence of childhood obesity, as well as examination of research on the differences in parental feeding styles.
Figure 9. SEEDS Program Development Steps
Establish project team. The SEEDS program development team was established several years prior to the start of the project. Members of the WSU Extension faculty came together to form the Extension Health Promotion Team whose goal was to come up with ideas for ways that WSU Extension could address the issue of childhood obesity throughout the state. One plan that came from this group was to add a lesson on childhood obesity and parental feeding to the already existing SFP program being implemented throughout the state. When the call for proposals came out for the USDA-AFRI grant, one team member, the PI-WSU, came to the team to determine their interest in being involved on the project. Many team members of the Extension Health Promotion Team partnered by joining the SEEDS team. These team members had extensive experience implementing the SFP. Other initial team members were brought on through their existing relationships with the PI-WSU including the PI, and other researchers with knowledge of proposed theoretical foundations and research on parental feeding and obesity prevention, and knowledge of local communities where programs could be implemented. Additional team members were added as the process unfolded including program facilitators, project coordinators, and additional content experts.

Community needs assessment. Conducting the community needs assessment began by gathering the literature relevant to obesity prevention and parental feeding and involving content experts. This step allowed for a greater understanding of the prevalence of childhood obesity, and the use of parental feeding styles, as well as more information about differences in parent feeding styles and behaviors among low-income, African-American and Latina mothers. Another step in the needs assessment process was to involve stakeholders. In order to involve stakeholders in the process of developing
SEEDS, focus groups were set up in the various target regions (Pierce and Yakima Counties, Washington, and Houston, Texas). These focus groups aimed to provide information about the target populations that had not been addressed in the literature.

Another step in the needs assessment process was to involve community practitioners in interpreting the other aspects of community need, and getting their perspective of obesity prevention efforts in the local community and how successful those have been. They also provided insight into other considerations that should be made when working with families of each of the target populations.

**Set goals and objectives.** The first step involved with setting goals and objectives for SEEDS was to utilize the research and determine which topics should be prioritized. Six priorities were identified: introduction to SEEDS, trying new foods, self-regulation, portion size, structure of the environment, and wrapping up the SEEDS program. During development a seventh topic was added splitting the ‘structure of the eating environment’ into two topics, inside and outside of the home due to the differences between the two environments. Once the priorities (topics) of each lesson were established the Leadership and Coordinating Committee assigned team members to workgroups to work on the development of specific goals and objectives and later the parent lesson plans for individual topics.

**Develop curriculum.** After the goals and objectives were finalized for each session, lesson plans were drafted aimed at achieving these objectives through fun hands-on activities for parents, children, and families as a group. After initial lesson plans were developed they were then reviewed by several team members and content experts for cohesiveness and integration of themes throughout the lessons, integration of research,
and consistency with foundational theories. This step included reviews by experts in Self-Determination Theory and best practices in early childhood education. Another review was completed by program facilitators and community practitioners for cultural relevance and potential areas of concern. After each of these review steps, the curriculum and feedback from each review step was presented and discussed by the entire program development team. This allowed the entire group to provide feedback based on their individual area of expertise, ask questions, and pose ideas not considered in the initial development process. During this time the group was able to comment and provide feedback about each lesson. At this time it was determined that the lesson plans lacked consistency in language and were missing integration of concepts throughout each lesson. After the meeting, the development process began again. A template was established for lessons that each group was to follow that utilized the structure of 4 A’s by Joye Norris (2003) (described previously). By providing this template each group was able to put their lesson plans into a similar format. The lesson plans then went through each review step again followed by another large group meeting. After this meeting final suggested revisions were made by Integrated Project Management.

During the second round of curriculum development the Video Production Workgroup was also able to take the suggestions from the large group meeting and the information identified in the lesson plans to begin creating the video materials that were integrated into the parent lessons. These videos were a major component of the parent curriculum and were utilized to deliver new information to parents based upon the research literature on parent feeding styles, portion size, and trying new foods.
**Pilot curriculum.** The first step in piloting the program curriculum was to train facilitators on the lesson plans and curriculum. An in-person, initial training put forth by program developers provided an opportunity for facilitators to ask questions related to content, and allowed program developers to clarify areas of confusion in the facilitator manual. The training also provided opportunities to practice delivering lessons to the group, and to receive feedback on facilitation from program developers and experienced extension educators.

After the training, the manuals were revised based on areas of confusion identified during the initial training, and the program was implemented as a pilot in all three locations. During the pilot, open-ended feedback was collected from parents and facilitators about the program, and what they thought about the different components. This feedback was compiled and then presented to the large group at an in-person meeting to begin the revision process.

**Revise curriculum.** The revision process began by combining feedback and discussing the need for related changes during a large group meeting of the program development team. Potential changes were discussed and plans were made to address each issue brought forth by parents and facilitators. The next step after this in-person meeting was the formation of a smaller workgroup to work specifically on the revision of the parent curriculum which had most of the identified need for changes. This workgroup (five members) consisted of community practitioners and SEEDS program facilitators experienced in working with the target populations, extension educators with expertise in adult education and the Integrated Project Coordinator who was responsible for integrating the pilot feedback. Two members of the Child Session Workgroup made
revisions to the child sessions. Changes made by each workgroup were then reviewed by the coordinating committee and then distributed to the entire team to comment on, and were discussed individually with each site.

**Implement program.** For the SEEDS project, the implementation stage refers to the program efficacy trial implementations taking place over years four and five of the project (currently ongoing). During this stage, SEEDS was implemented in Franklin County Washington and Houston, Texas. Implementation rounds include 2-3 weeks of pre-testing assessments followed by seven weeks of program classes, ending with another 2-3 weeks of post-testing assessments. During each implementation round, the sites participated in weekly monitoring including the completion of evaluation documents and meetings with the Integrated Project Coordinator. Meetings between local implementation teams and the integrated project coordinator served the purpose of monitoring and providing technical assistance to the teams. By meeting with each site, the Integrated Project coordinator identified the need for ongoing training for each site, as well as for the group as a whole. Through ongoing training meetings, the need for revisions to the facilitator manual to provide clarity in activities was also identified and several small revisions to the manual were made during the implementation phase, contributing to the final manual and curriculum at the end of the grant.

**Disseminate program.** The final step in the SEEDS program development process was to disseminate the program. Dissemination was considered throughout each of the previous stages and in making decisions for planning the program. The ultimate goal for SEEDS was to be able to disseminate the program widely across populations. Looking toward dissemination in previous stages, the curriculum videos were made in
two languages, English and Spanish, and utilized actors that reflected diversity in their ethnicity for each set of videos. A complete facilitator’s manual also was developed to be available in both languages along with all other program materials. Another step in the dissemination process for SEEDS was to establish an infrastructure for providing training on the program and continued technical support and evaluation assistance. Providing evaluation resources to those implementing the SEEDS programs can help to contribute to the evidence-base for the program.

**SEEDS Work Group Details**

As stated previously, workgroups were used throughout the process of developing SEEDS to accomplish different tasks. Key functions and descriptions of each workgroup are described below. While the information in this section is similar to that presented in the timeline and the SEEDS Program Development Steps sections the current chapter, this section describes the steps taken to develop SEEDS adding further information about how each step was accomplished.

**Project PI & PI-WSU.** The project PI and PI-WSU were responsible for managing the grant budgets and requirements for the primary and subcontracts. They also established and led the Leadership and Coordinating Committee to integrate multiple perspectives into decision-making and determining tasks for the project.

**Leadership and coordinating committee.** The Leadership and Coordinating committee, consisting of six members including researchers and extension faculty, served the function of decision-making for the SEEDS project. Over years 1-5 of the project the committee generally met on a bi-weekly basis discussing current and anticipated issues regarding program development and implementation. The committee also established
guidelines and restrictions for program participation, recruitment, assessment protocols, the need for and coordination of facilitator training and many other issues.

**Integrated project management team.** The Integrated Project Management team consisted of three members of the Leadership and Coordinating Committee including each of the project PIs and the Integrated Project Coordinator. These members served as a bridge between the local teams and practitioners and other team members including researchers. They also served the function of communicating and monitoring tasks as delegated by the Leadership and Coordinating Committee to all other team members and workgroups.

**Focus group workgroup.** One of the first workgroups established was the Focus Group workgroup. Led by a member of the Leadership and Coordinating committee experienced in qualitative data collection, this group was responsible for planning and carrying out focus groups during the community needs assessment stage of the project. To conduct focus groups, facilitators were recruited from each of the respective locations to match the ethnicity of participants. After hiring facilitators, a training meeting was held that provided an introduction to moderating and facilitating focus groups as well as supervised practice and feedback through mock focus groups. After the initial training, weekly calls took place between the workgroup lead and focus group facilitators. These calls provided opportunities to answer questions and problem solve issues related to planning the focus groups. Over the remainder of the first and second years of the project, focus group data were selected and analyzed. An initial report was prepared and provided to those involved in developing the curriculum. The leader of this workgroup is currently writing up the results of these focus groups to add to the literature on parental feeding.
Parental feeding coding workgroup. To accomplish project video coding goals, a project coordinator was hired who had previously coded videotapes utilizing the same coding scheme with the project PIs. The coordinator then hired and trained coders to work on coding videotapes over the next year.

Content experts. In order to support the development of the SEEDS program, several content experts were brought on to inform program development on select targeted areas including nutrition, parental feeding, Self-Determination Theory, adult experiential learning, early childhood development and education, video production and program evaluation. These content experts provided information from their respective literatures that could be used to answer questions related to program content, adult experiential learning and research design. They primarily served as consultants to various workgroups who requested information about specific topics, while some content experts also participated more directly in project tasks including curriculum development by serving on additional workgroups.

Individual parent lesson development workgroups. After the SEEDS program development team determined the initial goals for each of the parent sessions, groups of 3-4 people were established and charged with the task of determining measurable objectives for each of their respective lessons. Members of the workgroups involved researchers familiar with the topic of focus for the lesson, extension faculty and graduate students. Each group worked independently to come up with a list of objectives for each lesson. Once these were drafted, the entire SEEDS team reviewed the objectives and worked through a revision process to reduce the number of objectives, and make sure that the objectives were consistent with the literature. Once finalized, workgroups built on
program objectives by each writing a lesson plan for their assigned session that focused
on achieving the desired objectives through interactive activities. Once drafted the entire
SEEDS team met to discuss lesson plans and to provide recommendations for revisions.

**Parent session revision workgroup.** After the initial parent sessions were tested
through the program pilot numerous changes were needed. Feedback from the program
pilot was compiled by the Integrated Project Management, and then presented at a large
group meeting. Feedback was discussed, and a list of action items and changes were
developed. A group of five extension educators and the Integrated Project Coordinator,
who communicated feedback from the pilot, worked to come up with alternatives.
Revisions were then reviewed by the Leadership and Coordinating Committee, and then
communicated to the project facilitators.

**Child session development workgroup.** The child sessions were developed by a
group of three early childhood educators and two nutrition researchers. The group set out
to build activities and lesson plans based on the two previously-established objectives for
the child sessions—encouraging children to try new foods and identifying and
communicating their internal cues of hunger and fullness. The researchers provided
general, research-based guidelines for developing activities in these areas, and then the
early childhood educators developed a full lesson plan for each week utilizing principles
of best practices in early childhood education. Two of the group members were also
responsible for making changes to the curriculum after the program was piloted.

**Family session development workgroup.** The family sessions were developed
by a workgroup made up of representatives from the child and parent session
development workgroups who were familiar with family activities and early childhood
development. The process of developing the family sessions took place after the child and parent sessions were complete, and strived to integrate the goals and objectives of each session into a family activity that was developmentally appropriate for children ages 4-5. Additional program components developed by this workgroup included specifications and requirements for a family meal to be provided at each implementation, and the development of a food-experience to take place at each session.

**Video production team.** The video production team was led by a video producer who interacted directly with the development team members and project leadership to plan curriculum components including videos, handouts and designing a facilitator guide. The video producer also coordinated contracting work through various vendors including the video production crew, editors, actors, graphic designers and others.

**Individual site implementation teams.** Implementation teams were established at each of the three original sites including Pierce and Franklin counties in WA and Houston, Texas. Each site team was led by a local Project Coordinator responsible for managing the implementation process including hiring and supervising additional staff (facilitators and child care workers). Together these teams were responsible for building community relationships, securing locations to implement programs, recruiting and retaining participants, and delivering the program. Individual site teams were also managed by Integrated Project Management who provided technical and troubleshooting assistance in delivering the curriculum, and monitored implementation for consistency across sites and other aspects of implementation quality.

**Assessment teams.** Local assessment teams were established in Pullman, Washington and in Houston, Texas to carry out assessments for each of the local sites.
These teams involved the child and parent facilitators, as well as childcare workers who cared for children brought to assessments who weren’t participants of the program and designated assessors. Several assessors were trained on assessment protocols by project managing researchers for the project. Once trained, each team was responsible for continued training and practice carrying out assessments with staff. Both assessment teams also continued to meet regarding assessments in order to problem solve logistical issues, and to make sure that assessments were consistently implemented across sites.

**Training workgroup.** The training workgroup was established prior to piloting SEEDS in year three of the project. The workgroup included three experienced WSU Extension trainers and administrators and one team member with a background in early childhood education. These team members set out to develop a training experience that introduced each of the seven sessions and provided program facilitators with hands-on, experiential opportunities to deliver sessions and receive feedback. The initial training was a one time, two-day training session that took place in person, in Seattle, Washington with all site facilitators from Pierce and Franklin counties in Washington and Houston Texas. After the initial training and prior to the pilot, follow-up calls were scheduled with trainers and facilitators to answer questions related to the curriculum. Weekly debriefing phone calls between the site coordinators and integrated project management also were used as opportunities to provide technical assistance and determine areas in need of continued training for each group. Additional training calls were planned and scheduled after completing the pilot and revision of curriculum during the implementation phase of the curriculum to address issues that were arising during implementation. The training
committee was also involved with developing an overall training plan during the final year of the grant that can support future implementation on an ongoing basis.

Translation workgroup. The translation workgroup was made up of five Latina members of the SEEDS program development team who are native Spanish speakers, all from a different country of origin (i.e. Columbia, Puerto Rico, Mexico), based out of Houston, TX. The translation workgroup was responsible for translating into Spanish all lesson plans and educational materials once they were completed in English. This workgroup went through each lesson as a group discussing the most appropriate terminology to use to convey the same message in Spanish as the curriculum was using in English. The group then went through a series of reviews to make sure that the translations were complete and accurate, and that the group was comfortable with the language and dialect used. The complete curriculum was then sent to a Spanish-speaking implementation team in Franklin County, Washington to review for inconsistencies with regional dialect and any other disagreements. Both groups then met to discuss differences and continue to make changes.

SEEDS Communication Structure

A major component of group functioning to accomplish the task (and sub-tasks) of program development was group communication. A graphic representation across the various team members’ roles is depicted in Figure 10. Group communication for SEEDS took a variety of forms. Large group meetings were held where all sub-groups of team members communicated directly with each other during structured meetings aimed at accomplishing program development tasks and decision-making. Large group meetings took place over a period of 2-3 days in locations primarily in the Pacific Northwest
(Vancouver and Seattle, WA). These locations were deemed to be the most cost effective because of the number of staff traveling from Washington to attend. For these meetings, an agenda was prepared and reviewed by the Leadership and Coordinating committee and conversation was facilitated by integrated project management (PIs & coordinator) to keep the meeting moving efficiently. Smaller meetings were held for individual workgroups where integrated and management staff led workgroups in accomplishing tasks, and facilitated conversation and collaboration between researchers and practitioners. Small workgroup meetings were inconsistent across groups and irregularly scheduled – their effectiveness in accomplishing tasks varied from group to group. Smaller meetings were held by the Leadership and Coordinating Committee on a regular, bi-weekly basis to discuss project tasks, make assignments and problem solve issues that had arisen at various levels.

Additional technological methods of communication utilized during the program development process included email from Integrated Project Managers updating the entire team on the project which took place approximately 2-3 times per year over the duration of the project. Conference phone calls were also utilized to convene meetings of smaller workgroups. At the local level, and for the Leadership and Coordinating committee, regular meetings schedules were set in place that allowed team members to plan and make themselves more available for group meetings.
Figure 10. SEEDS Communication Structure Graphic
For local teams, group meetings took place in person which provided an opportunity to communicate about tasks, practice delivering the curriculum and to divide tasks, and to follow-up with the group. Document sharing was used by some local teams to collaborate in compiling notes, and to share other project documents. Each local team met weekly by phone with the Integrated Project Coordinator to ask questions, monitor fidelity and implementation quality and identify the need for additional support.

**Chapter Summary**

In the current chapter I provided a detailed description of the SEEDS program development process, addressing the second goal of the study. The description included a visual representation of the organizational structure and relationships between the workgroups involved in developing SEEDS. A timeline for the SEEDS project was presented, including major tasks that took place over the course of the five-year project. A communication process graphic was presented showing how communication across groups of team members took place. A visual model of the program development steps was also presented and discussed.
CHAPTER SIX
RESULTS: GOAL 3 SEEDS LESSONS LEARNED

In the current chapter I address my third study goal, providing the lessons learned from developing SEEDS, including what worked well, as well as challenges experienced during development. The information presented is based upon data gathered through interviews with SEEDS program development team members representing their perceptions of the program development process. Team members were asked to share the challenges they experienced in the process, what worked well, what they would recommend to other groups and the lessons that they learned about integrating research and practice. Once collected, information was then coded into categories according to which aspects of the project the information related to and to bring context to the information provided. Upon initial coding, 112 categories were identified, representing numerous tasks and aspects of the development process, and participants’ responses. When interview information contradicted that from other sources of data, multiple data sources including documents, observations and key-informant interviews are also presented.

A complete list of initial categories can be seen in Appendix B, and included: project budget and management, communication, confidence, respect, curriculum development, meetings, patience, program pilot, and many others. These initial codes were then grouped at a higher level (focused coding), reducing the categories to: communication, meetings, timeline, overall process of the project, the perceived effectiveness of the model, program planning, integrating research and practice, team members and staffing, utilizing workgroups, training provided, and implementation of the
program. Results related to each area are presented in the sections that follow. A summary of these categories, grouped by aspect of the program development process, as well as sample strengths and weaknesses, are provided in Table 15.

Table 15. Lessons Learned in Developing SEEDS: A Sample of Focused Coding Results

<table>
<thead>
<tr>
<th>Aspect of the SEEDS Program Development Process</th>
<th>Strengths</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>• Clearly communicated timeline</td>
<td>• Team member personalities</td>
</tr>
<tr>
<td></td>
<td>• Adequate use of technology</td>
<td>• Differences in terminology and language</td>
</tr>
<tr>
<td></td>
<td>• Central contact person</td>
<td>• Working through frustration</td>
</tr>
<tr>
<td></td>
<td>• Transparent document storage through cloud storage</td>
<td></td>
</tr>
<tr>
<td>Meetings</td>
<td>• Regular meetings were critical for building relationships</td>
<td>• Geography of different time zones and states</td>
</tr>
<tr>
<td></td>
<td>• Efficiently run meetings</td>
<td>• Difficulty and expense of planning in-person meetings</td>
</tr>
<tr>
<td></td>
<td>• Physical set-up of in-person meetings (circular) facilitated conversation</td>
<td>• Unable to pick up non-verbal cues meeting remotely</td>
</tr>
<tr>
<td>Timeline</td>
<td>Not Applicable</td>
<td>• Difficult to predict length of timeline and tasks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Time intensive to integrate research and practice</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Not enough time for revisions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Not enough time for adequate collection of data after pilot</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Tasks felt rushed</td>
</tr>
<tr>
<td>Overall Process of SEEDS</td>
<td>• Modeled after SFP</td>
<td>• Process was not pre-developed</td>
</tr>
<tr>
<td></td>
<td>• Topics based on research outcomes</td>
<td>• Focus group stage lost focus, went beyond scope</td>
</tr>
<tr>
<td></td>
<td>• Activities linked to objectives</td>
<td>• Team members felt disconnected</td>
</tr>
<tr>
<td></td>
<td>• Facilitator involvement in process</td>
<td>• Revision stage (not enough time, lack of understanding)</td>
</tr>
<tr>
<td>Program Planning and Management</td>
<td>• PI leadership style</td>
<td>• Budget, compensation to staff</td>
</tr>
<tr>
<td></td>
<td>• Local-level flexibility</td>
<td>• Inconsistent involvement of project PIs in local activities</td>
</tr>
<tr>
<td>Integrating Research and Practice</td>
<td>• Utilizing workgroups for collaboration</td>
<td>• Researchers and practitioners have different assumptions</td>
</tr>
<tr>
<td></td>
<td>• Each team member had a specific role</td>
<td>• Time to collaborate and get a response</td>
</tr>
<tr>
<td></td>
<td>• Team members respected each others’ expertise</td>
<td>• Involvement of team members varied</td>
</tr>
</tbody>
</table>
Team Members and Staffing

- Extension practitioners had access to program staff through partnerships
- Diverse representation in team members
- Half-time employees who are qualified are hard to find
- Staff were hired who may not have been most qualified

Utilizing Workgroups

- Diverse perspectives incorporated into each group
- Liaison with coordinating committee was helpful
- Equitable division of labor
- Lack of cohesion between groups
- Lack of cohesion in work, needed to be merged
- Lack of involvement of local teams (facilitators and staff) in workgroups early on

SEEDS Communication Process and Meetings

In the SEEDS program development process, communication and the use of meetings were seen as both successes and sources of challenge. Perceived strengths and challenges to communication are presented below.

**Strengths of the SEEDS communication process.** There were several strengths and advantages to the communication process for the SEEDS project identified through interviews with team members. Though the timeline was rushed, team members felt that it was communicated clearly to the team. Several team members felt that technology was adequately used, in that multiple methods of communication were utilized including email, telephone, and document sharing through Dropbox and GoogleDocs. Some team members noted that team notes and documents were available and transparent through the use of document sharing, but weren’t sure how many team members took advantage of these resources.

Most team members, with the exception of the program facilitators, felt that having a central contact person (Integrated Project Coordinator) to go to for questions, information, and program updates was critical to the group functioning. Meetings of both
the large group and individual workgroups were another critical aspect of group communication. Most team members felt that regular in-person meetings, while infrequent, were critical for building relationships with team members, learning about each other’s roles and background and accomplishing project tasks. Many team members reported that these meetings were efficiently run, well organized, and productive in working through disagreements and project planning. It was also noted by some that the setup of the room, in a large circle, and the environment, helped to facilitate open conversation and dialogue. Local teams felt that their regular in-person meetings were highly effective for accomplishing project tasks, and assigning weekly roles and responsibilities. Similarly, members of the Leadership and Coordinating Committee felt that having regularly scheduled meetings on a bi-weekly basis allowed them to plan around these meetings and be available regularly to discuss tasks and issues related to the SEEDS project.

**Challenges of the SEEDS communication process.** Team members identified several challenges related to communication. On several occasions personalities of other team members were seen as challenging, making collaboration difficult at times. Differences in language and vocabulary across disciplines also made it challenging to collaborate and to come to a shared meaning of terms. It was perceived that many disagreements that arose were ultimately a result of differences in language. Another challenge was the group’s ability to effectively and productively communicate and work through frustration. There were also instances of disagreement during group meetings that resonated with team members and did not reach resolution.
Several challenges had to do with how connected team members felt to the project based on their individual roles in the project. Some team members felt that updates and communication were not frequent enough. If they were not involved in a workgroup at different periods of time, it resulted in “peaks and valleys” in communication and work. Additionally, local program staff and facilitators who were not involved in curriculum development or revisions sometimes felt that their feedback was not heard if it was not incorporated into the curriculum, in spite of efforts to communicate what changes were made and why. They felt that one or two people had the final say in making decisions, which could be due to their limited involvement in the revision process. Overall, some program staff felt frustrated only reporting to their site PI and the Integrated Project Coordinator with their feedback about the program. They didn’t feel that the whole group understood their feedback or had input on the changes that were made as a result of their feedback. One staff member expressed concern that her feedback didn’t “get through” to project leadership. She felt that it was not presented for consideration, implying that upon communicating feedback to the Integrated Project Coordinator, the coordinator (myself) selectively filtered information before communicating it with project leadership.

Team members also identified several challenges related to meetings. The first challenge was in the difficulty of having team members located in four different states and time zones. Locations of team members resulted in difficulty scheduling meetings and finding times that would work for everyone involved. It also made in-person meetings nearly impossible on a regular basis, and expensive for travel to meetings when they did occur. In spite of these challenges, most team members felt strongly that the group could not have enough in-person meetings, and that these were a valuable use of
resources. Another limitation of in-person meetings was that there is a limited amount of work that could be accomplished in the 1-3 day time frame of meetings. Phone meetings also proved to be challenging with more than a few people, as non-verbal cues were difficult to pick up on over the phone. It was also difficult to schedule meetings with some of the academic team members who were less available during the summer months; when team members were not available, there were also challenges in getting things done or making decisions without key team members.

**SEEDS Timeline**

SEEDS program development took place over the course of five years, as discussed in the previous chapter. Many challenges were reported in regard to the timeline, while no strengths were reported. This is most likely due to interviews taking place during the program development process. Reported challenges are presented below.

**Challenges to the SEEDS program planning timeline.** The first challenge was that since no member of the team had developed a program of this scale it was difficult to predict how long each stage would take to complete. Integrating research and practice also posed challenges related to the timeline in that collaboration takes time. Because integration and collaboration were of key importance to this project some pieces were rushed and difficult to work through because of the number of people involved in each task.

One challenge identified by team members was that the needs assessment stage (i.e., the focus groups), and the video coding, took a very long time. Initially it was planned that this stage would take approximately one year, but it was not completed until the end of year two. Additionally, the analysis of each of these components continued
beyond the life of the grant, which meant that limited information from these components could be used in determining program content and curriculum design.

The length of time that the first stage of the process took posed a significant delay in the remaining stages of developing the program. It took approximately one year for the group to establish goals and objectives due to the challenges of coming together and reaching consensus about what they should be. The remainder of year three was spent developing the lesson plans and piloting the program. Given the restriction in the timeline of utilizing years four and five for implementation, little time was left to revise the program and thoroughly pilot the materials and curricula. The limited timeline regarding the revision and piloting process was another prevalent theme when discussing challenges with team members.

The pilot ended in December of 2013 and at the start of 2014 all feedback was compiled from the pilot and was then presented at a meeting in February of 2014. The program was set to begin in March and was ultimately pushed back to begin in late April of 2014. Given the process of revision, this timeline was very challenging and rushed. In addition to the revision process, it was then necessary to revise the Spanish version of the curriculum, which took several weeks. The intensity of the timeline at this stage of the process left several staff members feeling like there was not enough time to complete all of the revisions that they would have liked to, or to re-pilot some of the changed activities.

**Overall Process Model**

In regard to the overall process model, several staff members felt that the process was ultimately effective and efficient, although challenging, but in many ways could have
been improved. Strengths and challenges to developing the SEEDS program are reviewed below.

**Strengths to the SEEDS program development process.** Several team members also thought that the process of developing SEEDS was well organized and reflected a truly integrated collaboration between researchers and extension faculty. It was thought that the SEEDS program development process was ultimately successful—able to meet its goals, developing a curriculum with activities that they felt resonated with parents, children and program staff and had community buy-in. There were several specific aspects of the program development process that team members felt worked well. Team members felt that it was particularly useful that the program was modeled after another already successful program that many team members were familiar with—the SFP. Team members also felt that establishing topics for each lesson based on the research related to the targeted outcomes provided a helpful foundation for further program development. This foundation also helped workgroups develop specific objectives based on research and activities linked to those objectives that were based upon practitioners’ experience. As identified through my observations and interviews with team members, little program development work took place prior to the establishment of these objectives by the large group (and ultimately the project leadership) making this a crucial step in the development process.

Additionally, team members viewed the revision process as successful. The revision process started with brainstorming solutions to the issues raised by facilitators during the pilot implementation. In my role monitoring implementation and communicating with facilitators, I observed that those who were present for the meeting
were more satisfied with the changes made to the curriculum, and had a better understanding of why changes were made than facilitators who were not present. However, interviews with team members revealed that most team members felt that the revision process resolved many of the issues that were experienced during the pilot (e.g. timing, literacy levels of parents, and cultural relevance of activities). It was also thought by team members that large group meetings held at several stages in the process were very productive and effective for making decisions and accomplishing tasks (e.g. determining learning objectives, planning video content and reviewing and troubleshooting pilot feedback).

**Challenges to the SEEDS process.** Team members also identified several challenges to the process. One challenge identified was that roles, responsibilities, communication structure and the development process itself were developed as the team went through the project. The challenge of not having these processes preplanned was thought by team members to have resulted in further challenges such as knowing who to speak with for specific kinds of questions and confusion about other team members’ and their own roles on the project. The lack of clarity or regularity of communication about what was happening with the process left many team members feeling disconnected from the process. Through my role I observed that there were many gaps in communication between meetings and workgroup timelines for a majority of team members except for the leadership and coordinating committee.

Team members also felt that the focus groups, conducted for the community needs assessment stage, became disconnected from the actual development of the programs. They felt that the topics of focus and the questions became narrow in focus,
and were unable to be directly incorporated into the program curriculum. Specifically, they thought that the opportunity to learn about the interest of participants in the program, and information such as when and where participants might be willing to participate was lost due to the narrow focus of the focus groups. One team member shared that it would have been more useful to target focus group resources on additional pilot testing of the curriculum and on getting more community involvement during that stage.

Team members also identified several challenges during the revision stage of the project. Due to the constraints of the timeline, many team members felt that there was not enough time to complete revisions, to allow for adequate integration of group feedback, and to collect feedback from community participants. Specifically, local teams felt that their feedback was not heard or incorporated into the revision. This comment, however, contrasted with my own observation that each comment was considered and discussed by Integrated Project Management, and was presented to the large group for troubleshooting, though not all suggestions were accepted. I observed that some facilitators, who were not present, had less understanding of the revision process and felt that their feedback was not incorporated. Based upon the facilitator interview comments and my observations, the process by which feedback was reviewed and incorporated was not communicated effectively to program staff resulting in some team member frustration.

Throughout program implementation it was felt by facilitators that their comments were not incorporated in a timely manner, and that revisions should have been made more frequently throughout the implementation of the project. Project leadership reported that there was a lack of understanding at the local level with facilitators about the kind of changes that could be made to the curriculum during implementation. Some
of the suggested changes could not be made due to the scope and purpose of the project in testing for program efficacy over a two-year period. My observations revealed that substantial changes were not made to the program after the pilot. The only changes made were those that aimed to clarify the instruction manual, improve the ease of implementation and address cultural appropriateness through activity delivery, rather than content. For example, icebreaker activities, meant to illicit discussion at the start of the program, were adapted to be made less personal, as it was felt that the parents were not comfortable sharing so much about themselves so early in the program.

**Project Planning and Management**

In the area of project planning and management themes emerged reflecting both strengths and challenges. Strengths of project planning and management, reported by team members, included the leadership style of the PIs. Local teams communicated that they valued the flexibility and control over the logistics and other decisions at the local level, which was allotted to them by project leadership during implementation. Many team members also felt that their contributions were valued and respected by project leadership.

One challenge related to the program budget. Multiple team members commented that they were not compensated in a way that was equitable for the time that they had contributed. Documents and my observation revealed that several team members were funded as consultants and compensated a certain predetermined amount, unchanged during the course of the project. I observed that the approach to the project, and the roles of team members, changed over time and team members had roles that varied greatly in their level of involvement. Some team members felt that they ended up contributing more
time and effort than they were compensated for causing some feelings, which led to frustration. Team members also expressed frustration when they compared the work that they had done and their compensation, with other team members who were not contributing in an equitable way to the process.

There were also some challenges regarding project leadership. Some team members felt that project PIs needed to be involved more at the ground level in the development and the implementation. Based upon reported roles of project leadership, PIs had little direct contact with local teams during implementation. Local teams appreciated when PIs were involved in the process, and met with them about their concerns. They felt that the PIs should be more involved and aware of what was happening at the local level. It was also thought that project leadership was not always as involved as other team members when they felt their experience wasn’t relevant. When tasks or decisions were delegated to other team members it was felt by many that the leadership was not invested in the process. Some team members felt that project leadership was behind the curve in anticipating what the next steps in the process would be, and there was not enough planning for later stages earlier in the process, or in submitting the grant proposal. Based upon review of documents, there was little planning of the program development process in the grant proposal, and interviews with project leadership revealed that the process developed as time went on.

**Integrating Research and Practice**

Interviews with team members also provided information about how the project integrated research and extension practice, one of the guiding principles for developing SEEDS. One major theme emerged in that team members thought that the content of the
program and other decisions were ultimately informed by research. Specifically, interviews with team members revealed that decisions about how to develop and carry out activities were informed by what is known to be best-practice, or based upon the experiences of extension practitioners. Additionally, program content was determined by research. My own observations and interviews revealed that when there was a question as to the content of the program, information from the literature was used to make the decision.

Examples of integration can be seen in the parent session videos, the content of which were derived solely from research and were produced in a way that was fun, entertaining and approachable. The remainder of the parent sessions applied best practice in adult-experiential education by providing experiential activities for parents to apply the information learned in a theoretical way through activities, and at home through assigned homework and goal setting.

**Extension and integration.** Another theme that emerged when discussing integration with team members was the role that extension faculty played in integration. Several team members described the role of extension educators as being the “translators” in bringing research to practice. The role of extension educators was described as “grounding” the ideas of researchers in the practicality of the real-world, and the relevance of the content and messages to the families in their respective communities. Extension educators also identified several logistic considerations for implementing programs that had not previously been planned for. This included the need for multiple child educators, as is best-practice for young children, and to utilize a convenient,
location, time and day of the program, providing childcare for non-participating children and a family meal each week all supporting attendance.

One team member described the integration of researchers and extension as being:

“an ideal model. It allowed researchers to provide input on the content based on their knowledge of the field, and allowed practitioners to have input on how that would play out and how the ideas could be carried out through activities.”

**Supporting integration.** Team members identified several aspects of the SEEDS project as supporting the integration of research and practice. One of the supports was the structure of the team in utilizing workgroups to incorporate multiple perspectives. Team members felt that this approach was truly collaborative and involved the integration of multiple disciplines (i.e. nutrition, parenting, early childhood education, parental feeding), research, extension, and experts in the practice of adult and early childhood education in each component of the project.

Another support to integration was that each staff member had a specific role that contributed to the project as a whole, and was not heavily involved in pieces where he or she had less expertise. Team members thought that the team as a whole respected the expertise of others, were open to ideas, and were truly invested in collaboration and integration. There were few instances of ego, or territorial disagreements, and when they did occur it was discussed as a group and an agreement or executive decision was made.

**Challenges to integration.** One of the challenges identified by team members was that researchers and practitioners have fundamentally different assumptions and priorities due to the nature of their positions being fundamentally different. While outreach is thought to be the fundamental priority of extension faculty, there is also a
pressure to achieve tenure. In addition to criteria related to community involvement and outreach (program planning, extension program delivery, team building and collaboration (Llewellyn, 2013)), criteria for tenure include program outcomes and assessment, acquisition of funding (Llewellyn, 2013), as well as scholarship in the form of extension and stakeholder-oriented publications (Culp, 2009; Llewellyn, 2013). Research faculty priorities also vary and include teaching, mentoring graduate students, conducting research, and producing knowledge and contributing to the field by publishing. The pressure to produce in each of these areas is also stronger for research faculty who are trying to earn tenure.

Further discussion with project PIs revealed examples of conflicting assumptions between researchers and extension faculty (during the development of SEEDS), which were most prominent during times of disagreement. One difference in assumptions that arose during the program development process was disagreement about modifications that could be made to the program during implementation. Research faculty involved in the project stressed fidelity and expressed that facilitators were not to change or drop activities while extension faculty involved with implementation sometimes modified activities because it eased implementation, and sometimes left off activities due to time restrictions. Another difference that arose involved the required qualifications to participate in SEEDS. Research faculty involved with the project determined specific qualifications for participants to include Latina or African-American mothers and their preschool aged children. Extension faculty faced challenges in responding to participants’ requests to have fathers or multiple children participate in the program, both determined to be unallowable in order to maintain the research design. These differences
were not necessarily challenges themselves, but they led to reoccurring feelings of frustration between program staff and leadership. These differences also had the potential to impact the quality of the programming being delivered.

There were many other reported challenges related to differences between researchers and practitioners. It was noted by several team members that in some of their interactions with researchers, when information was needed to inform program development tasks, the information took a long time to receive, which was frustrating given the tight timeline. While this challenge was identified in the context of working with researchers, this experience only directly related to two of the nine researchers involved with the project. Another challenge regarding integration, and collaboration of team members, was that the level of involvement of team members varied. Differences in the level of involvement in various tasks within the large group, as well as in individual workgroups, contributed to feelings of resentment, and affected some team members’ desire to continue to contribute to the project. This particular challenge has implications that can be seen in communication, and recommendations for communication; it also applies to project management and staffing which suggests that in the future this concern and challenge should be addressed at multiple levels.

Integration for the purpose of cultural relevancy. Another goal of integrating research and practice for SEEDS was to develop a culturally relevant program. Research was integrated that related specifically to what is known about the target populations, and the aspects of parental feeding practices present in low-income, African-American and Latina mothers. Community needs assessment research was done during the early stages of program development to learn more about the target populations. This information was
directly integrated into the program content. Practitioners who were experienced in serving both target populations were also involved in the development of the program, representing the needs and interests of the target population in the process. It was thought by many team members that while steps were taken to integrate the target population into the development of the program, that these steps were insufficient. Many thought that the team did not involve enough minority representation or community members of the target population in the planning process.

**Utilizing Workgroups**

One of the major aspects of the program development process for the SEEDS program related to the organizational structure and the use of workgroups to accomplish program tasks. In order to delegate program tasks, workgroups were established or appointed to accomplish tasks. These groups contained both researchers and practitioners, and were strategically staffed by project leadership to incorporate multiple perspectives. Overall team members thought that the process of utilizing workgroups was effective in supporting a truly collaborative model, and the integration of multiple perspectives. However, the effectiveness of utilizing workgroups varied from group to group. Several specific examples of what worked well in utilizing workgroups as well as some of the challenges to utilizing workgroups are presented below.

**Strengths of utilizing workgroups.** Several specific examples of the success of workgroups during the SEEDS process emerged from discussions with team members. Most team members believed that utilizing workgroups, and assigning researchers and practitioners to each group, was done in a way that yielded diverse perspectives in each group. It was also thought by most team members that having smaller workgroups and a
liaison within that group who was a member of the coordinating committee provided a useful flow of information in both directions. Specifically related to the curriculum, some team members thought that utilizing workgroups to develop the curriculum, especially breaking down the parent sessions lesson by lesson, was an effective way of integrating multiple perspectives. Team members also thought that because most team members were assigned to a specific session (all but two members) it was a more equitable division of labor than some of the other tasks accomplished by other workgroups.

A workgroup that was seen to be most effective was the video production group. Before beginning production and script writing, the parent session curriculum went through many stages of planning and review to determine what should be included in the videos. Having this information available before production made for a smoother process for the video production workgroup. It was also very helpful, from the producer’s point of view, to have a liaison from the coordinating committee facilitating the gathering of additional information as needed, and available to make on-set decisions when videos were being shot. The process that was utilized, and the timing of having the video producer involved from the early stages of curriculum, was very helpful from the perspectives of project leadership and the video producer. It was thought that this approach, and having a clear understanding of what was wanted for videos, and open ongoing communication between the video producer and the team members, saved time and money in post-production.

**Challenges to utilizing workgroups.** Challenges to utilizing workgroups also emerged in discussions with team members. One theme that emerged was that utilizing workgroups contributed to a lack of cohesion between the team members. With large
group meetings and periodic updates as to what was happening, there were long lags between work on the project, and many moving parts. It was difficult to bring the pieces together in a cohesive way; unless team members were involved in the coordinating committee, they were not clear as to what was happening in the overall project. This challenge was also seen at the local level. Due to the division of responsibilities, and the roles that team members played, most local team members were not involved in the early stages of program development and did not fully understand the purpose of the project, or the restrictions given the research-based goals. Due to the time restrictions, there was also limited time spent informing and training local team staff about the project, though the research-base and background were presented over a two-day training prior to the pilot.

There were also several general challenges regarding the use of workgroups. One challenge was that it was widely viewed by team members that some workgroups were more effective than others. It was thought by project management that there were mistakes made by assigning some team members to workgroups that ended up causing problems –some groups became stalled because of conflict and different personalities and motivations. There were also varying levels of involvement of team members, which proved to be challenging in a tight timeline if members did not complete their assigned tasks in time or were unavailable.

Specifically related to the parent session workgroups, there were several challenges in assigning different sessions to an individual group. Because sessions were developed independently of one another, there was a lack of consistency in formatting, content, length and overall tone of the sessions. After seeing initial drafts, it was determined that one team member would create a standard template and have workgroups
put their lesson plans into the same template. This helped to build consistency across lessons. Another challenge remained in that ultimately it was left to Integrated Project Management to combine all lesson plans and ensure consistency.

**Efficacy Trial and Implementation of the SEEDS Program**

Several themes that emerged when discussing the program development process related to implementing the program (during the efficacy trial phase). One potential reason for the prevalence and intensity of comments related to the implementation stage is that the interviews were conducted during the development phase. Because it was the stage that team members were working on, it is logical that issues related to the stage would be on team members’ minds. It is also noteworthy that most of the comments related to implementation came from program facilitators, with the exception of the challenges related to local staffing which were reported by other team members and project management who were involved in program implementation.

**Program recruitment.** Specifically related to recruitment, some facilitators faced challenges finding community partners who directly interacted with families to partner with and support recruitment. Many team members were new to their positions, and were charged with trying to build relationships from the ground up. Some sites were able to partner with local Head Start centers and schools that reached children of the target age; however, without a strong partnership and staff support at the center or direct access to parents before or after school, it was difficult to build relationships within the community that would facilitate parent participation. Facilitators also faced a challenge in having to balance the timeline, and the need to start programs, with the need to start with a target number of participants.
Program delivery. In regard to program delivery, there were also challenges identified. It was challenging to implement a program targeting preschool-age children in community settings. One example was the challenge in delivering the curriculum in environments not set up for young children such as community or university settings versus early childhood classrooms, and balancing the number of staff with the needs of children. Specifically, restrooms were not easily accessible to children and the physical set up required a facilitator to take children to and from the restroom away from the session. Some environments also required restriction of child activity by the facilitators due to potentially dangerous items, such as kitchen appliances and utensils present during delivery.

The most challenging aspect of program delivery, as reported by program facilitators and project managing team members, was the need for continued training and building an understanding of the requirements for program fidelity. It was apparent during the efficacy trial-research implementation stage of SEEDS that some facilitators were uncomfortable with the concept of fidelity, and desired training that would help them feel confident in their ability to deliver the program content into their own words while maintaining fidelity.

There were also challenges in the process of monitoring implementation, and communication with the SEEDS program development team. Some facilitators would have preferred to interact directly with the project PIs regarding program implementation questions and concerns instead of with the Integrated Project Coordinator. It was also apparent that some facilitators felt that their feedback after the program pilot and throughout implementation was not ‘getting through’ the Integrated Project Coordinator
to the PIs and coordinating committee although each item brought up for each site was brought to the attention and discussed with PIs. One local team thought that their feedback on the program pilot and research implementation was not integrated into the program.

**Training.** Themes also emerged in conversations with team members regarding facilitator training. One theme was that there had not been adequate time to spend on training prior to the pilot. The first facilitator training was a two-day training that was held in-person with facilitators prior to the start of the program pilot. At this time, issues with the facilitator’s manual also emerged, leading to a revision before the pilot just a few weeks prior to the start of the piloting process. Several facilitators reported this training as being helpful but confusing in that there were more questions posed than answers at that point in the process. Facilitators had brought several concerns to light that had not previously been planned for.

Another challenge came with turnover of local team staff. As there were no additional trainings scheduled after the program pilot, initially it was challenging for local staff to provide ongoing training for their teams. This posed another challenge in that there was concern of inconsistencies across sites in how team members were trained and programs were implemented. These concerns and challenges helped project management to identify the need for continued centralized training throughout the implementation process.

**Families.** While it was thought by program facilitators that the program was effective in that families related to the program and were interested in its content, there were also challenges reported that had to do directly with family involvement in the
program. One challenge for some facilitators was that the target audience of the program was mothers, and these facilitators had concerns about the exclusion of fathers from the program for research design purposes. In designing the study, it was thought that having only some fathers participate could impact the learning environment for the mothers, and that if some fathers were able to participate there wouldn’t be enough participation to examine the impact on fathers specifically. While the exclusion of fathers may have supported some mothers in their learning, it also may have created problems as some mothers chose not to participate or dropped out of the program because their partner could not attend. Others felt that their partners needed to learn this information and that it would help them to make changes in their household if their partners could also participate.

Additionally, there were challenges in the mothers’ reactions to the curriculum content. While it seemed that mothers liked the content of the program, they had additional questions and desires to learn that were not addressed. Specifically, mothers had many questions related to nutrition which facilitators were not fully equipped to answer because nutrition was not part of the program content, and facilitators were not nutrition experts. To respond to this challenge, additional program materials that specifically targeted nutrition-related questions were gathered from the myplate.gov website, from USDA, and distributed to mothers in addition to the program content.

Local team staffing. Team members reported that the staffing of local teams, for the purpose of the efficacy trial, was one of the most challenging aspects of the program development process. The original intent in the project was to hire half-time employees to implement and facilitate the program over the course of two years. Given the irregularity
of the implementation, gaps between implementation times and inconsistent hours for staff, the decision was made to hire staff hourly instead of half-time, with the exception of existing staff whose time would be bought out to coordinate the program on a part-time basis. Several challenges arose in hiring part-time staff after making this decision.

Due to the exclusive criteria for participating in SEEDS (low-income, African-American and Latina mothers of three to five year old children) the intent was to recruit program delivery staff that had existing relationships within the target communities. The program content was also developed under the assumption that staff would have prior experience in delivering child or parent education curriculum, and a bachelor’s degree in a related area. It was assumed that staff would have a working knowledge of best practices in early childhood education and development, as well as in adult experiential education. It was also very optimistic to expect that the most qualified, well-positioned individuals would be available for part-time work and would stay committed to the project through its duration. As a result, staff hired for the project had varying backgrounds and levels of experiences, which contributed to challenges in program implementation.

Another challenge that occurred as a result of the staffing was the fact that most facilitators were hired after the program curriculum had been developed. Lack of involvement in the development process resulted in facilitators not having the understanding of the overall goals of the project, the theoretical foundation of the program or an understanding of the research requirements for the project. Some facilitators reported that they felt that their proposed changes were not always heard, considered or integrated into the program. Based upon my observations of the
communication and documentation of feedback, this was not the case. Based upon this
disagreement, the project leadership and I recommend that more time should be spent
discussing with the team members the reasons for accepting some recommendations and
not others.

**Lessons Learned in the Process of Developing SEEDS**

Throughout the process of developing SEEDS there were several lessons learned
and expressed by team members. Team members reported learning more about the
differences between research and extension positions—more specifically about how
things work at WSU Extension. Extension practitioners reported learning more about the
importance of a research protocol and the rigor of methodology for testing a program’s
efficacy. Both groups reported having a greater appreciation for the role that each has,
and the perspective that researchers and extension practitioners bring.

Many team members reported that they had a greater appreciation for the
importance of integration, and truly collaborating to incorporate both perspectives. They
also learned about the importance of organization, communication, and the challenge and
complexity of attempting program development through an integrated approach.

**Recommendations for Future Program Development**

Finally, team members were asked what they recommend for other projects
aiming to develop programs, or how they would approach a similar project in the future.
Several themes emerged in team members’ recommendations for future program
development including recommendations for: communication, project management and
leadership, project timeline, cultural relevance and community involvement, and
integration of research and practice.
Communication. Team members made several recommendations regarding communication between team members. It was recommended that roles and responsibilities be clearly defined and communicated to team members ahead of time so that expectations in regard to participation in the process of program planning are clear. It was also recommended that project leadership spend time at the onset of a project to get to know each team members’ strengths, availability, level of desired involvement and preferences for communication. Regular communication and updates to all team members through available technology such as email and social media were recommended. It was also recommended that more time be spent on team building throughout the duration of the project. Another recommendation was to find ways to facilitate regular communication between local team sites at different locations. It was thought that sites could benefit from building relationships with team members across sites, and share in learning from each other’s experiences regarding issues related to implementation.

Project management and leadership. Team members made several recommendations in the area of project management and leadership. One recommendation was to involve practitioners and facilitators in establishing a project budget so that it accurately reflects the cost of implementation. It was recommended that project leadership actively engage in the process of program development learning about areas that they are unfamiliar with and “getting their hands dirty”. Additionally, it was recommended that project leadership spend time acknowledging and communicating their appreciation of the efforts made by team members, and that policies be established
at the onset of a project about the analysis and interpretation of data and expectations for authorship.

**Project timeline.** Regarding the project timeline, it was recommended that project planning tasks begin immediately upon starting a project, and that an accurate timeline be developed at the onset, allowing for some flexibility in the areas expected or shown to be most challenging. Specifically, time spent on the revision process and ongoing training of facilitators is needed.

**Cultural relevance and community involvement.** It was recommended that community members, and members of the target audience, be directly involved in the program development process from the onset, and that community partners, or champions be identified who could participate in program development and assist in implementation. It was also recommended that for an integrated research and extension project investigators be brought on who are members of the target population and actively involved in relationships with community members. Support and integration of community champions, researchers or community partners, would help to support implementation, and would also help in developing a more culturally relevant program for the target population. Additionally, to aid with implementation, it was recommended that local teams contact families through focus groups or interviews asking about their interest in the program, as well as logistic issues such as locations and times of day that are convenient for them to participate.

**Integration of research and practice.** Team members also recommended the integration of research and practice to other groups developing programs. One team member suggested that programs shouldn’t be developed effectively from the bottom up,
or the top-down with success. She stated that integration of both research and practice from the start of program development is necessary to increase chances for success. Team members also recommended that workgroups with representatives from multiple perspectives be utilized to accomplish tasks effectively and efficiently. It was also recommended that only single workgroups be established to accomplish a specific task.

For curriculum development, some team members recommended that the same group develop each lesson, while incorporating multiple perspectives based on the session topic. This would allow for consistency across lessons and threading topics and information across sessions.

**Program implementation.** Recommendations related to implementation also include those related to staffing local teams. One recommendation would be to embed the implementation of the program into an existing infrastructure, such as the university extension, Head Start or other community or childcare systems emphasizing parent education. Buying-out the time of existing staff who are well positioned and qualified to implement the program could potentially minimize the challenges experienced in implementing the program; it would also ensure that facilitators were experienced in adult-experiential learning and early childhood education. Other recommendations related to program implementation are for developers to identify areas important for program fidelity, as well as areas that are flexible and could be adapted during the program development process.

**Chapter Summary**

In the current chapter I provided a detailed review of the lessons learned in developing SEEDS including both strengths and challenges to different aspects of the
process, addressing the third goal of the study. Information presented in this chapter was
derived from each of the study sources including documents, interviews, and
observations, while most information came from interviews with team members as it
represented their perceptions of strengths and weaknesses to the process of developing
SEEDS. Lessons learned from developing SEEDS were then integrated into the proposed
model, introduced in the following chapter.
CHAPTER SEVEN

RESULTS: GOAL 4 PROPOSED MODEL OF PROGRAM DEVELOPMENT

In the current chapter I present an integrated model of program development to address goal four of the current study. The proposed model contains information from relevant literatures (implementation science, program planning, and program evaluation), as well as lessons learned from developing SEEDS. In the current chapter I describe key points of the model and discuss guiding principles for utilizing this model.

Proposed Integrated Model for Program Development

The proposed model (Figure 11) begins with the stage of project planning and the submission of a proposal. While this step is not necessary for all groups developing programs, grant opportunities often require the development or selection of a program or intervention. The model then moves through the stages of: community needs assessment, establishing program theory and rationale, developing the curriculum, piloting the program, revising the curriculum, efficacy trial-research implementations, and finally dissemination of the program. Each stage, with the exception of program planning and dissemination, is made up of several sub-steps that should be completed as a cycle, repeating the cycle as necessary before moving to the next stage. Stages of the model are linked by double-sided arrows that signify the iterative nature of the model suggesting repetition of cycles and moving back and forth between steps as necessary.

Project planning and proposal. Program development often begins with a grant proposal and initial development of a project plan, as was the case for the SEEDS project. During the initial stage of project planning it is necessary to conduct an initial needs assessment identifying gaps in existing services, or in the literature, that the proposed
project aims to fill. It is then necessary to establish a project team by finding partners who are interested in collaborating on the project. Additional team members will most likely be added later on, but establishing partnerships early on can help to build a stronger proposal.

The next step during this stage is to conceptualize the project, coming up with ideas and building a program rationale (logic model or program theory). Many funding proposals request this documentation and preparing a rationale (setting measureable outcomes, linking proposed activities or strategies to outcomes based on the literature) can aid in the program development process. It is also necessary to identify a target population who has demonstrated need and interest in the program, and to establish partnerships with organizations willing to participate in the planning process, and in testing and implementing the program. Each of these steps is re-addressed in future stages of program development, but are necessary for the preparation for and submission of a grant proposal.

**Community needs assessment.** The community needs assessment process should begin by reviewing the literature related to the targeted outcomes and programs targeting similar outcomes, as well as by involving content experts. Information collected for the purposes of the current model could involve a baseline assessment and determining the prevalence of the targeted outcomes in the target population, but should utilize multiple methods and data sources. Specifically, collecting information directly from participants to get a greater understanding of the participants’ desires and needs, as well as the perceived benefit of potential programming is necessary in addition to collecting community-level data related to outcomes and behavior. Perceived need for the program
is one aspect that is thought by researchers to impact implementation quality (Durlak & DuPre, 2008) and adoption (Rogers, 2002). Conducting a community needs assessment is a crucial step from both the perspectives of program planning and development, implementation and evaluation.

It is also necessary, during this stage, to determine how the potential program will be implemented. Needs of implementers, organizations, and participants for implementation are also important for program developers to address. For example, developers should ask: who will be the implementers, what are their assumed backgrounds, are there logistic concerns for implementation that should be considered in developing the program? Answers to each of these questions provide important direction that should be incorporated into a curriculum. Chen (2005) suggests that this information is also necessary for building an action model, or a model for how the program will be delivered. While this model does not need to be established and finalized this early in the development process, it is important to include this in the needs assessment stage so that findings can be incorporated into the development of the program.

**Establish program theory and rationale.** The next stage of program development, or tasks that I propose be completed, is establishing a program theory or rationale. Establishing a program theory, rationale, or logic model (all of which serve the same purpose) should begin by selecting the targeted outcomes of the program (Chen, 2005). By selecting targeted outcomes, it becomes easier to tie the goals and objectives of activities, and curriculum components (Chen, 2005). This idea is often also supported through the grant proposal process, which generally requires targeted outcomes, and then proposing a plan to achieve them. Once developed, program theories, rationales or logic
models should be reviewed by all team members to ensure that the theory is established, outcomes are measureable and that the multiple perspectives provided through the needs assessments are well integrated. As activities are developed in the following stage they can then directly be integrated into the program theory or logic model, each of which should directly tie to a targeted outcome.

**Develop program curriculum.** The next stage involves taking information from each previous stage and developing the program curriculum. Curriculum activities should each be tied to the program theory and directly linked to the desired outcomes. There should be some type of evidence suggesting that the activities are logical to achieving desired outcomes. Activities and other aspects of the curriculum should also build upon and consider the capabilities of implementing organizations while addressing community needs and desires, information gathered during the needs assessment stage. The idea of considering and building upon the capabilities of organizations during the program development phase comes from implementation science, ensuring compatibility and organizational fit, both of which are related to implementation quality (Durlak & DuPre, 2008), and sustainability of the program. Activities should also be fun and engaging for participants so that participants are responsive to the program—another aspect of successful adoption of programs in communities (Rogers, 2002) and implementation quality (Berkel et al., 2011).

**Pilot program curriculum.** After a program curriculum is developed it should be piloted. Piloting the program curriculum allows the developers to collect feedback from participants and facilitators about the curriculum, participant engagement and the perceived effectiveness of strategies. Piloting also provides an opportunity to identify
issues that arose during implementation, providing specific direction for necessary revisions, or for training to support facilitators in responding to barriers. The piloting process should be repeated after revisions are made as many times as necessary. While it may not be necessary to re-pilot the entire curriculum, I recommend re-piloting activities or strategies that were revised. Ample time for piloting, including re-piloting activities, is based upon lessons learned from the SEEDS program development and what was recommended by facilitators to improve the program development process.

This integrated model also proposes involving multiple perspectives while carrying out this, and every other, stage. Multiple perspectives should be provided from all team members specifically in determining how to interpret and respond to feedback gathered during the pilot. The piloting stage of the integrated model is a defined place for integrating feedback from participants, facilitators and program development team members, and is a standardized way of involving each group in the program development process.

**Revise curriculum.** After collecting feedback from piloting the curriculum, the next stage is to revise the program. Revising the program should involve combining feedback from participants and facilitators, and should involve all team members, reviewing and discussing necessary changes and then revising the curriculum. If substantial changes to the curriculum or activities were made they should then be re-piloted, repeating the previous pilot stage (as discussed previously) and then coming back to revision to determine if additional revisions are necessary. This process should be repeated until no substantial changes are needed.
**Efficacy trial-research implementation.** After the curriculum is developed, piloted, and revised, the program is ready for further implementation and testing. When programs aim to build an evidence base, it is necessary to complete an efficacy trial utilizing rigorous methodologies to determine if the program does no harm and is effective in achieving its targeted outcomes (NREPP Home, 2014). Implementing a program in the target community is extremely helpful in identifying unanticipated challenges with the program curriculum, its ability to be implemented, and the need for continued training and support. By implementing the program under real-world conditions, versus research settings, information pertaining to implementation can be gathered during the development process and addressed by program developers proactively before disseminating the program.

Tasks included in this stage include monitoring the implementation, providing technical and ongoing assistance to local teams and revising the facilitator manual and curriculum providing clarification when necessary. These tasks are recommended by implementation researchers, and have been found to relate to high-quality implementation (Durlak & DuPre, 2008). After the implementation stage, it may be necessary to return to the revision stage if any issues arose that were unanticipated during initial development stages. When substantial changes are made (i.e., developing new activities, major revision of activities), the changes should then be re-piloted and reviewed before dissemination.

**Disseminate program.** Program dissemination takes place after program development is complete and initial testing of the program has shown it to be successful in achieving targeted outcomes. While this stage takes place after development there are
considerations that developers must make before the program is finalized and made available. These considerations include the development of training and evaluation materials, and plans to make materials available for those implementing the program. Finally, plans should also be made to provide ongoing technical assistance for implementation and potential adaptations. The availability of training materials and technical assistance has also been related to higher quality implementation (Durlak & Dupre, 2008). The availability of evaluation materials, and assistance in program evaluation, can also help to build an evidence base for the program, and sustain the program over time should it be successful. By preparing for dissemination during program development, developers can be proactive in providing support for high-quality implementation and sustainability of the program.
Figure 11. Integrated Model of Program Development Process

1. Project Planning and Proposal
   - Initial Needs Assessment, Identify Gap in Services of Literature
   - Build Project Team
   - Conceptualize Project
   - Identify Target Audience in Need of Program
   - Establish Community Partnerships
   - Submit Proposal for Project Funding or Agency Approval

2. Community Needs Assessment
   - Determine Capabilities of Implementing Organizations
   - Gather Relevant Literature by Involving Content Experts
   - Assess Needs Directly with Potential Participants and Facilitators
   - Review by Team Members at all Levels

3. Establish Program Theory and Rationale
   - Set Goals and Objectives; Provide Rationale for Links to Outcomes
   - Determine Desired Outcomes

4. Develop Curriculum
   - Build upon capabilities of implementing organizations
   - Address Community Needs and Desires
   - Identify Opportunities for Adaptation in Content and Delivery
   - Review by Team Members at all Levels

5. Pilot Program Curriculum
   - Implement Pilot Curriculum
   - Gather Feedback from Participants
   - Train Facilitators
   - Review by Team Members at all Levels

6. Revise Curriculum
   - Revision of Program Curriculum
   - Group Review & Discussion of Changes
   - Combine Pilot Feedback
   - Monitor Implementation
   - Provide Technical Assistance on Curriculum Content

7. Efficacy Trial Research Implementation
   - Provide Ongoing Training Related to Program Content
   - Revise Facilitator Manual for Clarity

8. Disseminate Program
   - Provide Training Materials for Program Implementation
   - Provide Ongoing Technical Assistance for Quality Implementation and Adaptation
   - Provide Evaluation Materials
   - Assist in Evaluation of Effectiveness and Efficacy Trials to Build Evidence Base
**Communication Structure**

Along with the specific program development tasks and steps, I propose a corresponding communication structure (Figure 12) utilizing the extension infrastructure. The proposed structure involves a program development team made up of several subgroups including researchers, integrated project management, extension faculty, community representatives, and practitioners. I recommend involving researchers familiar with risk and protective factors in the development of programs because of their knowledge of the literature to be incorporated into the program. Extension faculty are also recommended for involvement as they are often experienced in program development and knowledgeable about the population because of their position.

The vertical lines in the model represent the gap between research and practice. The double-sided arrow between each subgroup (researchers, extension faculty, community representatives and practitioners) represents the direct communication necessary for the groups to collaborate in developing the program. Communication is facilitated by the Integrated Project Management subgroup, which is placed between research and practice to demonstrate the facilitation of communication by project leadership. As the purpose of extension is bringing research to practice, I placed them in the gap between the two on the proposed model, lying partially in the area of practice. As with each of these boxes, the positioning varies depending on the individual persons involved; the placement of extension is based on anecdotal experiences of extension educators (SEEDS team members) being more experienced in community involvement and less heavily in research.
In the case of the SEEDS program, researchers involved in developing the program brought their knowledge of respective literatures. Extension faculty brought knowledge of their respective communities as well as perspectives of things that should be incorporated into the program curriculum. The SEEDS program also utilized integrated project management to facilitate communication and collaboration. Due to the conflict and tensions that arose through disagreements between the various groups, it was critical to group functioning to have integrated project management that were knowledgeable and supportive of research and extension and incorporated the perspectives of each in an equitable way.

In addition to these three groups, the involvement of other practitioners such as program facilitators, content experts and vendors (such as the SEEDS video producer), is also recommended in order to facilitate group decision making and the integration of multiple perspectives. Additionally, community representatives such as potential program participants, community partners and other representatives, are also strongly recommended in the development of programs. I propose that integrating these perspectives in the early stages of program development can increase the investment and buy-in of the program from its onset. Investment in the program by various stakeholders has the potential for more successful implementation in the community, as well as support integration and collection of target participant feedback and partner participation in the program pilot and efficacy trial phases.
Figure 12. Integrated Model of Program Development: Communication Structure
Guiding Principles for Applying Integrated Model

In addition to the proposed process model and communication structure, I propose several guiding principles for applying an integrated model when developing programs. These principles, presented in Figure 13, include: data-based decision making using multiple sources of data, ongoing evaluation, cultural relevance, involvement of community participants and facilitators, collaboration of researchers and practitioners, collaborative leadership, and ongoing team communication.

The first principle, data-based decision making and the use of multiple sources of data is widely considered to be best practice for decision making. Data-based decision making refer to the ongoing process of gathering and analyzing information to inform or base decisions. Utilizing multiple sources of data means that information should be gathered from multiple sources, incorporating multiple perspectives into decision-making. Sources of data includes the literature related to the problem behavior, including prevalence and related risk and protective factors. It also includes the literature on human development and behavioral theories in order to determine points and methods of intervention.

This principle is used to varying degrees by local communities. Considering multiple sources of information, including integrating the community and participant perspective, is sometimes not adhered to by those developing programs or making programmatic decisions. This principle is crucial during the program development process, and has the potential to make the program more useful for target audiences by encouraging the search for and integration of relevant research.
The principle of **ongoing evaluation** supports the previous principle of making data-based decisions over the course of program development, and throughout the life of a program. Ongoing evaluation is consistent with the idea of Developmental Evaluation (Patton, 2008; 2011), which involves an iterative cycle of gaining and integrating evaluation feedback during program development. The proposed model applies this concept with the goal of engaging in a short-term cycle of Developmental Evaluation during the program development stage, and then ongoing evaluation over the life of the program when it is disseminated. By collecting evaluation data from a variety of sources programs are more equipped to make data-based decisions over the life of the program.

The third guiding principle is **cultural relevance**, an innovative approach to developing programs, striving for programs that are appropriate, desired and relevant for the target population. One characteristic that has been found to directly relate to successful adoption is the **relative advantage** and compatibility of the program, the degree to which the participants perceive the program and its contents as being a good idea, or relevant, and consistent with their community needs (Rogers, 2002). Several tasks proposed in this integrated model (assessing needs directly with participants and facilitators, involving facilitators and participants in the program development process, piloting the program and incorporating feedback) and additional guiding principles (involvement of community participants and facilitators) also support the idea of cultural relevance of a program.

The fourth principle supports the idea of cultural relevance by **involving community participants and facilitators** in the program planning and development process. During the SEEDS program development process, facilitators’ lack of
understanding about program goals and rationale was challenging for both facilitators and project leadership. One shared that it was “difficult when new facilitators had missed previous opportunities to integrate their experience and take ownership of the curriculum.” Some facilitators also felt that only some of their ideas were incorporated, with no understanding as to why others were not, in spite of efforts to communicate the rationale of changes with team members. Additionally, team members felt that staff did not fully understand what the program was about; it took time to train staff on what the meaning of the curriculum was. I propose that involving facilitators earlier in the process would help to prevent some of these challenges.

SEEDS team members also felt that there should have been more involvement of participants on an ongoing basis throughout the program development process, though participant feedback was collected during the needs assessment and after the pilot. I suggest that applying this principle during program development could contribute to a program’s success during future stages as well.

The fifth principle is to involve researchers and extension/practitioners during each phase of the development process. Given the mission of extension of bringing research to practice, and extension faculty members’ in-depth knowledge of local communities, I propose that collaboration during program development is a promising strategy for achieving cultural relevance, and increased chances for quality implementation. It was also the opinion of many SEEDS team members that the integration of research and extension was successful—both researchers and extension faculty recommended that others utilize a similar approach. When asked what was
learned through integrating research and practice in developing SEEDS team members shared:

“It is valuable to have researchers and extension coming together.”

“As an extension practitioner, I learned to appreciate the protocol and rigor of research for our purpose.”

“My already great respect for extension increased in their competence and knowledge about translating research into practice.”

The sixth principle for applying the proposed model is to utilize integrated management and leadership to guide the process. It is important that a leadership group be established that is representative and knowledgeable of both research and extension to support the application of the proposed process and communication models. It is also important that group members embody the values of collaboration and respect for the roles of researchers and extension/practitioners in an equitable way, valuing the unique perspectives each has to offer. The leadership structure in the SEEDS program development process was widely considered to be successful: having leadership that was involved and aware of both research and practice and providing consistency across multiple sites. One team member shared that this project:

“reinforced the need for good management and coordination across sites for such a large group. Having one person coordinating everything made sure that things got done. Having someone who knew what was going on at all sites, to the same level of detail, was important.”

Another team member shared that groups:
“have to have strong leaders who are willing to listen to others and facilitate collaboration, taking multiple perspectives into account, which is rare for researcher led groups.”

I propose utilizing the same principle during program development to facilitate collaboration between research and extension, integrating both perspectives into each stage of the program. Applying this principle could serve the function of bridging the gap between research and practice during program development.

The final guiding principle for applying the proposed model is to engage in ongoing team communication. While communication amongst team members has not directly been addressed in the program development literature, the experiences of developing SEEDS, as well as other community-based approaches, suggest that group communication during program development is critical. SEEDS team members also made recommendations to establish routines and expectations for ongoing group communication and participation in the development process. This principle of communication will help support the application of the proposed collaborative model that incorporates perspectives of team members into each developmental task.

Chapter Summary

The proposed model aims to guide researchers and extension practitioners in the development of an intervention or prevention program curriculum—an area in great need of literature. The steps that I propose, as well as the structures and principles of applying the model, were derived from both relevant literatures and lessons learned from
developing SEEDS. Discussion of the proposed model in the context of existing literature is presented in the chapter that follows.

Figure 13. Guiding Principles for Applying Integrated Model
CHAPTER EIGHT

DISCUSSION

The current chapter concludes this study by providing a discussion of the study findings related to each goal, and their relation to the literature. I will also discuss the potential strengths and limitations to utilizing the proposed model. I provide recommendations of areas in need of additional research and opportunities for utilizing the proposed model in developing programs. Finally, I discuss recommendations for integrating research and practice, opportunities for collaboration between extension and researchers and the function of integration in aiming to close the gap between research and practice.

Goal 1: Describe the Guiding Principles That Contributed to the Development of SEEDS

The goal of understanding the principles that guided the development of SEEDS came from the realization that little information about how SEEDS would be developed was defined before the project started. The process evolved over time under the guidance of project leadership. One possible explanation for the lack of explicit planning of the program development process was due to the fact that none of the leadership team members for SEEDS had experience in program development. It was apparent upon data collection that there were, however, principles that guided decision making though it was not clear as to what they all were. The study results related to the first study goal identified four guiding principles that contributed to the development of SEEDS. These guiding principles included: integration and collaboration between research and practice, utilizing extension as an infrastructure, cultural relevance, and a culture of evaluation.
These findings reveal that there are more factors that influence program development than the explicit descriptions of the steps to take or the stages of the process (i.e. Bartholomew et al., 2006).

The principle of integration and collaboration between research and practice is consistent with other approaches to program development, implementation and evaluation reviewed previously in this paper. Implementation research suggests that one factor related to implementation quality is the use of collaboration and shared decision-making (Durlak & DuPre, 2008). This suggestion is consistent with the principle of integration and collaboration in that SEEDS team members made decisions for the process jointly through group meetings.

Utilizing the extension system as an infrastructure for implementation, recruitment and for integrating research and practice is similar to other projects such as the CaFaY project (Goldberg et al., 2001) and the PROSPER study (Spoth et al., 2004). Each of these studies utilized the extension system as a means for program delivery for their empirical studies of their programs. Radhakrishna and colleagues (2014) also reinforce the utility of the extension system for collaboration of researchers and practitioners in their study about the barriers to collaboration.

Cultural relevance as a guiding factor is consistent with recommendations from Castro and colleagues (2004) that programs should be developed with the overarching goal of making a program relevant and appropriate for the target population. A culture of evaluation is most similar to the Intervention Mapping model (Bartholomew et al., 2006), but is also found in the program planning resources from the University of Wisconsin-Extension (Program Development & Evaluation Home, 2010). Similar to the proposed
Considering the overarching principles guiding the program development process and decision making is not a new idea in the area of program development. Guiding principles for program development can be derived from other models, though they usually are not specifically acknowledged by authors, or recommended to others as ways to approach the program development process. In those cases that directly address the issue of program development, the models usually only contain general overarching principles and high-level tasks to be completed with few specific details (Bogenschneider, 1996; Israel et al., 2011; Minkler & Wallerstein, 2008; National Research Council and Institute of Medicine, 2009). The current study contributes both the overarching principles that guided the development of SEEDS as well as the steps that were taken throughout the process.

**Goal 2: Present a Case Study, and Initial Model of the Process of Developing SEEDS**

Reviewing grant documents, notes, interviews with team members, and my observations provided a thorough representation of the process by which SEEDS was developed. Several graphic models were presented depicting the process of program development that took place including an organizational chart, a communication process graphic, a timeline, and a visual model of the process. Case studies depicting the process of developing programs are rare. In my review of the literature I was unable to find a similar case study depicting the experience and process of developing a program. Even the most detailed model of program development, Intervention Mapping (Bartholomew et
al., 2006) fails to describe the relationships between team members, or provide information about who should be involved in the group and how they should work together. While models of this nature are rare, the SEEDS program development model aligns closely with some of those that do, and has many similarities to recommendations from other sources of literature due to the project leadership’s knowledge of existing literature and the state of their field, as well as their own experiences. Given the similarities between the SEEDS model and the proposed integrated model, in that each of the SEEDS steps is contained in the proposed model, alignment with the literature is discussed in more depth in the section discussing the results related to goal four of the current study (below).

One significant contribution of the current study, derived from the results related to goal two, is an understanding of the relationships between key stakeholders and the program development team. Results of the case study provided a foundation on which to examine the lessons learned throughout the process and an opportunity to compare the experiences of the SEEDS program with recommendations from relevant literatures. This description provides context to the other results of the study, allowing the reader to develop an understanding of the SEEDS project, helping them to interpret the recommendations made and the proposed model of program development.

Goal 3: Discuss the Lessons Learned in Developing SEEDS

Results related to study goal three provide insight into the challenges and complexity involved with developing a program in an integrated and collaborative way. I would argue that working alone, or in a small group, while it is more work for the people doing it, is easier than working with a large group and adequately integrating each
person’s perspective. Lessons learned in developing SEEDS related to communication, meetings, the timeline, the overall process, program planning and management, integrating research and practice, team members and staffing and utilizing workgroups. This information contributes detailed information around the application of an integrated model, as well as the supports and challenges to applying an integrated model of program development.

While the lessons learned in developing SEEDS were unique to the SEEDS project, some were similar to the literature on barriers and supports to implementation, reinforcing the idea that the literature from implementation science is relevant during the process of program development. One example of the similarities between the lessons learned in developing SEEDS and the literature on implementation science concerns issues that came up with the SEEDS study staff, their qualifications, understanding and support of the SEEDS program content. The implementation science literature has shown that provider characteristics are directly related to implementation quality (Durlak & DuPre, 2008). Provider characteristics include: the perceived need for innovation, perceived benefits of innovation, self-efficacy and skill proficiency. Lessons learned in the SEEDS project related to the facilitators included: having a difficult time finding qualified, part-time staff, not involving facilitators early enough in the program development process, not communicating enough to the staff about the program, and not providing enough training on an ongoing basis. These lessons learned from developing SEEDS directly align with previously mentioned provider characteristics (perceived need for innovation, perceived benefits of innovation, self-efficacy and skill proficiency). This
alignment suggests that addressing these during program development is a promising strategy.

Perhaps one of the greatest contributions of the lessons learned by developing SEEDS comes from those related to integrating research and practice. Given the recent prioritization of integrating research and practice during program development (Gorman-Smith, 2014; Gottfredson, Cook, Gardner, Gorman-Smith et al., 2015; Spoth et al., 2013), lessons learned by groups that have done this can provide helpful insight to other program developers. Specifically, lessons learned by developing SEEDS (i.e. relating to communication and meetings) provide direction for groups to consider and plan for. SEEDS team members recommended utilizing workgroups with representatives from multiple perspectives be utilized to accomplish tasks effectively and efficiently. Doing so is consistent with recommendations from CBPR to facilitate equitable, collaborative partnerships throughout each phase of the project (Israel et al., 2011).

SEEDS team members recommended that researchers and practitioners be involved in project management. Facilitators also recommended involving project leadership in the community implementations. These recommendations support the requirement that CBPR project teams be equitable in the sharing of responsibility in completing project tasks (Israel et al., 2011). While there are consistencies between these recommendations and the CBPR literature, recommendations and lessons learned involving project leadership contradict CBPR’s emphasis on the equality of all team members especially in terms of shared authority. SEEDS team members ultimately recommended establishing defined roles and responsibilities for all team members, including project leaders and management. It was also felt that having leaders who were
involved in each aspect of the project brought consistency and direction to such a large team.

While this information (recommendations for integration, communication and staffing) may be present in the literature on communication and group dynamics, it is not something typically discussed in the prevention science literature. I suggest that prevention science as a field can benefit from the integration of insight from other literatures such as how to work effectively as a group and how to collaborate effectively—particularly in the development of prevention programs.

**Goal 4: Contribute an Integrated Model of Program Development to the Prevention Science Literature**

The proposed integrated model of program development began by examining the previously discussed model for developing the SEEDS program. Once the SEEDS program development process was defined I adapted the model based upon lessons learned and experiences of the SEEDS program as well as recommendations from relevant literatures. Ultimately the two models (figures 10 and 11) are similar. They also utilize similar guiding principles. The proposed model expands on the SEEDS model through specific substeps proposed throughout the process. For example, the proposed model suggests that the capabilities of implementing organizations be considered during the needs assessment process and incorporated throughout program planning. It also proposes that the needs of the community and community desires be incorporated more intentionally through the various steps. The most notable difference between the SEEDS model and the proposed model is the iterative natures, and the possibility of repeating
stages. The SEEDS program development process did not do things such as re-pilot program content after changes were made.

The proposed model has many similarities with others in the literature, as it was based upon both the lessons learned in developing SEEDS and recommendations from the literature that could be applied during program development. The iterative nature of the proposed model is similar to what is described by Bartholomew and colleagues (2006) in Intervention Mapping, in that, when necessary, previous steps should be repeated constantly integrating feedback. One thing that is unique about the proposed model is that there are built-in time points for when data should be collected and integrated into program planning. This differs greatly from other resources.

Conducting a community needs assessment is also included in many program development models (Bartholomew et al, 2006; Kettner et al., and others previously reviewed). However, the content collected, and the extent to which the information is used varies by those conducting the needs assessment. The proposed model is unique in that I also recommend involving content experts, the target population, and implementing organizations during the needs assessment process, incorporating each of their perspectives. While the perspective that should be incorporated are in line with CBPR principles (Israel et al., 2011), the conducting of a community needs assessment and the integration of research to drive programmatic decisions contradicts CBPR principles of equality. CBPR principles state that all perspectives should be equitable, and when researchers or research is incorporates it should not overshadow the perceived needs and ideas of community members.
By making these recommendations I am guiding program developers in how to accomplish integration, and at what points to do so. Another unique aspect of this stage as proposed, is the identification of the implementing organization. While this is consistent with the implementation literature (Durlak & DuPre, 2008) in that characteristics of the implementing organization have been found to relate to implementation quality, it has not explicitly been addressed during the program development phase. I recommend basing programmatic decisions around the needs of the implementing organization, such as education level and background of facilitators, along with physical characteristics of the site in order for the program to have greater chances for success.

Establishing a program theory or rationale, or developing a program logic model, is not a new idea. It is seen in most program development models or approaches reviewed for this study. Given its critical role in the program development process, it was included in the proposed model as well. Piloting the program materials and activities is also not a new idea, this is similar to the recommendation of Bartholomew and colleagues (2006) to pretest all program materials and protocols. The current model provides a recommended time point to collect data and integrate feedback into the program. It also contributes a defined time to involve the community perspective and program participants in the development process as recommended by many researchers (Bogenschneider, 1996; Chen, 2005; Israel et al., 2011; Minkler & Wallerstein, 2011; Program Development & Evaluation Home, 2010).

Planning for dissemination during the program development stage is consistent with recommendations of the University of Wisconsin-Extension (Program Development
The University of Wisconsin-Extension recommends analyzing the situation, including community needs and assets, and priority setting, making program planning decisions based upon the situation. These principles are both focused on making decisions based upon an understanding of the implementing organization. Taking this principle a step further, planning for dissemination as proposed, involves preparing a plan for training materials, and ongoing technical assistance. These steps directly impact implementation (Durlak & DuPre, 2008), and are included in the proposed model to prepare programs for potential success.

Additional contributions to the literature include the level of detail in the proposed model, including both high-level steps and the detailed substeps proposed. More often, models of program development provide high-level tasks to be completed (Bogensneider, 1996; Israel et al., 2011; Minkler & Wallerstein, 2011; National Research Council and Institute of Medicine, 2009) neglecting the smaller details, and making them extremely challenging for groups to implement. By including a communication structure in the proposed model, information is also provided about the relationships between team members along with recommendations for roles that I believe have the potential to support integration and collaboration. Models such as PROSPER (Spoth et al., 2004) also provide recommendations for communication and provide similar recommendations about the collaboration of researchers and extension faculty and staff, as well as the role of integrated management. They differ in terms of the contents and the role in communication that is asked of each group. The fact that communication has been considered by additional research confirms the perceived importance of communication and group functioning to accomplish program development.
Finally, the proposed model utilizes the context of extension, and proposes using the extension infrastructure to facilitate program development, bringing the perspective of the community and participants through this existing infrastructure. This recommendation is consistent with other extension projects like the CaFaY project (Goldberg et al., 2001) and the PROSPER study (Spoth et al., 2004); however, instead of supporting program selection and implementation as these models have, the proposed model uses the extension infrastructure to develop a program curriculum.

Discussion of guiding principles for applying integrated model. Several principles for applying the proposed program development model were also proposed. The concept of applying overarching guiding principles is not new; in fact it is generally more common than providing specific steps that should be taken during program development. Researchers (Bogensheider, 1996; Israel et al., 2011; Minkler & Wallerstein, 2008; National Research Council and Institute of Medicine, 2009) have proposed similar guiding principles for developing programs, whereas few have proposed specific steps such as in Intervention Mapping (Bartholomew, 2006).

The first principle of data-based decision making and the use of multiple sources of data is consistent with approaches such as Developmental Evaluation (Patton, 2008; 2011) and Intervention Mapping (Bartholomew et al., 2006). The principle of ongoing evaluation was directly derived from Developmental Evaluation (Patton, 2008; 2011), and is consistent with the recommendations of other evaluation theorists (Chen, 2005; Patton, 2008, 2011; Wandersman, 2004). These theorists advocate for ongoing evaluation throughout the development process, and throughout the life of a program, challenging the historic views of evaluation taking place only at the end of the program.
Cultural relevance, is based upon the concept of the relative advantage and compatibility of the program (Rogers, 2002). The specific steps recommended in the proposed model, aiming to support cultural relevance, are also consistent recommendations from the Prevention Science literature. Bogenschneider (1996) advocated applying key principles during program development (collaborating with community stakeholders, involving the target audience in design, planning and implementation and being sensitive to community diversity) in the hopes of supporting cultural relevance.

Involving community participants and facilitators in the program planning and development process supports the idea of cultural relevance. This recommendation is consistent with implementation science literature demonstrating that shared decision making is related to quality implementation (Durak & DuPre, 2008). It is also consistent with the recommendations made by researchers with regard to program development. Bogenschneider (1996) suggests that groups involve the target audience in program design, planning and implementation helping to ensure cultural relevance. Patton (2011) also advocated for the integration of feedback from the intended users of the program and the program stakeholders throughout the process. Similarly, from the literature on Implementation Science, Sloboda and colleagues (2014), argued that participant involvement in the preplanning stages, and participants’ perceived need for the program, are directly related to implementation quality.

Involving researchers and extension/practitioners during each phase of the development process is also not a new idea. Models such as Intervention Mapping (Bartholemew et al, 2006) specifically call for researchers and practitioners to collaborate...
in the process of developing programs. They also call for the integration of research to inform programmatic decisions. What has been discussed less in the literature is the utilization of the extension system, and the collaboration between researchers and extension faculty to develop programs. One exception is the PROSPER model which utilized university researchers and extension staff, state administrators, local school personnel and community service providers to implement community programs (Spoth et al., 2004). Each group of team members served a unique function contributing to the collaborative model.

Utilizing **integrated management and leadership to guide the process** was based upon the experiences of the SEEDS project. It differs from recommendations of CBPR (Israel et al., 2011) of equitable authority and contributions. In the experiences of the SEEDS team it was ultimately necessary to have a final decision maker in order to make timely progress through steps and to maintain consistency. The principle of **engaging in ongoing team communication** is consistent with recommendations by Israel and colleagues (2011) that state that it is critical to CBPR that partnerships are collaborative in all phases of the project.

**Strengths of proposed model.** The proposed model is strong in that it is based on research from a variety of literatures including program development, implementation and evaluation. It strived to address some of the limitations of other approaches including providing more detail that could be used to apply the model in an integrated way, and by using an extension infrastructure. It also expands upon the widely used Prevention Research Cycle (IOM, 2009) model by giving further detail about the pre-intervention and efficacy trial phases. It also provides specific recommendations for planning for later
stages of the life of a program during development such as dissemination, and specific steps for integrating data and feedback from a variety of stakeholders into decision-making.

Additional strengths of this approach involve maximizing funding resources available for program development. By putting a greater level of investment, time, money and other resources upfront, I propose that this model has the potential to result in cost savings in the implementation and dissemination stages, and increases the likelihood of successful adoption. While numerous programs have been developed, some undergoing efficacy and effectiveness trials, few have then been successfully adopted, disseminated and brought to scale in existing infrastructures for delivery in communities in need (Spoth et al., 2008). Currently, researchers and practitioners have little guidance for developing programs that are successful during the implementation stage. An inconceivable amount of money (public and private funding) has been spent to support the development of programs; however, relatively few are considered evidence-based (Spoth et al., 2008). This suggests that improvements in how programs are developed are needed to maximize the return on investment of these funds, and the likelihood of program success. I propose that integrating research and practice, such as through the use of the extension system, has the potential to bridge the gap between research and practice, and improve the programs that are developed.

Limitations to proposed model. In spite of the strengths, there are also limitations to the proposed model. One limitation that proved to be a significant challenge for SEEDS, was the time required to effectively move from stage to stage. In the case of SEEDS, there was not enough time specifically for re-piloting after the revisions were
made which could have minimized some of the challenges experienced in the research implementation phase of SEEDS. The proposed model suggests that programs would be better off to take their time piloting, by revising and re-piloting components as necessary. With time comes money. Another significant limitation to this model is that it would be costly to implement. It is unknown what the cost of developing a program utilizing the proposed model would be.

Another limitation is that this model utilizes a large, diverse group of team members to develop the program. There are inherent challenges in working with people, especially larger groups of people with differences of opinion, experience and personalities. Challenges are to be expected in incorporating enough diversity of perspective and disciplines, in satisfying all team members with their roles in the process or in reaching group consensus. A leader who is skilled in facilitation is necessary to minimize these challenges. Ultimately the success of collaboration is dependent on the strength of its leader, and their leadership style and involvement in the project. Attempting to apply this model without a leader who is skilled in collaboration, communication and in team dynamics would be challenging and possibly not successful.

There are also several limitations to using the extension infrastructure as a mechanism for program development and delivery. While some research has been conducted on extension-researcher collaboration, little is known about what supports are necessary to facilitate this collaboration. Again, a leader who is familiar with each group (extension and research), as well as an institutional structure that supports and rewards such activities, would support this collaboration. Without such support, there is the potential that one group or the other will be neglected, with the other dominating the
process. Another limitation to the proposed model is that it is theoretical. While it may lead to a more effective and sustainable program based on the relevant literatures, empirical studies are needed to determine if this approach results in a more effective program.

**Limitations to the Current Study**

Although this study provides a great amount of detail as to the steps necessary and the complexity of developing a program, there are also many limitations. First, this study does not intend to be generalizable for all programs, or groups aiming to develop programs. While it could be relevant and helpful to other groups is utilizes an extension infrastructure and assumes affiliation with a land grant university. It also assumes that program developers have the desire to utilize research to inform decision-making as well as the perspective of the community, while this may not always be the case. Additionally, the study design has limitations in that much of the information was mined from existing documents, not originally intended to be a data-source. For example, there may have been information missing such as deleted emails, notes and other documents that were not retained, or were collected prior to starting the current study. Similarly, there may have been information that was not available to me as a direct observer such as meetings and conversations that I did not participate in.

**Recommendations for the Future**

An integrated approach to developing programs has been called for by many researchers in prevention science (Berkel et al., 2010; Castro et al., 2004; Spoth et al., 2013; Wandersman et al., 2008). While the proposal of an integrated model is an important step for the literature, more work is necessary. The testing and development of
additional integrated models to program development are needed. There is also more work needed on the application and use of integrated models including the cost of doing so. It is also necessary to continue to research the use of integrated models by a variety of extension, public health and other community agencies. The development of other comprehensive, integrated models developed specifically for those infrastructures to address their unique needs in a way that can readily be utilized by practitioners without direct access to researchers is also necessary.

It is incredibly important that prevention researchers continue to add to the literature specifically on program development. There is little academic research available on program development; much of the research presented in the current study comes from other areas including prevention science, program implementation, and program evaluation. In order to support the development of programs, more literature and resources are needed that are framed within the context of program development so that they can more easily be found and applied. It is also important to learn more about the areas of program development in need of more direction and support by conducting research on the program development process.

Given the experiences and feedback of the SEEDS team members, and the successful collaboration between researchers and extension faculty, it is important that future research be done on how to support and engage in successful collaborations between the two. As the mission of extension is to bring research to practice, extension practitioners are routinely asked to develop and implement programs. By encouraging collaboration between researchers and extension faculty, programs developed by either group have the potential to be more successful when implemented, and more effective in
achieving targeted outcomes. More research is needed on what prevents these two groups from working together more frequently, as well as on how to support the collaboration between the two.

**Conclusion**

Participating in the development of SEEDS from the early stages of the project uniquely positioned me to complete the current study, with access to information related to nuances of completing each stage of program development from the leadership and local levels. By reviewing the relevant prevention science literatures I gained understanding in aspects of quality programming, which if incorporated into the program development process, have the potential to support a program’s success in implementation and sustainability. The literature, in combination with the experiences of developing SEEDS, including lessons learned through the process, were used to inform the development of an integrated model of program development.

The proposed integrated model utilizes the extension system as a mechanism for developing programs, bridging the gap between research and practice by facilitating collaboration between researchers and practitioners. As integrated research and extension projects are of priority to agencies such as the USDA, it is important that resources are made available that guide groups in the development of programs in a way that maximizes their potential for success. It is my hope that by establishing a literature on program development, and making resources more accessible, that practitioners and researchers alike will make the most use of their funding opportunities, ultimately developing programs that are more easily implemented and sustained.
REFERENCES


National Research Council and Institute of Medicine, Committee on Prevention of Mental Disorders and Substance Abuse Among Children, Youth and Young Adults: Research Advances and Promising Interventions, & Board on Children, Youth, and Families, Division of Behavioral and Social Sciences and Education. (2009). *Preventing Mental, Emotional, and Behavioral Disorders Among Young People: Progress and Possibilities.* (O’Connell, Mary Ellen, Boat, Thomas, Warner, Kenneth E., Ed.). Washington, DC: National Academy Press.


Appendix A. SEEDS Development Team Member Descriptions

**Principal Investigator (PI).** The PI on this project was an Assistant Professor at the Children’s Nutrition Research Center, Department of Pediatrics, Baylor College of Medicine in Houston, Texas. The PI had expertise in the area of obesity prevention and risk factors for childhood obesity. The PI led the Leadership and Coordinating Committee for the SEEDS project, supervised the coordination of program activities including pilot testing, assessments, and the efficacy trial for the Houston programs and project team. The PI was ultimately responsible for the completion of this project in its entirety, and the fulfillment of its funding requirements.

**Principal Investigator WSU (PI-WSU).** The PI-WSU was a Developmental Psychologist in the Department of Human Development with a partial extension appointment at WSU in Pullman, Washington, and served as PI for the WSU subcontract, managing all team members and tasks in Washington. The PI-WSU had expertise in parenting and risk factors for childhood obesity including parental feeding practices. The PI-WSU served as a member of the Leadership and Coordinating Committee, and led the integration of program curricula and supervised the efforts of project consultants during the development of SEEDS. The PI-WSU also led the development of the family sessions and translated program curricula into video components in collaboration with the Video Producer.

**WSU Extension Faculty Leader.** The WSU Extension Faculty Leader was a Professor in Human Development, and an Extension Family and Community Development Specialist at WSU. She had expertise in prevention programs and university extension. She was also heavily involved in the implementation of the SFP in
Washington State. The WSU Extension Faculty Leader served as a member of the Leadership and Coordinating Committee, and led the Washington sites in the planning and conducting of focus groups that were conducted to influence program development. She also led the Washington sites in the preparation for implementation of the program for the program piloting and the efficacy trial. She was also involved in the hiring and training of program facilitators.

Co-I University of Colorado- Denver (Co-I UCD). The Co-I UCD was an Associate Professor of Community and Behavioral Health in the Department of Pediatrics at the University of Colorado Denver. The Co-I UCD had expertise in children’s nutrition and eating behaviors, as well as in parental feeding practices, and ethnic differences in obesity and self-regulation. The Co-I UCD served as a member of the Leadership and Coordinating Committee, and was involved in coordinating the completion of focus group in the Denver area that influences the development of SEEDS. They were also involved in the conceptualization of goals and objectives for SEEDS based on the literature on risk factors for childhood obesity. She was involved in the planning of assessment measures, and in training assessors for data collection.

Co-I North Carolina State University (Co-I NCSU). The Co-I NCSU was an Assistant Professor of Nutrition at North Carolina State University in the department of Food, Bioprocessing and Nutrition Sciences. The Co-I NCSU had expertise in the use of qualitative research methods, childhood obesity prevention, and community nutrition with low-income and ethnic minority populations. The Co-I NCSU served as a member of the Leadership and Coordinating Committee, and led the conceptualization, training,
conducting, and analyzing of the focus groups that were conducted to influence program development.

**Integrated Project Coordinator.** As stated previously, I served as the Integrated Project Coordinator for the SEEDS project. I was also a Doctoral Candidate in Prevention Science at WSU, and had expertise in the areas of early childhood education, parenting, and program evaluation. I served as a member of the Leadership and Coordinating Committee, and was responsible for updating the coordinating committee on the project status at various sites. I was also responsible for coordinating the program development process, planning meetings, providing group communication, hiring and training facilitators, and leading site project coordinators in conducting the program pilot and efficacy trial.

**Extension Faculty-Washington County 1.** The Extension Faculty-Washington County 1 was a county extension educator in the state of Washington. She had expertise in the SFP, and in parent programs, having developed many prevention programs. She also had expertise in working with adult learners, and in training facilitators. The Extension Faculty-Washington County 1 was heavily involved in the development of the parent, and the family curricula, and in training facilitators in the delivery of the curricula. She also served as a resource for local facilitation issues in Washington.

**Extension Faculty- Washington County 2.** The Extension Faculty- Washington County 2 was an extension educator for WSU Extension in the state of Washington. She was a member of the statewide parenting and health promotion teams, and was heavily involved in the dissemination of SFP across Washington State. She was heavily involved in the development of the parent and family curricula components of SEEDS. She was
also heavily involved in the training of program facilitators, and served as a resource to local teams implementing SEEDS.

**Extension Faculty- Early Childhood Education.** The Extension Faculty-Early Childhood Education was an experienced parent educator and associate professor in Human Development and extension Faculty at WSU in Vancouver, WA. She served as a statewide expert in parenting for WSU Extension. She was also heavily involved in the development of the program curricula, and led the development of the child and family session curricula.

**Extension Faculty-Program Evaluation.** The Extension Faculty-Program Evaluation was a psychologist and Professor of Human Development at WSU, and a statewide evaluation specialist for WSU Extension. During the development of SEEDS she served as an expert in program evaluation advising the development team in decisions relating to the design of the research study and efficacy trial, and in integrating program evaluation.

**WSU Research Faculty.** The WSU Research Faculty was an Associate Professor in the Department of Educational Leadership, Sport Studies, and Educational/Counseling Psychology at WSU. She had expertise in kinesiology, and in self-determination theory, and was involved in the review of the SEEDS curriculum, and the integration of the principles of self-determination theory.

**Video Producer.** The Video Producer was a freelance writer, director, and producer of media materials with experience in health-promotion. She had experience in interactive forms of media, and developing program materials. The video producer was responsible for coordinating, managing, and producing the program video component for
the parent session. She was also responsible for integrating feedback from the Leadership and Coordinating Committee, as well as in revising the videos based on program piloting.

**Extension Faculty-Nutrition.** The Extension Faculty-Nutrition was a dietician, and extension coordinator for WSU Extension. She served in an advisory role in other extension programs including WSU Extension’s Food Sense Program, and other diabetes prevention programs. She had also led the development of the SEEDS parent session targeting portion size, and advised the nutritional content of the program.

**WSU Child Development Specialist.** The WSU Child Development Specialist was a faculty member of WSU’s Department of Human Development. She had expertise in the areas of early childhood education, early childhood development, curriculum development, and developmentally appropriate practice. The WSU Child Development Specialist served as a consultant for the project, and was heavily involved in the development of the child curriculum for SEEDS.

**Extension Faculty-Washington County 3.** The Extension Faculty-Washington County 3 was a county extension educator for WSU Extension in rural Washington. She has expertise in health education, and other health and nutrition programs. She served as a community representative during the development of SEEDS, and coordinated the completion of focus groups in rural western Washington with Latino families.

**Project Coordinator-Washington County 4.** The Project Coordinator-Washington County 4 was an extension Faculty member with WSU Extension in central Washington State. She had expertise in parenting education, and in working with Latino and other minority families. During the program pilot and efficacy trial she was responsible for coordinating its completion in rural eastern Washington with Latino
families, and for hiring and supervising program facilitators, recruiting families to participate in the program, serving as a parent educator for the program pilot, and collecting feedback on the program curriculum and reporting to the Leadership and Coordinating Committee.

**Project Coordinator-Washington County 5.** The Project Coordinator-Washington County 5 was a research associate at WSU Extension in Washington State. She had expertise in parenting, and in working with low-income and at-risk families. During the program pilot and efficacy trial she was responsible for coordinating its completion in urban western Washington with African-American families, and for hiring and supervising program facilitators, recruiting families to participate in the program, serving as a child-educator for the program pilot, and collecting feedback on the program curriculum and reporting to the Leadership and Coordinating Committee.

**Extension Faculty-Washington County 5.** The Extension Faculty-Washington County 5 was an extension Faculty member with WSU Extension in Washington State. She had expertise in parenting education, and in working with African-American and other minority families, as well as in working with families at risk. She also had expertise in cultural competency, and was heavily involved in training professional across the state of Washington in cultural competency. She was heavily involved in the development of the parent session curricula for SEEDS. During the program pilot and efficacy trial she served as a resource to the county 5 team, and were involved with hiring and program facilitators and providing feedback on the program curriculum, and cultural relevancy and reporting to the Leadership and Coordinating Committee.
**Project Coordinator-Houston, TX.** The Project Coordinator-Houston was a research associate at Baylor College of Medicine’s Children Nutrition Research Center. She has been involved in several research projects related to children’s nutrition, and parental feeding. She was involved in the coordinating the coding of mealtime videotapes during the first year of the grant, and was also involved in conducting focus groups in Denver, CO the first year of the project. During the program pilot and efficacy trial she was responsible for coordinating its completion in Houston, TX, and for supervising program facilitators, collecting feedback on the program curriculum and reporting to the Leadership and Coordinating Committee.

**Recruitment Coordinator-Houston, TX.** The Recruitment Coordinator-Houston was a research associate at Baylor College of Medicine’s Children Nutrition Research Center. They have been involved in numerous research projects with the institution and have expertise in the community, and in participant recruitment. In the development of SEEDS the recruitment coordinator was involved in reviewing the program curriculum for cultural relevancy for the Latino community.

**Focus Group Facilitators.** The focus-group facilitators were involved in conducting focus group with members of the target populations in communities in Tacoma, WA; Houston, TX; and Denver, CO. A total of six focus group facilitators from each local community were trained in conducting focus groups, and completed focus groups prior to the development of SEEDS. Focus groups were conducted during the first year of the project, and the information collected was integrated in the development of the program curricula.
**Program facilitators.** SEEDS program teams conducting the program pilot, and the efficacy trials consist of three facilitators. Each team contains one parent facilitator, and two child facilitators. A total of 12 program facilitators were involved in the process of development for the project. Program facilitators have experience in their local communities in working with children and families. Program facilitators for the pilot program were responsible for delivering the SEEDS curriculum, and for providing feedback for to program developers on the reactions from parents to program activities.
Appendix B. SEEDS Initial Interview Coding Themes and Examples

<table>
<thead>
<tr>
<th>What worked well in the program development process?</th>
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</thead>
<tbody>
<tr>
<td>Communication</td>
</tr>
<tr>
<td>Coordinating Committee</td>
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<tr>
<td>Coordinator</td>
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<tr>
<td>Culture</td>
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<td>Curriculum</td>
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<td>Development</td>
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<td>Facilitators</td>
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<td>Implementation</td>
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<td>Integration</td>
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<td>Leadership</td>
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<td>Local Teams</td>
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<td>Meetings</td>
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<td>Multiple Perspectives</td>
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<tr>
<td>Production</td>
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<tr>
<td>Respect</td>
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<tr>
<td>Revisions</td>
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<tr>
<td>Roles</td>
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<tr>
<td>Staffing</td>
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<td>Training</td>
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<td>Video</td>
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<table>
<thead>
<tr>
<th>What were some of the challenges during the program development process?</th>
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</thead>
<tbody>
<tr>
<td>Assessments</td>
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<tr>
<td>Budget</td>
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<tr>
<td>Child Sessions</td>
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<tr>
<td>Cohesion</td>
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<tr>
<td>Collaboration</td>
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<tr>
<td>Communication</td>
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<tr>
<td>Conflicting Information</td>
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<tr>
<td>Culture</td>
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<tr>
<td>Curriculum</td>
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<tr>
<td>Development</td>
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<tr>
<td>Development/Implementation</td>
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<tr>
<td>Development/Management</td>
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<tr>
<td>Facilitators</td>
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<tr>
<td>Families</td>
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<tr>
<td>Family Session</td>
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<tr>
<td>Focus Groups</td>
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<tr>
<td>Geographic</td>
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<tr>
<td>Implementation</td>
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<tr>
<td>Integration</td>
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<tr>
<td>Involvement</td>
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<tr>
<td>Involvement/Budget</td>
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<tr>
<td>Local Teams</td>
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<tr>
<td>Meetings</td>
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<tr>
<td>Meetings/Budget</td>
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<tr>
<td>Meetings/Communication</td>
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<tr>
<td>Personalities</td>
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<tr>
<td>Recruitment</td>
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<tr>
<td>Revisions</td>
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<tr>
<td>Roles</td>
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<td>Staffing</td>
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<td>Timeline</td>
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<td>Training</td>
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<td>Translation</td>
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<tr>
<td>Video/Curriculum</td>
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<td>Videos</td>
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<tr>
<td>Workgroups</td>
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<tr>
<th>How did SEEDS integrate research and practice?</th>
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<tbody>
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<td>Adult Learning</td>
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<tr>
<td>Assessments</td>
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<td>Child Sessions</td>
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<td>Curriculum Content</td>
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<td>Curriculum</td>
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<td>Decision Making</td>
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<td>Extension</td>
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<td>Families</td>
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<td>Focus Groups</td>
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<td>Integration</td>
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<td>Local Teams</td>
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<td>Organization</td>
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<tr>
<td>Research</td>
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<td>Revisions</td>
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<td>Videos</td>
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</table>
What was the most important thing that you learned through developing SEEDS?

<table>
<thead>
<tr>
<th>Budget</th>
<th>Flexibility</th>
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<tbody>
<tr>
<td>Communication</td>
<td>Humility</td>
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<tr>
<td>Community</td>
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<tr>
<td>Complexity</td>
<td>Involvement</td>
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<tr>
<td>Confidence</td>
<td>Management</td>
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<td>Content</td>
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<td>Coordinator</td>
<td>Patience</td>
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<td>Culture</td>
<td>Pilot</td>
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<td>Decision Making</td>
<td>Rewarding</td>
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<td>Development</td>
<td>Staffing</td>
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<tr>
<td>Engagement</td>
<td>Training</td>
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<tr>
<td>Facilitators</td>
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</tbody>
</table>

What did you learn about research and practice?

<table>
<thead>
<tr>
<th>Complexity</th>
<th>Respect</th>
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<tbody>
<tr>
<td>Planning</td>
<td>Integration</td>
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<tr>
<td>Development</td>
<td>Roles</td>
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<tr>
<td>Research</td>
<td>Leadership</td>
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<tr>
<td>Extension</td>
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</tbody>
</table>

What should be done differently when developing programs?

<table>
<thead>
<tr>
<th>Initial Code</th>
<th>Examples</th>
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</thead>
<tbody>
<tr>
<td>Budget</td>
<td>A more accurate budget, reflective of what needs to be done should be developed. Example: number of facilitators needed for each session 2 child. And child-care workers. Involve extension more in planning budget, as well as potential facilitators.</td>
</tr>
<tr>
<td>Communication</td>
<td>Leaders need to communicate appreciation, acknowledging the work that the team members are putting in, and that people are going above and beyond what was expected of them. Regular updates to the large group are needed (ask at the beginning what the preference is for frequency and method of delivery). More time should be spent on team building, 5 years is a long time to work together</td>
</tr>
<tr>
<td>Community</td>
<td>Identify and establish agreements with community partners before project</td>
</tr>
<tr>
<td>Culture</td>
<td>Diversity (of team members) is needed in curriculum development.</td>
</tr>
<tr>
<td>Curriculum Development</td>
<td>Should develop a curriculum first then integrate research</td>
</tr>
<tr>
<td>Families</td>
<td>Better inform families about the intent of the program</td>
</tr>
<tr>
<td>Implementation</td>
<td>Better define fidelity and make sure that training and enforcement at the local level is the same. (Major struggle) Important to identify adaptation, or points of flexibility in curriculum implementation. EX. Lg vs. Small group for Child</td>
</tr>
<tr>
<td>Component</td>
<td>Needs</td>
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<tr>
<td>Leadership</td>
<td>Needs to actively engage in the learning about the process, the content and get their hands dirty in each step of the process even in areas that are new to them and they are not confident about.</td>
</tr>
<tr>
<td>Piloting</td>
<td>Get more feedback from participants before the pilot, utilize focus groups differently to collect feedback from what was developed not to inform development. More time is needed to make revisions</td>
</tr>
<tr>
<td>Planning</td>
<td>Need to learn more about the logistics next time Never asked participants what their interest was in our specific topic or program</td>
</tr>
<tr>
<td>Policies</td>
<td>Should be in place when starting a program including those about analysis, interpretation of data and authorship.</td>
</tr>
<tr>
<td>Publicity</td>
<td>Publicity and advertising for the program (Increase community awareness)</td>
</tr>
<tr>
<td>Recruitment</td>
<td>Recruitment should be done differently and using different strategies such as community partners and staff already embedded into the community.</td>
</tr>
<tr>
<td>Roles</td>
<td>Setting clear expectations and clarifying roles and responsibilities at the start. Set ground rules for participation and set and communication expectations Communicating at the beginning of the project what peoples roles are Clearly defined roles and responsibilities.</td>
</tr>
<tr>
<td>Staffing</td>
<td>Would only carry out program in sites where there was research and practice expertise in community programming utilizing an existing philosophical approach. Hiring fulltime staff and not part time or students. There are challenges to working with students, though they are committed, and motivated and responsible, schedule changes cause difficulty. Hiring staff to deliver parent sessions that have experience in adult experiential learning Hiring staff to deliver program that have experience in ECE best practices, knowledge of child development, and developmentally appropriate practice Utilize existing and available staff who best fit the need. Would embed project into an existing infrastructure where we could buy out time of those positioned to implement program.</td>
</tr>
<tr>
<td>Timeline</td>
<td>Allowing sufficient time for training facilitators and dialogue about the curriculum. More time allotted for video production, and for getting to the point of scripting the lesson plans and videos sooner would have helped. Needed a more accurate timeline instead of spending too much time at the beginning not starting the process of program</td>
</tr>
</tbody>
</table>
development.
- Should have started the program development process earlier.
- Trying to work ahead instead of reacting to things as they happen

**Training**
- Training at the site level about assessments, their importance and the process behind them to help gain support and ease frustrations in carrying them out.
- Facilitators did not understand the concepts of fidelity and our expectations for what that meant. There were differing opinions across disciplines as to what that meant. Need to support facilitators and build confidence.
- Technical assistance and training were needed to give feedback to each site and provide consistency across sites.

**Workgroups**
- Need to be re-thought and planned due to challenges.
- Utilize a core group instead of smaller groups to develop the parent curriculum

**What should be done the same when developing programs?**

<table>
<thead>
<tr>
<th>Initial Code</th>
<th>Examples</th>
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</table>
| Communication | - Communication across sites for group.  
- Communication between team members at the local level.  
- Debriefing sessions and documents were tools for group communication. |
| Families | - Fitting the location to an easily accessible location for community members |
| Integration | - Bridging research and practice is so important, development can't be done effectively from the bottom up with success  
- Having extension, community, university level, all layers again is helpful in developing a project. Multi-disciplinary  
- Incorporate those with the expertise from around the country |
| Pilot | - Pilot test curriculum, and incorporate feedback from community members into planning.  
- More time to do more effective pilot. |
| Videos | - Having someone from leadership team available to facilitate problem solving in video production.  
- Having content experts available and willing to participate in the video production |
| Workgroups | - Breaking up into small committees worked well at getting session developed quickly. |

**How effective was the SEEDS program development process?**

<table>
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<tr>
<th>Initial Code</th>
<th>Examples</th>
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</table>
| Challenging | - Somewhat effective but could have been improved with various checkpoints along the way.  
- So many moving parts, nutrition, early learning, feeding, parenting |
| **Moms are interested in learning more about the child components because their children are eating food that are new to them after participating.** |
| **Challenging from the start through the implementation** |
| **Clunky, bumpy** |
| **Successful/Effective** |
| **Very helpful for low-income families, showing them resources that they have within themselves to make changes for their families** |
| **Truly integrated research and extension project.** |
| **Well organized** |
| **Worked Well, came up with great ideas** |
| **Synergy of group was good** |
| **Staff are interested and invested in the program content** |
| **Seems to be functioning well** |
| **Project goals and individual goals of groups were eventually met which was successful** |
| **Participants were receptive to content** |
| **Moms are interested in topic** |
| **Effective and efficient in making decisions and getting things done in the time frame.** |
| **Community has taken well to the program and have good attitudes shown through their interest.** |
| **Children are understanding what they are learning** |
| **Clear, adequate communication and organization** |
| **Definition of an integrated research and practice collaborative effort** |