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An Evaluation of the Relationship Smarts Plus Program on Adolescents in Georgia

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The present study examines the impact of Relationship Smarts Plus among 1,657 adolescents age 12-18 across 25 Georgia counties. The program, aimed at increasing awareness about healthy versus unhealthy relationships and promoting smart dating strategies and the application of healthy communication and conflict resolution skills, was offered 54 times by 23 different FCS or 4-H agents during a 53-month period. After each lesson, participants completed a 5-item retrospective pre- and post-test assessing changes in awareness and understanding of the concepts and skills learned. Overall, 949 (57%) youth responded to an overall post-evaluation administered at the conclusion of the program series to document confidence levels in having a healthy relationship, likelihood of using the skills learned, perceived helpfulness of the program, and changes in how youth felt about themselves. On average, youth demonstrated significant increases in knowledge for all lessons and reported positive improvements across all post-evaluation indicators following participation in the program. Implications for future youth-focused outreach programming to promote healthy relationships are shared.

Keywords: adolescence, romantic relationships, dating, relationship education, program evaluation

Involvement in romantic relationships during adolescence is not only extremely common (Raley, Crissey, & Muller, 2007), the quality of these relationships has implications for future intimate relationships as well as individual well-being (Madsen & Collins, 2011; Royer, Keller, & Heidrich, 2009). The growing understanding of the salience of adolescent romantic relationships (Collins, 2003) has resulted in increased attention to relationship and marriage education programs for youth. The purpose of the present study is to examine changes related to knowledge and attitudes among adolescents age 12-18 who participated in one such program, Relationship Smarts Plus (RS+; Pearson, 2007).
Adolescent Romantic Relationships

By the time teens reach 11th or 12th grade, 77% have been involved in some type of romantic relationship (Raley et al., 2007). Despite past misconceptions that adolescent romantic relationships are trivial and inconsequential, research shows that these relationships are developmentally significant in many ways (Collins, 2003). These early romantic relationships provide the first opportunities for teens to understand communication, conflict management, and emotional regulation in the context of a relationship characterized by higher levels of intimacy than previously experienced in familial or peer relationships (Barber & Eccels, 2003; Collins, 2003). Teens themselves view developing a special personal connection and gaining experience with relationships as the main motivations for taking part in a romantic relationship (Royer et al., 2009). In fact, the characteristics of teen dating relationships (e.g., commitment, intimacy, reciprocity, acceptance) are often indistinguishable from adult romantic relationships (Williams & Hickle, 2010). These early dating experiences also have implications for the success of future intimate partnerships (Madsen & Collins, 2011).

While healthy intimate relationships provide adolescents with opportunities to develop important competencies and skills, a lack of understanding of intimate relationships and experiences with unhealthy relationships can have negative consequences. One such consequence is an alarmingly high prevalence of dating violence among teenagers. Adolescents, and especially females ages 16-24, report dating abuse more often than any other age group (Rennison & Welchans, 2000), and 12% of adolescents report they have been the victims of physical dating violence in the last year (Maas, Fleming, Herrenkohl, & Catalano, 2010). Dating abuse among adolescents begins gradually, often starting with teasing and name calling, but adolescents tend to think of these behaviors as “normal” in a relationship. For instance, although 60% of adolescent girls experience jealous or possessive behavior in a dating relationship, they tend to perceive these experiences as not serious, when in reality they can be red flags for the future occurrence of dating violence (Murphy & Smith, 2010). These patterns of dating violence that develop in the adolescent years continue into adulthood for both victims and perpetrators (Gomez, 2011). Furthermore, teen victims of physical dating violence are more likely than their non-abused peers to smoke, use drugs, engage in unhealthy diet behaviors, engage in risky sexual behaviors, and attempt or consider suicide (Silverman, Raj, Mucci, & Hathaway, 2001). Teaching adolescents about healthy relationships can help them recognize the signs of an abusive relationship and can provide them with tools to end unhealthy relationships before they experience negative consequences (Antle, Sullivan, Dryden, Karam, & Barbee, 2011).

As well, teens are most likely to explore their sexuality in the context of a dating or romantic relationship. In fact, among adolescents having their first sexual experience, 85% reported that it was with a romantic partner (Manlove, Ryan, & Franzetta, 2003). Without a deep understanding of genuine love and intimacy, teens may rush into a sexual relationship before really getting to know a dating partner. For instance, among teens who have sex for the first time within a
romantic relationship, 24% have intercourse within the first month of the relationship and 37.5% have sex by three months (Manlove et al., 2003). Despite a decrease in the teen pregnancy rate to a thirty year low among 15-19 year old girls, the U.S. still has the highest rates of teen pregnancy, births, and abortions in the industrialized world (Kost & Henshaw, 2012). Helping adolescents understand how healthy relationships develop, including the role and timing of sex in a relationship and the consequences of having sex too early in a relationship, may serve to reduce at-risk sexual behaviors (Trella, 2009).

The Relationship Smarts Plus Program

*Relationship Smarts Plus* (RS+; Pearson, 2007) is a research-based curriculum that incorporates hands-on activities to teach skills and knowledge necessary for healthy dating relationships during adolescence. Recently registered as an evidence-based program (U.S. Department of Health and Human Services, 2012), this 13-lesson curriculum offers developmentally appropriate information that addresses identity development, personal goals and values, what healthy (vs. abusive) relationships look like, dating processes and decisions, important communication skills, and the promotion of future-orientated thinking about relationships (see Table 1 for lesson descriptions). Importantly, the structure of this program is very interactive (i.e., discussion focused) and activity based (e.g., games, role playing, drawing, sculpting, listening to music, writing stories) to stimulate thinking, sharing, and processing of the information learned.

Past studies have shown positive outcomes related to changes in beliefs, knowledge, and behaviors for adolescents who participate in the RS+ program. For instance, teens were less likely to have unrealistic beliefs about relationships and are more likely to believe a supportive partner is important (Kerpelman, Pittman, Adler-Baeder, Eryigit, & Paulk, 2009). In terms of gained knowledge, adolescents who participated in the RS+ program significantly increased their knowledge of main curriculum topics including mature love, healthy expectations and behaviors, unhealthy relationships, communication skills, conflict resolution skills, and smart dating strategies (Adler-Baeder, Kerpelman, Schramm, Higginbotham, & Paulk, 2007). Perhaps most encouraging is the finding that participation in a relationship education program could lead to a decrease in conflict engagement, less reliance on verbal aggression and violence to solve conflict, and greater likelihood of using reasoning skills to manage differences (Gardner, Giese, & Parrott, 2004; Adler-Baeder et al., 2007).
Table 1. Relationship Smarts Plus Lessons and Description

Lesson 1: Who am I and Where am I Going? Adolescents get in touch with their sense of identity and possible selves. Emphasis is placed on who the adolescent is within their family, friendship, and dating relationship contexts. Adolescents explore their future self-goals, ways to attain them and how to stay true to themselves when faced with peer pressure.

Lesson 2*: Maturity Issues and What I Value. Adolescents learn to identify four aspects of maturity—physical, emotional, mental and social—and learn how the latter three do not happen on their own, but take conscious effort. Adolescents then participate in a “values auction” that helps participants identify the values that are important to them.

Lesson 3*: Attractions and Infatuation. Adolescents explore the building blocks of a good relationship, including common interests, talking to each other, and developing a real friendship. The chemistry of attraction and the nature of infatuation are also explored.

Lesson 4: Love and Intimacy. Adolescents learn about the differences and connections between love and lust by analyzing magazine pictures, and examine three important aspects of mature love: passion, intimacy, and commitment. Adolescents also learn how intimacy develops over time.

Lesson 5: Principles of Smart Relationships. Adolescents examine seven principles for "smart" dating and process relationship decision making strategies.

Lesson 6*: The Low-risk Relationship Strategy: Decide, Don’t Slide! Adolescents explore why people easily get swept up and involved with poor relationship choices when they slide into situations instead of making clear decisions. They learn how to take the go-slow approach to dating while avoiding the high-risks of sliding.

Lesson 7: Is It a Healthy Relationship? Adolescents learn to distinguish between a healthy and unhealthy relationship through a series of questions and a sculpting activity that aids in visualizing negative and positive relationship qualities.

Lesson 8*: Breaking up and Dating Abuse. Using a thought provoking game and viewing an educational video, adolescents learn about the various forms of abuse and explore ways to avoid or get out of abusive relationships. In addition, adolescents are provided guidelines for knowing when it's time to break up, better and worse ways to break up, and steps for moving on.

Lesson 9*: A Foundation for Good Communication. Adolescents consider the positive and negative communication patterns learned within their families, and then explore the basic elements of listening openly and speaking clearly, taking time outs, and giving appreciations in relationships.

Lesson 10: Communication Challenges and More Skills. Adolescents look more extensively at challenges to good communication and are introduced to patterns of troubled communication that damage relationships. Ways to address negative communication patterns in a relationship are practiced.

Lesson 11*: Through the Eyes of a Child. Adolescents build an awareness of how and why a healthy marriage matters by exploring the needs and wants of children and the importance of fathers.

Lesson 12: Looking Toward the Future – Healthy Relationships and Healthy Marriages. Adolescents learn about wise mate selection and reasons why some marriages succeed and others fail. Through activities, they learn why the choices they make in the present can take them down paths that will either lead them towards or away from a successful marriage.

Lesson 13: Follow Your North Star. Adolescents work together to produce a mural summarizing the key insights and information they have learned from the program, and then work individually on their own “success plans.”

*These lessons are considered “core” lessons of the curriculum.
Current Study

The purpose of the present study is to evaluate adolescents’ changes in knowledge and attitudes resulting from participation in the RS+ program. Specifically, the current study adds to the present literature by exploring whether expected changes occurred across each curriculum lesson topic (see Table 1) and whether possible variations may exist by topic. Because resources (e.g., materials) and time (e.g., class duration and frequency) are often limited, assessing whether certain topics/lessons yield more or less improvements in adolescents’ awareness and beliefs could inform what lessons educators may want to prioritize during implementation of the program. Adolescents’ overall perceptions of change and benefits resulting from participation in the program are also explored.

Method

Procedures

Data for the present study were collected anonymously from adolescents across Georgia who participated in a RS+ program facilitated by a Family and Consumer Sciences (FCS) or 4-H Extension agent. From July 17, 2008 to December 13, 2012, 2,436 youth across 30 counties in Georgia were offered the RS+ program. The current study is based on data collected from 1,657 youth age 12-18, in 6th-12th grade, who were offered at least three lessons from the RS+ curriculum and provided with evaluation forms to complete. Narrowing the sample in this way allowed us to examine the effects of a multi-lesson program that included minimum content coverage and that was offered to the appropriate audience for whom the curriculum was designed. During the 53-month period, the 1,657 youth were reached through one of 54 programs offered by 23 different facilitators across 25 counties. Although most agents offered youth 3-5 lessons from the program (n = 885), others included 6-9 (n = 683) or 10 or more lessons (n = 89) across multiple classes. Agents also varied in how often they met with the youth, including one-time workshops (covering multiple lessons), a single week series, once a week for several weeks, and once or twice a month for 6+ months.

Participants

Demographic information for the 1,657 youth and program characteristics are presented in Table 2. On average, the youth were about 14 years old (MD = 13.9), and most were female (57%), in 8th grade (63%), and White/Caucasian (45%). Further, 84% of the teens reported having had previous dating experience. A majority of the RS+ programs were offered in a school setting (75%) with lessons delivered either weekly (47%) or monthly (36%). Analysis of variance (ANOVA) was conducted to examine possible variations between 4-H and FCS agents across youth and program characteristics; these results are summarized in Table 2. Overall, compared
to 4-H agents, FCS agents were more likely to reach adolescents who were older, female, in high school, Black/African American, and who had dated previously. Further, 4-H agents were more likely to offer the program during school hours and as a 1-2 day workshop or one-week series, while FCS agents were more likely to offer the program as part of a weekly series.

**Table 2. Participants Demographics & Facilitation Characteristics**

<table>
<thead>
<tr>
<th></th>
<th>Total (N = 1,657)</th>
<th>4-H (n = 646)</th>
<th>FCS (n = 1,011)</th>
<th>F-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>13.88 (1.32)</td>
<td>13.56 (1.26)</td>
<td>14.08 (1.31)</td>
<td>62.91**</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>930 (56.6%)</td>
<td>326 (51.2%)</td>
<td>604 (60.0%)</td>
<td>12.38**</td>
</tr>
<tr>
<td><strong>Grade</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>6th-7th</td>
<td>262 (15.9%)</td>
<td>162 (25.2%)</td>
<td>100 (10.0%)</td>
<td>70.05**</td>
</tr>
<tr>
<td>8th</td>
<td>1,033 (62.9%)</td>
<td>410 (63.8%)</td>
<td>623 (62.4%)</td>
<td>0.33</td>
</tr>
<tr>
<td>9th-10th</td>
<td>249 (15.2%)</td>
<td>48 (7.5%)</td>
<td>201 (20.1%)</td>
<td>50.13**</td>
</tr>
<tr>
<td>11th-12th</td>
<td>98 (6.0%)</td>
<td>23 (3.6%)</td>
<td>75 (7.5%)</td>
<td>10.83**</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White/Caucasian</td>
<td>732 (45.2%)</td>
<td>307 (48.3%)</td>
<td>425 (43.2%)</td>
<td>3.96*</td>
</tr>
<tr>
<td>Black/African American</td>
<td>561 (34.7%)</td>
<td>161 (25.3%)</td>
<td>400 (40.7%)</td>
<td>41.30**</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>222 (13.7%)</td>
<td>108 (17.0%)</td>
<td>114 (11.6%)</td>
<td>9.50**</td>
</tr>
<tr>
<td>Other</td>
<td>104 (6.4%)</td>
<td>60 (9.4%)</td>
<td>44 (4.5%)</td>
<td>15.93**</td>
</tr>
<tr>
<td><strong>Prior Dating Experience</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1,239 (83.5%)</td>
<td>475 (79.7%)</td>
<td>764 (86.1%)</td>
<td>10.80**</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In-School</td>
<td>1,248 (75.3%)</td>
<td>590 (91.3%)</td>
<td>658 (65.1%)</td>
<td>159.99**</td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2 Day Workshop</td>
<td>21 (1.3%)</td>
<td>19 (2.9%)</td>
<td>2 (0.2%)</td>
<td>24.02**</td>
</tr>
<tr>
<td>Monthly Series</td>
<td>589 (35.5%)</td>
<td>216 (33.4%)</td>
<td>373 (36.9%)</td>
<td>2.06</td>
</tr>
<tr>
<td>One Week Series</td>
<td>271 (16.4%)</td>
<td>188 (29.1%)</td>
<td>83 (8.2%)</td>
<td>135.93**</td>
</tr>
<tr>
<td>Weekly Series</td>
<td>776 (46.8%)</td>
<td>223 (34.5%)</td>
<td>553 (54.7%)</td>
<td>66.98**</td>
</tr>
</tbody>
</table>

**Measures**

The evaluation of the RS+ program included an examination of short-term indicators of change in participants’ knowledge and beliefs related to topics covered in each lesson, as well as confidence in their ability to use the skills learned. First, participants completed a 5-item retrospective pre- and post-test following the conclusion of each lesson. Specifically, youth were asked to report whether their knowledge, awareness, and understanding of the various topics or skills that were covered in the lesson was 1 = Poor, 2 = Fair, 3 = Good, or 4 = Excellent before the program and then asked what their understanding was like after the program (using the same scale). Items related to changes in knowledge are pulled directly from main topics covered in the
curriculum, thus providing high construct validity (copies of the evaluation instruments are available from first author). These same instruments have been used in other evaluations of the RS+ program (e.g. Adler-Baeder et al., 2007; Kerpelman, Pittman, & Adler-Baeder, 2008). Mean before and after scores were computed with higher scores reflecting greater understanding. Cronbach’s alphas for each pre- and post-lesson scale were .79 or above.

In the context of program evaluation studies, the use of a retrospective pre-/post-design has benefits over more traditional pre-/post-designs. In traditional pre-/post-designs, changes in knowledge can be obscured when participants overestimate their knowledge and skills before attending programming. However, after programming, individuals are more aware of their lack of knowledge prior to their participation in a program, and thus they do not evaluate themselves from the same frame of reference or using the same metric at pre- and post-test (Pratt, McGuigan, & Katzev, 2000; Sibthorp, Paisley, Gookin, & Ward, 2007). The use of a retrospective pre-/post-test design has been shown to reduce the risk of response shift bias that results in underestimation of program effects (Pratt et al., 2000).

Second, a brief one-page overall post-evaluation was administered to participants at the end of the program series. This evaluation was only administered when the educators offered a minimum of four lessons from the curriculum: one lesson focused on values/goals (Lesson 1-2), two lessons focused on what healthy relationships look like (Lessons 3-8), and one lesson focused on teaching communication skills (Lessons 9-10). Youth reported on changes in confidence levels related to having healthy relationships with friends and family, being a good listener, handling conflict in a healthy way, having healthy dating relationships, and expressing their feelings to a dating partner. Specifically, youth were asked “As a result of participating in this program, how confident do you feel now compared to before in…,” and response options for the 5 items were 1 = Less confident, 2 = About the same, 3 = A little more confident, and 4 = A lot more confident. The post-evaluation also included single items related to how youth felt about themselves after the program compared to before (1 = I feel a lot worse to 5 = I feel a lot better), helpfulness of the program (1 = Not at all helpful to 5 = Very helpful), and likelihood they would use the skills learned in the program (1 = Not at all likely to 5 = Very likely).

Results

Outputs: Lessons Offered and Attended

Table 3 provides a summary of the number of youth who were offered the lesson, who attended, and who completed the evaluation for each lesson. The lessons offered and attended most often were lessons 1, 2, 3, 6, 8, and 9; with the exception of lesson 1, these are considered core lessons of the program. Although lesson 11 is also considered a core lesson, it was offered considerably less often than the other core lessons. On average, youth were offered 5 lessons and attended 4
lessons within a given program series. Further, 401 (24.4%) youth attended less than 3 lessons, 901 (54.4%) attended 3-5 lessons, and 355 (21.2%) attended 6 or more lessons. Overall, youth attended, on average, about 74.5% of the lessons offered. Last, as summarized in Table 3, at least 92% or more of the youth who attended each lesson also voluntarily completed the evaluation for that lesson.

### Table 3. Participants’ Reported Change Across Relationship Smarts Plus Lessons

<table>
<thead>
<tr>
<th>Curriculum Lesson</th>
<th>Offered Lesson</th>
<th>Attended Lesson</th>
<th>Completed Evaluation</th>
<th>Before</th>
<th>After</th>
<th>t-value</th>
<th>% improved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesson 1</td>
<td>931</td>
<td>766</td>
<td>714</td>
<td>2.67</td>
<td>3.26</td>
<td>22.78</td>
<td>68.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.70)</td>
<td>(0.61)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lesson 2 a</td>
<td>1,496</td>
<td>1,165</td>
<td>1,101</td>
<td>2.79</td>
<td>3.34</td>
<td>27.63</td>
<td>68.9%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.69)</td>
<td>(0.58)</td>
<td></td>
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</tr>
<tr>
<td>Lesson 3 a</td>
<td>807</td>
<td>622</td>
<td>618</td>
<td>2.70</td>
<td>3.30</td>
<td>20.55</td>
<td>71.2%</td>
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<tr>
<td></td>
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<td></td>
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<td>(0.71)</td>
<td>(0.61)</td>
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<tr>
<td>Lesson 4</td>
<td>265</td>
<td>174</td>
<td>168</td>
<td>2.26</td>
<td>3.35</td>
<td>18.11</td>
<td>84.9%</td>
</tr>
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<td></td>
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<td></td>
<td></td>
<td>(0.74)</td>
<td>(0.55)</td>
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</tr>
<tr>
<td>Lesson 5</td>
<td>521</td>
<td>402</td>
<td>371</td>
<td>2.52</td>
<td>3.42</td>
<td>25.97</td>
<td>86.2%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.68)</td>
<td>(0.54)</td>
<td></td>
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<tr>
<td>Lesson 6 a</td>
<td>1,202</td>
<td>813</td>
<td>782</td>
<td>2.63</td>
<td>3.25</td>
<td>22.60</td>
<td>67.2%</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td>(0.74)</td>
<td>(0.63)</td>
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<tr>
<td>Lesson 7</td>
<td>190</td>
<td>97</td>
<td>94</td>
<td>2.83</td>
<td>3.52</td>
<td>10.04</td>
<td>73.7%</td>
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<td></td>
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<td></td>
<td></td>
<td>(0.63)</td>
<td>(0.48)</td>
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<tr>
<td>Lesson 8 a</td>
<td>1,462</td>
<td>1,096</td>
<td>1,049</td>
<td>2.68</td>
<td>3.36</td>
<td>27.47</td>
<td>67.7%</td>
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<td></td>
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<td></td>
<td>(0.76)</td>
<td>(0.62)</td>
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<tr>
<td>Lesson 9 a</td>
<td>1,252</td>
<td>875</td>
<td>845</td>
<td>2.66</td>
<td>3.24</td>
<td>22.87</td>
<td>64.8%</td>
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<td></td>
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<td></td>
<td>(0.73)</td>
<td>(0.64)</td>
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<tr>
<td>Lesson 10</td>
<td>210</td>
<td>104</td>
<td>99</td>
<td>2.55</td>
<td>3.40</td>
<td>10.67</td>
<td>71.0%</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.79)</td>
<td>(0.60)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lesson 11 a</td>
<td>569</td>
<td>390</td>
<td>383</td>
<td>2.87</td>
<td>3.37</td>
<td>12.48</td>
<td>52.7%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.82)</td>
<td>(0.68)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lesson 12</td>
<td>134</td>
<td>69</td>
<td>69</td>
<td>2.75</td>
<td>3.54</td>
<td>9.05</td>
<td>73.6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.78)</td>
<td>(0.55)</td>
<td></td>
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</tr>
</tbody>
</table>

*a These lessons are considered “core” lessons of the curriculum (see Table 1 for a description of each lesson)

*b All t-test results were significant at p < .01

**Outcome: Changes in Knowledge**

Following each lesson, participants, on average, reported that their knowledge, awareness, and understanding of the topics addressed in the lesson improved. As shown in Table 3 above, on average, youth reported their understanding of the principles and skills taught was “fair” (overall
An Evaluation of the RS+ Program

Prior to each lesson and improved to “good” (overall $M = 3.4$) afterwards. Paired-sample $t$-test analyses showed that the mean difference scores (before vs. after) were statistically significant for all twelve lessons evaluated. As shown in the last column of Table 3, at least two-thirds of the participants reported improvements across each lesson (i.e., individual post mean score was greater than their pre mean score), with the exception of lesson 11 (53%). Interestingly, youth exhibited the greatest mean score improvements (pre-post group score difference > .70, and at least 70% of the youth reported improvements) in lessons 4, 5, 7, 10 and 12, which are non-core lessons and that were offered to fewer youth.

**Outcome: Changes in Attitudes**

Of the 1,657 youth in the current study, 988 (60%) received at least four lessons (covering goals/values, characteristics of healthy vs. unhealthy relationships, and communication strategies), and 949 (57%) completed the overall program evaluation survey. First, youth were asked to rate how confident they felt after the program (compared to before) on 5 items related to establishing healthy relationships and using the skills learned. Table 4 summarizes the level of confidence that these youth reported after the completion of the program. Overall, the majority of youth felt that they were more confident than before the program in establishing healthy relationships with dating partners (81%) and family/friends (76%), followed by listening (75%), expressing their feelings and wants in a relationship (75%), and handling conflict (74%). These improvements were reinforced in some of the comments shared by the youth, including:

- *I feel that I will listen to what a dating partner says more carefully.*
- *In my relationship I will be more clear about my sexual guidelines and what I look for.*
- *The program helped me overcome trust issues.*
- *Be able to talk to guys differently and also won’t take smack from them.*

**Table 4. Youths’ Confidence After Completing Relationship Smarts Plus Program**

<table>
<thead>
<tr>
<th>Level of Confidence</th>
<th>n</th>
<th>Less</th>
<th>About the Same</th>
<th>A Little More</th>
<th>A Lot More</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Having a healthy relationship with family and friends</td>
<td>936</td>
<td>2.6%</td>
<td>21.4%</td>
<td>32.2%</td>
<td>43.9%</td>
</tr>
<tr>
<td>2. Being a good and sensitive listener</td>
<td>933</td>
<td>2.0%</td>
<td>23.5%</td>
<td>34.0%</td>
<td>40.5%</td>
</tr>
<tr>
<td>3. Handling conflict in a healthy way</td>
<td>930</td>
<td>3.7%</td>
<td>22.0%</td>
<td>36.2%</td>
<td>38.1%</td>
</tr>
<tr>
<td>4. Having a healthy dating relationship</td>
<td>927</td>
<td>2.6%</td>
<td>16.6%</td>
<td>29.0%</td>
<td>51.8%</td>
</tr>
<tr>
<td>5. Expressing your feelings and sharing what you want from a dating partner</td>
<td>925</td>
<td>3.9%</td>
<td>21.0%</td>
<td>26.5%</td>
<td>48.6%</td>
</tr>
</tbody>
</table>
Next, participants were asked “How likely are you to use the skills you learned in this program?” (1 = Not at all likely; 5 = Very likely). The majority (93%) of the youth reported that they were likely to use the skills learned: 20% were somewhat likely, 35% were likely, and 39% were very likely. As commented by one youth, “I can use all of the learned skills to help me in the future.” Participants were also asked “How helpful was the program to you?” (1 = Not at all helpful; 5 = Very helpful). Again, nearly all (93%) of the youth felt that this program was helpful: 39% very helpful, 36% helpful, and 18% somewhat helpful. Example comments shared by youth on how the program helped included:

- I express myself more openly to others now.
- A lot of the questions I had been wanting to ask someone were answered.
- It helped me to be better in life and know how to handle thing when you are growing up.
- Help me understand how I should begin to treat others.
- I could express myself and say how I felt and then get feedback on what I said and what's the right thing to do.
- It helped me realize the importance of my future and how is it affected by the choices I make now.

Last, to determine how participants felt about themselves after the program, they were asked “Compared to before the program, how do you feel about yourself as a person now?” Response options included: 1 = I feel a lot better, 2 = I feel a little better, 3 = I feel about the same, 4 = I feel a little worse, and 5 = I feel a lot worse. Although 26% felt about the same, most (73%) of the youth felt better about themselves after the program (only 1% felt worse). Commenting on what they learned or liked about the program, youth expressed examples of how the program helped them feel better about themselves, including:

- I have changed my attitude; it has become a lot more positive and I let a lot of little things pass me.
- This program has helped me a lot with my anger and temper.
- I feel this has helped me be a better person.
- This program made me feel more open about my opinions and now I have a higher self-esteem than before.

Discussion

Overall, after participating in the Relationship Smarts Plus (RS+) program, youth reported gaining awareness and understanding of what it means to have a healthy relationship. Specifically, adolescents who participated in the program showed an increase in knowledge about main curriculum topics including healthy and unhealthy relationship patterns, effective communication and conflict resolution skills, dating expectations and behaviors, dating abuse, and smart dating strategies. Further, participants reported that, after the program, they were
more confident in their ability to have healthy relationships, to handle conflict in a healthy way, and to communicate effectively. Importantly, youth became more confident that they can use these skills and behaviors in their everyday lives. Last, participants felt that the program was helpful to them, and they felt better about themselves after participating. These findings are consistent with previous evaluations of the RS+ program that showed the program to be effective (Adler-Baeder et al., 2007; Kerpelman et al., 2009).

Although no long-term behavioral outcomes were measured in the present study, these changes in short-term knowledge and attitudes reported by the youth have been shown to lead to positive changes in behavior. For instance, adults who have negative attitudes about divorce are more likely to believe their relationship will succeed and face fewer interpersonal problems within their relationship, like feeling closer to their romantic partner and experiencing less conflict than those with positive attitudes about divorce (Riggio & Fite, 2006). Clearly, attitudes about the seriousness of marriage and divorce can influence later relationship outcomes; thus, they are an appropriate target for relationship education programs. The RS+ program is one avenue by which adolescents are encouraged to deeply think about their beliefs related to family and intimate partnerships, including marriage. In fact, one of the lessons that influenced the greatest improvement was lesson 12, which focuses on risky marriage choices, why some marriages succeed and others fail, and ways to have a great marriage. Although not measured, some of the comments shared by the youth reflected positive changes in their attitudes towards marriage (e.g., “It helped me become more positive about myself and relationships,” “People should not live together before marriage,” “I learned that divorce can affect children”) and their confidence in having a healthy and stable marriage some day (e.g., “It will definitely affect my future relationships, and it will give me the knowledge to successfully raise children,” “It will help me pick the right person to spend my life with”). Future Extension and outreach programming could benefit from including content aimed at helping adolescents develop realistic expectations about the commitments involved in intimate relationships, especially those they will have in adulthood.

Furthermore, researchers have shown that adolescents who believe conflict is a chance for growth and greater understanding within a romantic relationship are more likely to have relationship-oriented conflict goals and are more likely to rely on negotiation during conflict. On the other hand, adolescents who believe conflict is destructive to relationships are more likely to have either self- or partner-oriented conflict goals and are more likely to rely on aggression or compliance during arguments (Simon, Kobielski, & Martin, 2008). Similarly, adolescents who see aggression in romantic relationships as acceptable are more likely to perpetrate dating violence (Connolly, Friedlander, Pepler, Craig, & Laporte, 2010). Thus, a healthy understanding of conflict in romantic relationships as well as an understanding of appropriate conflict behaviors can facilitate more healthy interactions in adolescent relationships (Adler-Baeder et al., 2007; Gardner & Boellaard, 2007). The RS+ program helps teens handle conflict more effectively as
they learn to use smart communication and conflict strategies, like negotiating and active listening, while also learning to avoid negative communication and conflict strategies, like aggressiveness or avoidance. In fact, some of the comments shared by the youth in the current study reflected better understanding these strategies (e.g., “Helped me learn how to communicate better in my relationships,” “I will know how to stop fighting and talk,” “It has taught me how to be a good listener and stop blaming and name calling”) and their application of these skills (e.g., “It helped me to be a good listener and help me have a better and stronger relationships with the people in my life,” “has helped me get through a break up 2 weeks ago and found a way to say that I still want to be friends”).

Recognizing the constraints faced by Extension agents in offering multi-lesson curricula (e.g., limited accessibility to youth, competing program needs), the current findings reinforce that youth who receive at least the minimum “core” content from RS+ still report significant improvements in knowledge and attitudes related to developing “smart” relationships. However, our findings suggest that youth may be missing out on the additional benefits gained by receiving “non-core” lessons as demonstrated by the greater mean score improvements found among youth across those lessons. Compared to prior research on RS+ (e.g., Adler-Baeder et al., 2007; Kerpelman et al., 2009), this is the first study to examine differences in knowledge changes by lesson. Future research would benefit from further examining whether variations in overall program-related and behavioral outcomes exist based on unique changes in knowledge and attitudes resulting from the number and types of lessons offered and attended.

These promising findings must be cautiously interpreted within the limitations of the current study. For example, not all youth participated in the same number of lessons even within the same program series. Similarly, the educators were not always consistent in their presentation of the content or in the amount of content they were able to cover during each session. Future evaluation efforts would benefit from documenting these variations to assess the impact of program dosage and fidelity on the changes observed following such programs. Albeit the inclusion of a diverse sample of youth and variations in program implementation, future research should explore possible variations in programmatic outcomes that may be attributed to characteristics of the youth (e.g., gender, age, race), as well as the program (e.g., location, duration, format). Still, according to our present findings, across the board, youth reported benefitting from participation in the Relationship Smarts Plus program. Helping youth better understand romantic relationships and feel efficacious in their ability to navigate the landscape of dating promotes positive youth development and can facilitate later healthy adult relationships and family formation decisions.
References


An Evaluation of the RS+ Program


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Identifying Best Practices for Engaging Faculty in International Agricultural Education Experiences

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Universities are being called upon to internationalize curriculum as the need for a globally competent workforce increases. Without globally-competent faculty, international integration within higher education cannot occur. Literature indicates that participation in short-term international agricultural education experiences is important to increasing agricultural faculty members’ cultural awareness. However, the best way to design and implement such experiences for faculty is uncharted. The purpose of the study was to identify best practices for facilitating a short-term international agricultural education experience for faculty in the agricultural and life sciences that encouraged learning, discussion, and reflection leading faculty to further integrate international perspectives in their agricultural courses in the U.S. Through a qualitative research design, reflective observations and statements from a planning team conducting a short-term international agricultural education experience in Ecuador were used to provide a thick, rich description of the successes/challenges faced while designing and implementing the experience. The results provided a list of best practices future planning team members can use to emphasize learning before, during, and after a short-term international agricultural education experience for faculty.

Keywords: globalization, educational programs, international experience, faculty

Agriculture is a core human activity dependent upon the sound management of global resources. This has created a need for colleges of agriculture and life sciences to prepare students for responsible citizenship and professional employment in a global agricultural workforce (Zhai & Scheer, 2004). Yet, according to Hudzik (2004), the U.S. is not reaching its potential. In a review of land-grant university internationalization efforts, Hudzik (2004) found U.S. education has generally been unable to meet the challenges and opportunities of globalization, and the American public is not prepared to be employed in a global economy. The U.S. has been found to “fall short on virtually all indicators of international knowledge, awareness, and competence” (Hudzik, 2004, p. 3).

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Higher education institutions can instill this global perspective by demonstrating a clear commitment to a global vision, including a curriculum with a strong international content. These are essential parts of integrating international aspects into on-campus courses (National Research Council, 2009). Kuenzi and Riddle (2005) stated, integrating international perspectives into higher education includes “studying languages, cultures and world regions that are critical to U.S. interests” (p. 1). Curriculum integration begins with faculty, and to integrate international perspectives into higher education, both faculty and students need culturally rich experiences.

Paus and Robinson (2008) believed taking faculty abroad on short-term visits focused on research and intellectual growth, as it relates to understanding cultural perspectives, would assist faculty in integrating international perspectives into their conversations with students. Short-term international experiences are “intellectually exciting to faculty members and can have serendipitous outcomes for faculty’s perspectives on learning abroad” (Paus & Robinson, 2008, p. 45). While taking faculty to Japan during a short-term international experience, Festervand and Tillery (2001) found the participating faculty experienced academic validation, intellectual growth, acculturation, and cognitive repositioning as a result of their time abroad.

The goal is to create an international experience which encourages discussion, reflection, and integration of key cultural aspects into U.S.-based classrooms. Roberts and Jones (2009) provided a conceptual model for facilitating an international experience that can be used as the foundation for research in this area. Their model is segmented into three stages: before, during, and after an international experience (see Figure 1). Each of the three stages is meant to target facilitation of learning through set expectations during the particular time frame associated with an international experience (Roberts & Jones, 2009).

Previous research suggests the reported outcomes received from an international experience are highly related to the amount of preparation in which the participant engages prior to traveling (Tritz & Martin, 1997). International experiences are known to elicit both positive and negative emotional responses in learners (Lamm & Harder, 2010; Wingenbach, Chmielewski, Smith, Piña, & Hamilton, 2006). Since emotional responses may impact learning, either positively or negatively, they should be addressed prior to traveling abroad. Roberts and Jones (2009) suggested addressing participants’ emotional reactions by preflecting prior to the international experience on participants’ safety concerns, pre-existing beliefs regarding the culture of the country(ies) visited, and engaging in shared goal setting. In addition to alleviating emotional stress, group preflection allows the participants an opportunity to engage with one another in conversations around their expectations resulting from previous experiences. Every learner brings prior experience to a learning environment (Roberts, 2006), and “each experience is influenced by the unique past of the learner” (Beard & Wilson, 2006, p. 21). Wingenbach et al. (2006) found that “allowing students to use their background experiences to interact provided a positive learning environment” (p. 80) when participating in international experiences.
Given the intense nature of international experiences, sensory overload, including “an overabundance of culturally and complex situations” (Roberts & Jones, 2009, p. 407), can occur. Cognitive load theory suggests each individual has a limited working memory. Therefore, an individual’s senses can become overloaded to a point where their learning will be negatively influenced (Sweller, 1998). In order to avoid overloading participants during an international experience, Roberts and Jones (2009) suggested engaging participants in guided reflection, allowing for self-regulated learning, and using inductive and problem-solving activities. Guided reflection can be used to “help learners focus on key aspects of the experience that are most relevant to achieving learning objectives” (Roberts & Jones, 2009, p. 407). Self-regulated learning may encourage participants to be more self-motivated, while giving participants responsibility for their own learning and allowing them to construct their own knowledge (Schunk & Zimmerman, 1994).
Roberts and Jones (2009) contended that the goals established during the prereflection period should be readdressed at the conclusion of the international experience. Participants should be given additional opportunities for reflection in order for learning to continue after an international experience (Kolb, 1984). Given that reflection is found to be an experience in and of itself (Zull, 2002), reflection after an international experience will prolong the learning that has taken place by “focusing the learner’s attention on the experience for a greater amount of time” (Roberts & Jones, 2009, p. 407) and motivating the participant to further his/her own learning.

Roberts and Jones’ (2009) framework emphasizes the importance of stressing certain activities before, during and after an international experience to ensure faculty get the most out of their experience, arguing that the more faculty learn, the more likely they will integrate international perspectives into their curriculum. Stohl (2007) argued that faculty engagement in international experiences is the key to the internationalization of higher education in the 21st century. In addition, Peterson (2000) stated that a world faculty is critical to the internationalization of college students’ education. Without globally-competent faculty members committed to integrating international perspectives into their curriculum, international integration within agricultural higher education may not occur (Navarro & Edwards, 2008). Stohl (2007) contended that for international integration to occur, faculty members needed to be exposed to and participate in international agricultural experiences.

While it has been acknowledged that participation in short-term international agricultural education experiences are important to increasing faculty members’ cultural awareness, the best way to create short-term international experiences for faculty members focused on agriculture and life sciences is uncharted. Therefore, the purpose of this study was to identify best practices for facilitating a short-term international agricultural education experience for faculty in the agricultural and life sciences. The research question driving the study was: What common themes emerge from planning team members’ reflective statements related to the successes and challenges noted while creating and implementing a short-term international agricultural education experience for faculty?

**Methods**

In order to collect necessary data needed to answer the research question posed, the researchers designed a qualitative study using participant-observer ethnography. A researcher may use ethnography in order to, “get inside the way each group of people see the world” (Crotty, 1998, p. 76). The ethnography allows the researcher to enter into the world of the research subjects. In this study, the research subjects were the planning team members. Using a qualitative research design allowed the researchers to gain an in-depth understanding of the social context through the identification of emerging themes (Lincoln & Guba, 1985) found in the planning team
members’ reflective statements (Neuendorf, 2002). To confirm and substantiate the observations made, the researchers conducted a content analysis on written reflections provided by the planning team. The analysis allowed for the identification of themes, which were then cross-compared with the observations.

Five planning team members developing and implementing an international faculty experience in a college of agriculture at a U.S. university made up the population of interest. The planning team consisted of an assistant professor, two associate professors, a lecturer, and one doctoral student. There were four females (two Caucasian and two Hispanic) and one male (Caucasian). The male professor was considered the “lead” instructor for the experience, and the Hispanic lecturer was the only one of the five fluent in Spanish. Members of the planning team had an individual responsibility assigned to them while engaged in the course implementation. One person took the lead role for each of the following responsibilities: (a) overall project, (b) evaluation, (c) facilitating reflection, (d) trip planning, and (e) general observation/trip support.

The international experience consisted of a 13-day trip to Ecuador during the summer of 2010. In addition to the five planning team members, eight agricultural and life sciences faculty members participated in the international experience. The goal of the international experience was to allow the eight faculty participants to explore scientific and cultural aspects of their disciplines in Ecuador.

The international experience consisted of a four-day stay in Guayaquil, a major metropolitan area, where faculty participants visited the Escuela Superior Politecnica del Litoral (ESPOL), one of the largest agricultural universities, to engage with ESPOL faculty in conversations surrounding current research and future collaborations. During the stay in Guayaquil, the U.S. faculty participants visited the main ESPOL campus and several research facilities along the western coast of Ecuador, as well as met with instructors and students at a vocational farmer training site. The faculty participants then traveled to Salinas de Guaranda for three days, a small town in the Andes Mountains, where they learned about the agricultural cooperatives in a particular rural community of Ecuador. The trip concluded with a three-day stay in the Galapagos Islands where the faculty participants took educational tours focused on learning about the ecosystems of various islands. During the international experience, the faculty participants were expected to take photographs, record videos, and collect information they could use to create educational experiences for their students.

Prior to the international experience, one of the planning team members was asked to contribute as a participant observer. The assigned role of participant observer was kept private with the exception of the lead instructor. As the participant observer, the team member participated in all of the planned activities, taking careful observations of how planning team members and faculty participants interacted with one another. The participant observer engaged both planning team
members and faculty participants in conversations surrounding their experience while traveling abroad. The participant observer kept reflective notes throughout the day and a daily journal to record observations.

Acknowledging researcher bias, the participant observer had previous experience with all four of the planning team members through previous travel, research activities, or coursework. The participant observer also had limited previous interactions with one of the faculty participants. The participant observer was hired by the project funding the international experience. The participant observer had previous experience serving as a participant observer on a student-focused, short-term international experience, conducting research in an international environment, and evaluating several student-focused international experiences in Latin America.

At the conclusion of the short-term international experience, the other four planning team members were asked to reflect upon their experiences prior to and during the trip. The planning team members provided written reflective feedback to the project lead, which were then shared with the participant observer. The format of their responses was left open as long as they discussed their thoughts about the planning process and project implementation. Planning team members were aware, while completing their reflective statements, that the comments would be read and analyzed. As a result, the lack of anonymity may have limited planning team members’ ability to be forthright with their statements. However, the participant observer was assured the reflective notes from conversations with the planning team members throughout the international experience and daily journal would be kept confidential. Therefore, the participant observer’s reflective notes and journal entries were used to confirm and develop a deeper understanding of the planning team members’ statements. All five planning team members’ responses and reflective notes were coded with a preassigned number for confidentiality and will be noted as Planning Team Member 1, 2, 3, 4, or 5 (PTM1, PTM2, PTM3, PTM4, PTM5). Pseudonyms were used when the planning team members’ direct quotes referred to specific faculty participants and other planning team members in their reflective statements to ensure anonymity of the participants.

The data were analyzed using content analysis (Neuendorf, 2002) by the participant observer. Emergent themes from the participant observer’s reflective notes and daily journal, as well as each of the other four planning team members’ individual reflections were identified, categorized, and then combined to meet the objectives of the study (Lincoln & Guba, 1985). The researcher first analyzed each planning members’ reflections by identifying key phrases that characterized the nature of the reflective statement. The 48 key phrases were then categorized by similarity. The categorized key phrases were labeled based upon a common thread, which united the reflective statements into one theme. An audit trail (agendas and minutes from pre-trip and post-trip planning team member meetings, international experience itineraries, e-mails between planning team members, and e-mails between planning team members and participants),
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Results

Five themes emerged from the respondents’ reflections. Because of the close nature of participant observation ethnography, the findings included the participant observer’s findings as they aligned with the remaining planning team members’ reflective quotes. There were five themes which emerged, aligning the participant observer observations with the planning team members’ reflections: communication, group dynamics, expectations, itinerary, and contrast.

Communication

The respondents reflected widely on the first theme, communication, in regards to communication issues taking place before and during the international experience. They felt discussions with the faculty participants prior to the trip, including specifics regarding the daily itinerary (PTM2, PTM4, PTM5), possible illnesses they may acquire (including food-borne illness) (PTM1, PTM3, PTM4), cultural considerations (PTM3, PTM4), needed documentation (PTM1, PTM5), packing/other travel considerations (PTM1, PTM2, PTM3, PTM5), and availability of phones/internet (PTM2, PTM4), would have greatly enhanced the international experience. Planning Team Member 1 wrote the need for communication clearly when reflecting that the planning team should “be much clearer on packing, comfort, and extenuating physical experiences.” Planning Team Member 4 reflected the planning team needed “more timely communication regarding the trip itinerary, and that the itinerary needed to be finalized and distributed in advance.” Planning Team Member 5 felt that everyone had a “general idea, but was much less focused on a specific task that needed to be accomplished” due to a lack of itinerary communication. To deal with the lack of communication, Planning Team Member 2 suggested creating “a meticulously detailed itinerary including beginning and ending time for every activity such as meals, local trips, visits, etc.”

During the trip, the planning team members felt communication could have been enhanced by distributing a daily detailed schedule (PTM1, PTM3, PTM4), ensuring the availability of local translators (PTM1, PTM3, PTM4, PTM5), assessing each faculty participant’s ability to complete physical activities (PTM1, PTM3, PTM4), conducting daily debriefings (both with the entire group and the planning team) (PTM1, PTM2, PTM4, PTM5), and keeping a faculty participant log of where everyone was during the day (PTM2, PTM3). The planning team members believed attention to these areas would have assisted with arising issues and making faculty participants feel more comfortable. Planning Team Member 2 felt “time allocated for
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[planning] team members to review trip activities” each day would have alleviated some of the issues with the daily schedule. Planning Team Member 4 felt a “participant ‘log’ to keep track of where people [were] during free time (suggested [by other state team members] as a safety measure) would be especially important.” Planning Team Member 5 reflected that when it came to scheduling and translation, there was “some tension in the planning team.”

Using local translators also arose in the reflective statements. Planning Team Member 1 felt “depending on one or two people to translate was tough as we thought, but it was unfair for [Adrienne] to have to continually serve in that capacity.” Planning Team Member 2 felt, “pre–training on communication patterns favored by locals would help.”

**Group Dynamics**

The second theme, *group dynamics*, emerged from comments regarding both the larger group and the planning team. Initial team building activities were suggested, along with plans for group development, to discourage small groups from forming. Planning Team Member 1 stated, “although our meetings were informative, they were strictly business. I think some initial get to know you activities (other than brief introductions) would have been nice and resulted in some other projects or planning.” Planning Team Member 3 agreed when noting the need for additional “activities to discourage ‘clicks’[sic].”

During the international experience, three distinct smaller groups formed within the first week. One of the groups formed out of relationships that existed prior to the international experience. Another group appeared to be based on cultural similarities and the ability to speak in Spanish. The third group constituted the rest of the participants and planning team members not included in the other two smaller groups. Additional groups also appeared to form based on where individuals sat on the bus. Given the length of travel between sites, those with motion sickness that sat near the front of the bus formed a group, and those sitting towards the rear of the bus formed a group, as they were more likely to engage in conversations given their physical location while traveling.

The roles and responsibilities of each planning team member should have been clearly established and trust built around those expectations prior to the trip. Planning Team Member 2 felt the planning team needed to “encourage the development of trust on the fieldtrip planner/coordinator within the grant team.” Planning Team Member 3 felt “periodic debriefing sessions” could have helped set “clear expectations/goals” for each planning team member. Planning Team Member 4 felt “the [planning] team should meet periodically throughout the trip to review how things are going and to make sure everyone is informed about the upcoming events.” Planning Team Member 5 noted that the planning team members seemed adversarial at times. While it was reflected that “they were able to keep their personal feelings to themselves
most of the time,” Planning Team Member 5 also noted “no matter how quiet we keep things, [faculty] participants are likely to pick up on tension.”

**Expectations**

The reflective statements reiterated that *expectations* should be clearly identified prior to traveling and emerged as the third theme. The expectations theme included planning team members’ responsibilities (PTM1, PTM3, PTM4, PTM5), language needs (PTM1, PTM2, PTM3), and the physical demands of the activities occurring throughout the trip (PTM2, PTM3, PTM4, PTM5). Planning Team Member 3 believed “roles for the [planning] team” should be clearly defined. Planning Team Member 5 stated “while a great experience, had each of the planning team members known their exact role and what was expected of them throughout the project, things would have come together more easily.”

The reflective statements reiterated the importance of clarifying language expectations with all faculty participants prior to traveling. While the faculty participants knew they were traveling to a Spanish speaking country, Planning Team Member 5 believed “most of us thought translation wouldn’t be an issue and something that was planned for.” Two translators were hired to assist the faculty participants’ communication while traveling in Guayaquil and Salinas de Guaranda. Planning Team Member 3 mentioned, “only one of the planning team members, and one of the [faculty] participants spoke fluent Spanish” and felt it was unfair for them to work as translators rather than participating in the experience as they originally intended. Planning Team Member 2 recommended “a fieldtrip to an English–speaking country…for [faculty] participants without or [with] limited international experience” could alleviate the translation issue.

The physical demands of the activities were also not clearly explained prior to the trip, and expectations regarding participation in these activities were stressed throughout the reflections. While traveling, several faculty participants experienced motion sickness, which was incompatible with long bus rides on winding roads and long boat rides on rough seas. In addition, a safety incident during one of the more physically demanding activities led to participant discomfort and possible embarrassment. Planning Team Member 4 felt the planning team “needed to evaluate people’s ability to complete physical activities and go over safety procedures before the activity begins.” Planning Team Member 2 felt the planning team should have “required information on existing health conditions or potential illnesses (motion sickness, allergies, and migraines) from each fieldtrip participant.” Planning Team Member 5 thought “pushing people out of their comfort zones isn’t a bad thing, but we need to be prepared to deal with the consequences.” Planning Team Member 3 agreed, feeling it was important to “stretch people in a safe environment.”
Itinerary

The fourth theme emerged out of statements referring to the *itinerary*. While all felt a shorter time frame (maximum of two weeks) was the best for an international experience, faculty participants need to be given the opportunity to explore on their own. Suggested time included unplanned meals (PTM2, PTM4, PTM5), general down time (PTM1, PTM3, PTM4), and time for work and individual meetings in which faculty participants may want to engage while visiting another country (PTM1, PTM2, PTM4, PTM5). Planning Team Member 4 felt faculty participants needed “more meals out ‘on your own,’” but recognized that it was important to compare the costs of eating individually versus eating at a hotel as a group. Planning Team Member 2 felt “group dinners should be limited to no more than 1/3 of total meals.” Planning Team Member 1 stated the schedule needed to “include individual time, in our particular case, we sometimes got overscheduled even though the original schedule did not indicate it.” Planning Team Member 5 reflected on the faculty participants’ need to make work connections recognizing that “[Bill] and [Mark] were eager to make additional connections with faculty in Ecuador, but scheduling meetings was difficult due to the lack of open time in our trip schedule.” Planning Team Member 2 stated that in the future, a team conducting a similar type of trip “must build free time throughout the entire trip.”

Contrast

The last theme of *contrast* came out of the planning team members’ positive comments regarding their opportunities to visit diverse parts of the country, including the ability to stay in nontraditional touristic accommodations. The planning team felt visiting diverse areas and staying in nontraditional touristic accommodations contributed to the cultural awareness aspects of the experience. Planning Team Member 3 felt “visiting multiple locations” was imperative, but “using a travel agent” would assist in the planning process, and that the trip could have been improved by “more informal time with the local people.” Planning Team Member 5 felt “watching the trip [faculty] participants engage in different aspects of what they specialize in, depending on where we were at the time, made a huge impact on their learning and exposure to culture.” For example, Planning Team Member 5 mentioned “[Jenny] was interested in nutrition and food, so she really enjoyed seeing how different people ate and prepared their food based on the location we were visiting.” Planning Team Member 4 believed that traveling to diverse areas was important, but felt the planning team “needs to acknowledge potential challenges in making long-distance arrangements in a location/country that may differ significantly from home-country in terms of local context, resources and how people prefer to function.”

The planning team members also reflected on their appreciation for the diversity in the faculty engaged in their trip. Diversity included age, sex, nationality, and programmatic areas of expertise. Statements were found throughout the reflections strongly suggesting others continue...
a similar pattern when planning international experiences in the future, as it assisted in gaining different perspectives on the experience in Ecuador. Planning Team Member 5 stated, “you always have people with different backgrounds and experiences participate when you plan a trip like this, but watching soft and hard scientists work together and gain an understanding of what each has to contribute to conversations is very encouraging.”

**Discussion**

Best practices for planning faculty-focused short-term international experiences were identified based on the emergent themes found in the data and grouped by the stages identified in Roberts and Jones’ (2009) model for facilitating an international experience (see Figure 2). While the researchers have developed an initial list of best practices that can be used when planning short-term international faculty experiences, the hope is that other groups conducting similar international experiences will develop additional best practices that can be added to the original list.

The generated list of best practices is meant to be a basis for further growth as the number of faculty-focused short-term agricultural education experiences increases. Given the list is an initial attempt to create best practices for facilitating faculty-focused short-term international experiences, there were several limitations to the study. First, the best practices were created from the planning team’s perspective. The researchers’ degree of international exposure and cultural competence, particularly in the analysis and interpretation of their own reflections, should be considered. Data should be collected from the faculty participants’ perspective in the future to see if it supports the best practices emerging from the planning team to develop a well-rounded perspective. In addition, it is important to examine how the use of the following best practices influences international faculty experiences in the future. Last, the data were collected while participating in the international experience and upon its immediate conclusion, therefore, little data exist regarding the time frame after the experience.

**Before the Experience**

Prior to traveling abroad, the data showed there were some best practices that could be implemented to better prepare faculty participants for an international experience. The best practices include clearly defining planning team members’ roles and responsibilities, selecting faculty participants with diverse personal characteristics and professional specialties, emphasizing communication with faculty participants prior to traveling, defining expectations for faculty participants, conducting team building activities, gaining an understanding of the faculty participants’ limits, and developing an itinerary with which all will be comfortable. These best practices are consistent with the work of Tritz and Martin (1997) and the model proposed by Roberts and Jones (2009). In the context of the study, faculty participants are the
learners, and established educational practices would support the importance of learner preparation, especially before an intense learning experience (Beard & Wilson, 2006; Bransford, Brown, & Cocking, 2000; Kolb, 1984; Roberts, 2006).

Figure 2. Best Practices Conceptual Model for Facilitating a Faculty-Focused Short-Term International Experience

Note: Adapted from the conceptual model for facilitating an international experience (Roberts & Jones, 2009)
During the Experience

While traveling abroad, faculty participants may be exposed to a large amount of new stimuli throughout the experience. Best practices to follow during the experience have been created in order to assist faculty participants in learning as much as possible while traveling. They include emphasizing cultural diversity throughout the trip, using translators not already involved in the planning process when in non–English speaking countries, staying in nontraditional touristic accommodations, clearly communicating with faculty participants while traveling, keeping the experience short with only a few targeted objectives to emphasize, and ensuring down time is included in the schedule so faculty participants feel encouraged to explore on their own. Beard and Wilson (2006) proposed that learners should reflect in experience and on experience. Roberts and Jones (2009) also emphasized the importance of multiple ways of reflecting and processing the experience. Providing faculty participants with down time and flexibility in their schedules would allow faculty participants to regulate their own learning and reflect in the experience.

After the Experience

Considering the data analyzed were collected during and upon the immediate return of the international experience, very little data were available that could be used to extrapolate best practices for after the experience. However, despite the lack of data, the previous literature emphasized a best practice that could be implemented after an international experience to strengthen learning would be formal reflection (Rodriguez & Roberts, 2011). Reflection could be done through a group reflection session two to four weeks after returning from the experience, through prompted journal entries upon their return to the U.S., or an in-depth personal reflection on the photo journals kept by the faculty participants throughout the trip.

Previous literature shows that once an individual removes him or herself from an experience, he or she is better able to see how his or her life has changed as a result (Roberts & Jones, 2009; Zull, 2002). A reflection activity would allow faculty participants an opportunity to explore whether or not the experience altered their perceptions of the world, and if so, how, as well as deepen their understanding of how what they learned can be incorporated into their everyday lives (Kolb, 1984).

Summary

The best practices conceptual model for facilitating an agricultural faculty-focused short-term international experience can provide a guide for future planning teams to use while planning and implementing faculty-focused short-term international experiences. While the model does not capture every possible factor that could be applied in a variety of situations, it does provide a
place to start. The conclusions drawn from the study imply that planning teams should consider taking a holistic approach to international experiences by thinking about learning before, during, and after the experience and are similar to those found by Rodriguez and Roberts (2011). Emphasizing learning during all three phases of an international experience should allow for improved quality of the international experience and enhance faculty participant learning.

Faculty engagement in international experiences is said to be the key to the internationalization of higher education (Stohl, 2007). Therefore, not only does agricultural and life sciences faculty need to travel internationally, but they must also have high quality learning experiences to ensure they are able to reflect upon and understand international agricultural concepts. With a deep level of understanding, faculty will have the ability to integrate the learned international agricultural concepts into their courses once they return to their home institution (Peterson, 2000).

References


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From John Lee to John Gottman: Recognizing Intra- and Interpersonal Differences to Promote Marital Satisfaction

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Since Extension agents work with a variety of families, there is a desperate need to further our understanding of how to educate diverse communities on a family-related topic. Focused on assisting those teaching marital education to a diverse population, this study attempts to understand how individual differences impact relationship satisfaction and marital communication. Based on John Gottman’s research on marital communication and John Lee’s six love styles, 653 participants completed a survey to further understanding of the relationship between inter- and intrapersonal variables. Results revealed that marital communication and love styles accounted for 54.6% of the variance in marital satisfaction regardless of difference in demographics. Results of this study provide a resource for educators and practitioners to use with diverse clientele, while also emphasizing the need to understand both intra- and interpersonal variables when working with families.

**Keywords:** John Gottman, John Lee, marriage education

Marriages are becoming an increasingly popular topic for education in Extension and research; articles with the word “marriage” in their title have ampliﬁed by approximately 48% in the last decade (Fincham & Beach, 2010). However, the breadth and scope of marital research makes it difficult to understand how to adjust marital education to fit the diverse needs of Extension agents. Rodrigues, Hall, and Fincham (2006) stated that the "first step in integrating existing research and exploring mechanisms is to deﬁne the relationship between intrapersonal variables and relationship-process variables" (p. 33). Thus, challenges associated with understanding how Extension agents educate others on improving marital quality in diverse communities includes limited research being focused on the linkage between communication, individual differences, and relationship outcomes (Schneewind & Gerhard, 2002). In an attempt to fulﬁll this recommended need, the present study will investigate both intra- and interpersonal variables to determine their predictive power toward marital satisfaction and, potentially, the usefulness of this approach in Extension education. Specifically, John Lee’s (1973) six love styles will be used as a framework to understand the influence of psychological variables, and John Gottman’s (1994) communicative techniques will be used to interpret interpersonal factors.

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Conceptual Models

Psychological Framework

In 1973, John Lee formed a framework in an attempt to understand what individuals desire in romantic relationships. Resulting from an analysis of over 4,000 written descriptions and 200 interviews with individuals, Lee quantified definitions associated with love into three primary (eros, ludus, and storge) and three secondary (mania, pragma, and agape) love styles. The breadth of these love styles and their ability to encompass numerous other approaches that tried to conceptualize love attests to the internal validity of his concept. For example, Hahn and Blass (1997) noted that connections could be drawn between Lee’s (1973) manic (obsessive) and agape (selfless) love styles to Sternberg’s (1987, 1988) infatuation and Clark and Mills’ (1979) communal love, respectively.

Primary styles. The eros love style is known as a passionate love that typically forms from a deep and immediate physical attraction. Eros has been termed as the “most consistent predictor of marital satisfaction,” regardless of gender or ethnicity (Contreras, Hendrick, & Hendrick, 1996, p. 412) and is positively related to intimacy, passion, commitment, and relationship satisfaction (Hendrick, Hendrick, & Adler, 1988; Levy & Davis, 1988; Morrow, Clark, & Brock, 1995).

People that fall into the category of a ludus love style tend to view relationships as a game and are more comfortable with the idea of pursuing or maintaining multiple relationships simultaneously (Lee, 1973). This style has been shown to negatively relate to marital satisfaction (Inman-Amos, Hendrick, & Hendrick, 1994; Kanemasa, Taniguchi, Daibo, & Ishimori, 2004), mostly due to the use of negative techniques such as avoidance, withdrawal, or denial (Hensley, 1996; Richardson, Hammock, Lubben, & Mickler, 1989).

The final primary love style, storge, has been termed as the friendship style of love (Lee, 1973). Storgic lovers develop their relationships slowly (i.e., to establish a friendship first), so they have also been found to positively relate to the measurement of conscientiousness, while negatively relating to impulsivity (White, 2003; White, Hendrick, & Hendrick, 2004).

Secondary styles. Agape is considered a hybrid of both the storge and eros love styles. The agapic style has been described as a selfless approach to love due to these lovers being extremely forgiving, supportive, and committed to their partners (Hahn & Blass, 1997; Hallett, 1989). It has shown to positively correlate with relationship satisfaction and commitment (Aron & Westbay, 1995; Hendrick et al., 1988; Lin & Huddleston-Casas, 2005), as well as intimacy and passion (Levy & Davis, 1988; Morrow et al., 1995).
Pragma lovers are characterized as making rational decisions of whether or not to enter a relationship because of personal or social compatibility (Hahn & Blass, 1997). Viewed as a hybrid between storge and ludic, these lovers emphasize compatibility on characteristics such as religion, family values, and education. Pragma lovers have revealed a negative correlation between love and openness (White, 2003), while positively relating to religiosity and conscientiousness (Hendrick & Hendrick, 1987; White, 2003).

The final love style is seen as a combination of eros and ludus and is characterized by a need for a great deal of attention and affection (Lee, 1973). The manic lover takes a rapid progression toward intimacy due to the desire for an all-encompassing relationship. Common characteristics of this love style include being obsessive, jealous, and emotional (Hahn & Blass, 1997).

**Interpersonal Framework**

John Gottman’s work surrounding marital communication is well-known in current literature (e.g., Busby & Holman, 2009; Gubbins, Perosa, & Bartle-Haring, 2010). Although there is some controversy associated with his research (see DeKay, Greeno, & Houck, 2002; Heyman & Hunt, 2007), his findings have resulted in the ability to predict the permanence of marriages with only 10% error. In particular, he found that the use of four attitudes—or Four Horsemen (i.e., criticism, contempt, defensiveness, and stonewalling)—seemingly forecasted relationship failure with great accuracy (Gottman, 1994).

**Negative communication.** Criticism is the technique of verbally attacking one’s partner based on his or her personality and/or character; this form of communication usually occurs because of the need to convince oneself that the partner is at fault (Gottman, 1994). The second technique is classified as defensiveness and typically coincides with complaining or criticism. This horseman involves an individual who is not able to place oneself in the partner’s position and, thus, is unable to view another as the victim. Contempt involves attacking a partner’s sense of self by insulting or verbally abusing them and can include sarcasm, insults, or name-calling. The final of the four horsemen, stonewalling, is defined as someone withdrawing completely from the conflict and can include ignoring, being unresponsive, or emotionally distant.

**Research Hypotheses**

Although research on love styles has been prominent (for review, see Hendrick, 2004), little research has been done to examine the relationship between love styles and negative relational maintenance behaviors (Goodboy & Myers, 2010) and their potential impact in Extension settings. In fact, most studies that have analyzed psychological variables with relationship maintenance have used the “Five Factor Mode of Personality” (i.e., neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness) and have disregarded configural
or typological approaches (Feeney & Noller, 1996; Furman & Flanagan, 1997). Only one study known to the authors has attempted to find this connection (i.e., Goodboy & Myers, 2010), and although limitations were present, a relationship was found between the love styles and negative relational behaviors, such as jealousy, avoidance, and infidelity. Due to the impact that understanding individual differences can have on teaching marriage education, the present study investigated the following research question: How do communication techniques used during marital conflict and the definition of love impact marital satisfaction? Specifically, we tested the following hypotheses:

H1: Ludic and manic love styles will inversely relate to marital satisfaction.
H2: Agapic, erotic, storgic, and pragmatic love styles will relate positively to marital satisfaction.
H3: Gottman’s Four Horsemen will inversely relate to marital satisfaction.
H4: After controlling for length of marriage, Gottman’s Four Horsemen and Lee’s love styles will have predictive power of marital satisfaction.

**Method**

**Procedure**

A survey was mailed to 300 individuals in randomly selected households from two large urban populations in a southeastern state. The contact information was obtained from the United Postal Services. All respondents were over the age of eighteen, and only those who had been married qualified for the study. No additional restrictions were placed on respondents based on their race, gender, or age.

The survey design followed procedures suggested by Dillman, Smyth, and Christian (2009). To begin, a brief pre-notice letter was sent to the respondents a few days prior to the official invitation to participate. It noted that an invitation for an online questionnaire would arrive in a few days and that the person’s response would be greatly appreciated. A questionnaire mailing was then sent that included a detailed cover letter explaining why a response was important, as well as instructions for how to complete the questionnaire online, and information for how to win $100. A thank you postcard was sent one week after the questionnaire mailing. This mailing expressed appreciation for responding and indicated that if the questionnaire had not yet been completed, it was hoped that it would be done soon. Finally, an invitation for a replacement questionnaire was sent to nonrespondents 2 to 4 weeks after the original questionnaire mailing. It indicated that the person’s questionnaire had not yet been completed and urged the recipient to respond. The response rate was lower than expected (13%), so additional recruitment was done by (1) sending a link to the survey to all Directors of Graduate Studies at a southeastern college requesting that they forward it to their students and (2) creating an event on Facebook inviting members to take the survey.
Sample

The three sampling techniques (i.e., mail, email, and Facebook) resulted in 653 individuals that were currently married (see Table 1 for summary). Of those participants, sixty-six (10.1%) had been married before, with a majority (83.1%) of those on their second marriages. The average length of time that the participants stated knowing their current spouse was a little under 15 years ($\text{Min} = 1.00$ years; $\text{Max} = 66.00$ years; $\text{SD} = 10.10$ years), while the mean for being married was almost 11 years ($\text{Min} = 1.00$; $\text{Max} = 64.00$; $\text{SD} = 10.03$). A small minority (.5%) noted that they were in an open marriage (e.g., swingers) while a few others (1.9%) stated that they were homosexuals; the remaining participants categorized themselves as being in a heterosexual and monogamous relationship.

<table>
<thead>
<tr>
<th>Table 1. Overall Demographics ($N = 653$)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Variable</strong></td>
</tr>
<tr>
<td>Married Before</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Number of Times Married</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4+</td>
</tr>
<tr>
<td>Type of Marriage</td>
</tr>
<tr>
<td>Heterosexual</td>
</tr>
<tr>
<td>Homosexual</td>
</tr>
<tr>
<td>Open</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Ethnicity</td>
</tr>
<tr>
<td>Caucasian</td>
</tr>
<tr>
<td>Asian</td>
</tr>
<tr>
<td>African American</td>
</tr>
<tr>
<td>Hispanic</td>
</tr>
<tr>
<td>Native American</td>
</tr>
<tr>
<td>Multicultural</td>
</tr>
<tr>
<td>Other</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th><strong>Mean</strong></th>
<th><strong>Min</strong></th>
<th><strong>Max</strong></th>
<th><strong>SD</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Years Married</td>
<td>10.78</td>
<td>1.00</td>
<td>64.00</td>
<td>10.03</td>
</tr>
<tr>
<td>Known Spouse</td>
<td>14.74</td>
<td>1.00</td>
<td>66.00</td>
<td>10.10</td>
</tr>
<tr>
<td>Age</td>
<td>36.81</td>
<td>22.00</td>
<td>89.00</td>
<td>10.99</td>
</tr>
</tbody>
</table>
A majority of the participants were female (72.2%) and Caucasian (91.9%). Almost equal representation was found among Asians (3.3%), African Americans (2.5%), Hispanics (1.5%), and Native Americans (1.5%). Multicultural (1.5%) and “Other” ethnicities (1.7%) were also presented as options, though it should be noted that the participants were able to select more than one category. The average age of the participants was almost 37 years, with a minimum of 22 and a maximum of 89 years.

Religiosity was assessed by how regularly participants attended religious services. This category resulted in the most diverse demographics and included 44.2% that attended church once a week and almost equal variance between rarely (18.9%), once a month (15.6%), and never (13.0%). The remaining participants stated that they only attended services on important holidays (7.6%).

Financial status was gauged by how comfortable the participants felt with their current financial situation; a majority felt secure (70%), followed by insecure (19.2%), very secure (8.8%), and very insecure (1.5%).

Measures

**John Lee’s love styles.** The Love Attitudes Scale (LAS): Short Form was developed by Hendrick, Dicke, and Hendrick (1998) to examine the six love types of individuals based on Lee’s (1973) *Color of Love Theory*. LAS-Short Form consists of 18 items with a 5-point Likert Scale (1 = *Strongly Agree*; 5 = *Strongly Disagree*). Three items in the scale represent each of the six major love styles. Prior reported test-retest reliabilities ranged from .60 to .78 (Hendrick & Hendrick, 1986) and alpha ranged from .62 to .88 (Hendrick et al., 1998). Similarly, Cronbach’s alphas for the present study were: *Eros* = .71, *Ludus* = .57, *Storge* = .78, *Pragma* = .54, *Mania* = .63, and *Agape* = .68.

**Gottman’s Four Horsemen.** The questionnaire used to analyze Gottman’s Four Horsemen was obtained from Busby, Holman, and Taniguchi’s (2001) research on premarital and marital couples and was found to be comparable to Gottman’s observational research (Holman & Jarvis, 2003). The participants were given 11 questions to assess their use of contempt/defensiveness, criticism, and stonewalling with contempt and defensiveness being combined due to the two being “different sides of the same coin” (p. 273). The authors’ replaced their stonewalling variable with the name *withdrawal* to assist those not familiar with Gottman’s work in understanding this technique; for this study, the variable will be renamed *stonewalling* to prevent confusion in the analysis section. These items were ranked on a 5-point scale anchored by 1 = *Never* and 5 = *Very Often*. Example items included “I feel attacked or criticized when we talk about our disagreements” for criticism and “I sometimes just clam up and become quiet” for stonewalling.
After checking the reliability of Gottman’s scale and subscales, one item was found to be inconsistent in interpreting the contempt subscale (i.e., corrected item-total correlation was .002): “I’ve found that during an intense argument it is better to take a break.” Eliminating this question from the subscale increased Cronbach’s alpha from .509 to .658. Assessing the reliability of questions associated with criticism resulted in a similar challenge; the question “let[ing] my partner have it full force” had a corrected item-total correlation of .249. Unfortunately, there were only three questions assessing this variable, and the change in Cronbach’s alpha was minimal (i.e., .07). So, we did not eliminate this question. Cronbach’s alpha, therefore, resulted in .528 for criticism and .746 for stonewalling. The remaining ten questions of the overall scale produced Cronbach’s alpha of .837.

**Measure of relationship satisfaction.** The Revised Dyadic Adjustment Scale (RDAS) was chosen over the Dyadic Adjustment Scale (DAS) because of its brevity (18 fewer items than the original DAS), multidimensionality, and ability to distinguish between distressed and nondistressed individuals and relationships (Busby, Christensen, Crane, & Larson, 1995; Spanier, 1976). The RDAS consisted of 14 items that provided a total score and three subscores: *dyadic consensus* (the degree to which couples agree on matters of importance to their relationship), *dyadic satisfaction* (the degree to which couples are satisfied with their relationship), and *dyadic cohesion* (the degree of closeness and shared activities experienced by couples). RDAS scores ranged from 0-48 with "distressed relation" having the lowest score. The instrument has shown high internal consistency (alpha = 0.90) and construct validity (Busby et al., 1995). In the present study, the following Cronbach’s alphas were found for the subscales and for the overall questionnaire: *Consensus* = .77, *Satisfaction* = .82, *Cohesion* = .76, and *Total* = .87.

**Results**

**Preliminary Analysis**

There was some concern regarding demographic differences associated with the three recruitment methods, so we completed a one-way between-groups analysis of variance to explore the impact of recruitment method on years married, years knowing the spouse, and age, while a Chi-square was performed on gender. Subjects were divided into three groups according to the recruitment technique used for their participation (Group 1: Mail, Group 2: Facebook, Group 3: Email). There was a statistically significant difference at the $p < .05$ level in all three variables of interest between mailing the survey and Internet recruitment: (1) years married: $F(2, 642) = 19.90, p < .000$; (2) years known spouse: $F(2, 640) = 14.86, p < .000$; and (3) age in years: $F(2, 640) = 27.49, p < 0$. Despite reaching statistical significance, the actual difference in mean scores between the groups was not extremely large. The effect size, calculated using eta$^2$, was .05 for years married, .04 for years knowing the spouse, and .08 for age in years. Post-hoc
comparisons using the Tukey HSD test indicated that the mean scores for Group 1 when compared to Groups 2 and 3 were significantly different on all three variables, but not between Group 2 and Group 3. Finally, the Chi-square test for independence with gender indicated significant associations between gender and recruitment method, $X^2 (2, n = 647) = .243, p = .38.23, \phi = .243$.

Furthermore, prior research suggests that there may be gender differences that could cause a spurious relationship. For example, agape has been found in at least one study to be more common in women (Davies, 2001) while manic lovers were found to be more likely men (White et al., 2004). Thus, independent sample $t$-tests were performed to analyze the differences between the RDAS and LAS scales with gender. There were significant differences found with LAS scores for males and females on the variables ludus ($p < .05$), pragma ($p < .01$), and agape ($p < .001$). However, the difference in mean scores and the resulting eta$^2$ for ludus and pragma showed that the differences were actually very small (mean difference = -.47 and .60, eta$^2 = .01$ and .01 respectively). Conversely, the magnitude of the difference between the means of agape (mean difference = -1.61, 95% CI: -2.04 to -1.20) were moderately high (eta$^2 = .09$), which is why the variable agape was divided by gender in the primary analysis. No significant differences were found between gender and RDAS scores. In addition to the above analysis of variables, race, age, and times previously married were tested, but did not show any influence that would impact the primary analysis.

Primary Analysis

To begin looking for a relationship between marital satisfaction, Lee’s love styles, and Gottman’s negative communicative techniques, a Pearson correlation matrix was calculated with results presented in Table 2. There was a strong, positive correlation between the consensus subscale and the RDAS overall score with eros ($r = .51$ and .56, respectively, $p < .001$). Although not as powerful, a significant correlation was also found between eros and the degree of closeness and satisfaction within the relationship ($r = .16$ and .28, respectively, $p < .01$).

The correlation between agape males and the RDAS resulted in moderate correlations with consensus and RDAS Total; the more likely the male agreed with being a selfless lover, the higher the likelihood of marital happiness and consensus on important matters (i.e., $r = .38$ for consensus and $r = .41$ for RDAS Total). Similar findings were found with agape females, but were not as strong, with $r = .24$ for consensus and .25 for RDAS Total. Although the overall score from the RDAS was positively correlated with four of the six love styles (exception of ludus, $r = -.28$ and pragma, $r = -.02$), only eros and agape males resulted in a strong relationship by Cohen’s (1988) standards ($r = .56$ and .41, respectively).
Table 2. Pearson Correlations between Measures of Marital Satisfaction with Lee’s Love Styles and Gottman’s Four Horsemen (n = 572)

<table>
<thead>
<tr>
<th>Scale</th>
<th>Consensus</th>
<th>Satisfaction</th>
<th>Cohesion</th>
<th>RDAS Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eros</td>
<td>.51**</td>
<td>.16**</td>
<td>.28**</td>
<td>.56**</td>
</tr>
<tr>
<td>Ludus</td>
<td>-.23**</td>
<td>-.14**</td>
<td>-.18**</td>
<td>-.28**</td>
</tr>
<tr>
<td>Storge</td>
<td>.10*</td>
<td>.08</td>
<td>.09*</td>
<td>.14**</td>
</tr>
<tr>
<td>Pragma</td>
<td>.03</td>
<td>.07</td>
<td>-.05</td>
<td>-.02</td>
</tr>
<tr>
<td>Mania</td>
<td>.01</td>
<td>-.04</td>
<td>-.05</td>
<td>.01</td>
</tr>
<tr>
<td>Agape (Male)</td>
<td>.38**</td>
<td>.05</td>
<td>.18*</td>
<td>.41**</td>
</tr>
<tr>
<td>Agape (Female)</td>
<td>.24**</td>
<td>.11*</td>
<td>.08</td>
<td>.25**</td>
</tr>
<tr>
<td>Contempt</td>
<td>-.45**</td>
<td>-.18**</td>
<td>-.27**</td>
<td>-.53**</td>
</tr>
<tr>
<td>Criticism</td>
<td>-.45**</td>
<td>-.09*</td>
<td>-.25**</td>
<td>-.56**</td>
</tr>
<tr>
<td>Stonewall</td>
<td>-.48**</td>
<td>-.22**</td>
<td>-.33**</td>
<td>-.60**</td>
</tr>
</tbody>
</table>

* p < .05, ** p < .01

The Pearson correlation matrix demonstrated a stronger relationship between Gottman’s Four Horsemen and RDAS. In general, the negative techniques described by John Gottman resulted in a moderate to strong negative relationship with the RDAS measurements; the exception was with the subscale satisfaction. Although a significant negative relationship was found between the Four Horsemen and this subscale, the relationship was weak (contempt/defensiveness = -.18, criticism = -.09, and stonewall = -.22).

To further our understanding of the relationship between Lee’s love styles and Gottman’s communicative techniques, a Pearson correlation matrix was also calculated between these two scales (see Table 3). Negative and significant relationships were found with eros and agape when compared to all of Gottman’s Horsemen. Significant, positive relationships were found with ludus and mania with the exception of mania and criticism (i.e., r = .06). Pragma did not show a significant relationship with any of the communicative techniques.

Table 3. Pearson Correlations between Measures of Lee’s Love Styles and Gottman’s Four Horsemen (n = 572)

<table>
<thead>
<tr>
<th>Scale</th>
<th>Contempt</th>
<th>Criticism</th>
<th>Stonewall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eros</td>
<td>-.30**</td>
<td>-.34**</td>
<td>-.39**</td>
</tr>
<tr>
<td>Ludus</td>
<td>.20**</td>
<td>.28**</td>
<td>.30**</td>
</tr>
<tr>
<td>Storge</td>
<td>-.12**</td>
<td>-.06</td>
<td>-.14**</td>
</tr>
<tr>
<td>Pragma</td>
<td>-.02</td>
<td>.04</td>
<td>.05</td>
</tr>
<tr>
<td>Mania</td>
<td>.16**</td>
<td>.06</td>
<td>.09*</td>
</tr>
<tr>
<td>Agape</td>
<td>-.12**</td>
<td>-.25**</td>
<td>-.13**</td>
</tr>
</tbody>
</table>

* p < .05, ** p < .01
Hierarchical multiple regression was used to assess the ability of John Gottman’s Four Horsemen and John Lee’s six love styles to predict marital satisfaction (as measured by RDAS Total), after controlling for the amount of time married. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity, or homoscedasticity occurred. Length of marriage was entered in Step 1, explaining 1.5% of the variance in marital satisfaction. After the entry of Gottman’s Four Horsemen at Step 2, the total variance explained by the model as a whole was 45.2%, $F(4, 566) = 29.40, p < .001$. The added variables explained an additional 43.7% of the variance in marital satisfaction, after controlling for years married, $R^2$ change = .44, $F$ change (3, 566) = 150.23, $p < .001$. In Step 3, Lee’s love styles were entered with the total variance explained by the model as a whole being 54.6%, $F(10, 560) = 67.38$, $p < .001$. The added variables explained an additional 9.4% of the variance in marital satisfaction, after controlling for years married and Gottman’s Four Horsemen, $R^2$ change = .10, $F$ change (6, 560) = 19.45, $p < .001$. In the final model, all of Gottman’s Horsemen were statistically significant, with criticism ($beta$ = -6.79, $p < .001$) and stonewall ($beta$ = -5.49, $p < .001$) showing higher beta levels than contempt/defensiveness ($beta$ = -.14, $p < .001$). Of John Lee’s six love styles, only eros was found significant with $beta$ = 9.41 ($p < .001$).

**Discussion**

To begin fulfilling the need of understanding the connection between intra- and interpersonal variables with marital satisfaction and how they can be utilized in an Extension setting, questionnaires that could be used in education were provided to participants in an online survey. In particular, communicative techniques and one’s personal definition of love were measured and compared to happiness in marriage. Assessing interpersonal variables, significant negative relationships were found between Gottman’s negative communicative techniques (i.e., contempt/defensiveness, criticism, and stonewall) and marital satisfaction. In particular, the overall score on the RDAS and the consensus subscale resulted in the strongest relationships with Gottman’s Four Horsemen. This finding supports the existing literature of a negative relationship being found with negative communicative patterns, and marital happiness/consensus on important matters (Gottman, 1994). By providing students with Holman and Jarvis’ (2003) measurement of Gottman’s communicative techniques, extension agents will be able to focus on the specific challenges that their students are having during marital conflict. This is particularly valuable information due to the challenges of observing such conflict in a marital education program.

Further supplementing existing research (e.g., Hensley, 1996; Montgomery & Sorell, 1997), the love style that views love as a game (i.e., ludic) resulted in a significant negative relationship (i.e., -.28) with the overall score from the RDAS. The findings for eros—the passionate love style—also produced unsurprising results of a positive significant relationship with all variables used to assess marital satisfaction (e.g., Contreras et al., 1996). Thus, the overall relationships
found between the love styles and marital happiness supported current research, but two styles resulted in findings that differed from existing literature: \textit{pragma}, \( r = -0.02 \) and \textit{mania}, \( r = 0.01 \). The lack of significant findings and negative relationship with the \textit{manic} and \textit{practical} love styles could possibly be due to the reliability of the questionnaire (i.e., Cronbach’s alpha = 0.63 and 0.54, respectively). Thus, hypotheses 1, 2, and 3 can generally be supported with some hesitation in regards to the pragmatic and manic love styles. Once again, Extension agents will be able to use this information in an educational setting to specify what challenges their students might be having in their relationship.

The present study’s true contribution to current literature, though, is the association found between both inter- and intrapersonal variables to marital satisfaction and its ability to be used in a practitioner setting. In assessing the predictive power of Gottman’s Four Horsemen (i.e., interpersonal) and Lee’s love styles (i.e., intrapersonal) with marital satisfaction, a model that included the amount of time married, the use of Gottman’s communicative techniques, and Lee’s styles accounted for 54.6% of the variance in marital satisfaction. Although the overall model was found to be significant, only Gottman’s Horsemen and \textit{eros} were found to be independently significant in the final model. These particular findings were also supported by the significant relationships found in the aforementioned regression analyses.

Regardless of this slight limitation, the usefulness of these two measurements for Extension agents is hard to deny. Educators can use these tools to enlighten them on the specific needs of their audience regardless of the diversity present. By giving these two simple measurements, agents will be able to assist in increasing their students’ marital satisfaction by educating them on Lee’s love styles and Gottman’s communicative techniques.

\textbf{Strengths, Limitations, and Further Research}

Gender differences were found with the recruitment method performed (i.e., mail, Facebook, or email) with females being more likely to respond to the online form of recruitment. This was particularly interesting due to Dillman et al.’s (2009) finding that females were, overall, more likely to respond to requests to participate in research. A speculated reason for this difference may be due to females being more likely to use Facebook for interpersonal communication (Weiser, 2000) and the email being sent to a university that has more female than male graduate students (Institutional Research, Planning, & Effectiveness, 2011).

In addition, the questionnaires used to measure Gottman’s Four Horsemen and John Lee’s love styles had some concerning results in regards to their validity. For example, even after eliminating one question, the variable \textit{contempt/defensiveness} resulted in a Cronbach’s alpha of 0.658 while the other two variables (\textit{criticism} and \textit{stonewall}) were 0.528 and 0.658 respectively. This method of analyzing Gottman’s techniques is relatively new to the field and begs for more
clarity. Furthermore, the measurement of four of John Lee’s six love styles did have a respectable amount of validity (i.e., <.62); *ludus* and *pragma*, on the other hand, resulted in alphas less than .58. It is speculated that the placement of this particular questionnaire (i.e., at the end of over ten different measurements) may have impacted the lack of consistency in measuring what the variables were intended to measure.

Thus, the resulting relationship between marital satisfaction and Lee’s love styles support existing data, but the power of the relationship provides some hesitation in regards to the overall validity of this analysis. Nonetheless, the ability of Gottman’s Four Horsemen and the love styles to account for a large amount of variance in marital satisfaction justifies the need for educators, practitioners, and researchers to understand both the intra- and interpersonal variables present in married couples. By utilizing components—such as the *Love Attitudes Scale*—that can assist in understanding individual differences, the impact educators can have on their students will increase greatly.

References


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*Ron Werner-Wilson* is an Endowed Professor at the University of Kentucky in the Department of Family Sciences. He served as chair of Dr. Kimberly’s dissertation committee.
The Impact of Extension Gardening Programs on Healthy Attitudes and Behaviors

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Sandra Thompson
Lawrence Carter
Florida A&M University

Gardening programs have been increasing in popularity since 1995 when California enacted legislation with the goal of putting a garden in every school. Research has shown positive benefits of gardening programs include increasing a child’s academic skills, environmental awareness, and social skills, but little is known about their impact on healthy attitudes and behaviors. Considering childhood obesity rates are rapidly increasing, understanding how educational programs, such as gardening, can impact health has become important. The purpose of this study was to assess the impact Extension gardening programs had on participants’ healthy attitudes and behaviors. Using a pretest/posttest research design with a control group, the researchers found that only slight changes were occurring in participants’ attitudes and behaviors. However, when staff member open-ended responses were reviewed qualitatively, it was found that more is occurring within the program than was uncovered by the quantitative instrument. Recommendations for enhancing the school-based garden program as a result of the findings included teaching participants how to prepare and eat the vegetables they have produced in the garden, increasing instruction on how gardening is a physical activity, and including journaling about the nutritional values of fruits and vegetables to develop positive attitudes about health.

Keywords: Extension, youth, gardening, health

School-based gardening programs have historical roots and are believed to impact students in many ways (Hillison, 1998). Nationally, the implementation of school gardens has been on the rise since 1995 when California enacted legislation with the goal of putting a garden in every school (California Department of Education, 2007). Since then, other states have also created school gardening programs, many run by Extension programs. These programs incorporate hands-on gardening on the school grounds either during or directly after the school day.

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Gardening programs are believed to have many positive impacts on students. Recent research has shown some of the positive benefits of school gardening programs include increasing children’s academic skills, environmental awareness, and social skills (Armstrong, 2000; Blair, 2009; Ozer, 2007; Pigg, Waliczek, & Zajicek, 2006). In addition, school gardening programs increase students’ knowledge of how food is produced, which may be of particular importance to young students with limited knowledge of the origins of food production (Hess & Trexler, 2011).

School gardens have also been shown to increase a child’s healthy attitudes and behaviors, including their willingness to taste, and consequently eat, different types of vegetables (Beckman & Smith, 2008; Hermann et al., 2006; McAleese & Rankin, 2007). Morris, Neustadter, and Zidenberg-Cherr (2001) found that first grade students who participated in a school gardening project were more likely to taste different vegetables when compared to students who had not participated. A similar study found older children in fourth to sixth grade reported being more interested in trying new vegetables after participating in a school gardening program (Heim, Stang, & Ireland, 2009). Gardening programs also provide a venue for physical activity, as the students spend time outside engaged in planting, weeding, and harvesting (Ratcliffe, Merrigan, Rogers, & Goldberg, 2011).

Since they encourage healthy choices, school-based garden programs may assist in the battle against childhood obesity. Current childhood obesity rates are about 17% for children from ages 2-19 (Ogden & Carroll, 2010). This is a major concern because overweight or obese children are at a much higher risk for many complications, such as high blood pressure, type 2 diabetes, breathing difficulties, and joint problems (Freedman, Mei, Srinivasan, Berenson, & Dietz, 2007; Han, Lawlor, & Kimm, 2010; Sutherland, 2008; Whitlock, Williams, Gold, Smith, & Shipman, 2005). In addition, being overweight or obese as a child also increases the risk of being so as an adult (Biro & Wien, 2010; Serdula et al., 1993; Whitaker, Wright, Pepe, Seidel, & Dietz, 1997). Those most likely to be overweight and/or obese often come from economically disadvantaged backgrounds and are overrepresented by racial minorities. Hispanic boys and African American girls have the highest rates amongst their gendered groups (Ogden & Carroll, 2010). Therefore, this group is of special concern and may benefit the most from school gardening programs.

**Theoretical Framework**

The theoretical framework for this study was Social Cognitive Theory (SCT; Bandura, 1986). SCT explains individuals’ behavioral patterns as a function of their environmental influences, personal attributes, and behavior, with feedback from each aspect affecting all the others (Bandura, 1986). Personal attributes include one’s attitudes and knowledge. Environmental factors include situations external to an individual that can influence him/her in some way. Behavioral factors are how an individual acts in a specific situation. Past research has used SCT to understand children’s vegetable consumption behavior (Perry et al., 1990; Reynolds, Hinton,
Shewchuk, & Hickey, 1999) and has been recommended in nutrition education and interventions (Glanz & Eriksen, 1993; Perry et al., 1990; Sims, 1987). More recently, it has been used as the foundation for developing an understanding of the impacts of school-based gardening interventions (Ratcliffe, 2007; Ratcliffe et al., 2011).

This study’s theoretical framework borrows from Ratcliffe’s (2007) descriptions of SCT constructs related to school gardening and environmental awareness and have been adjusted for this study, which focuses specifically on health-related attitudes and behaviors (See Figure 1).

**Figure 1. SCT Constructs and Relationship with School Gardening and Health**

- **Environmental Factors**
  - Hands on gardening experience
  - Health behaviors modeled by adults and other students

- **Personal Factors**
  - Attitude towards healthy behavior
  - Knowledge about healthy behavior

- **Behavioral Factors**
  - Healthy eating patterns
  - Increased physical activity

In the case of school gardening and its impact on health, students’ personal attributes are their attitudes towards health, nutritious eating, and physical activity, along with their knowledge base surrounding those subjects. The environmental factors include the hands-on gardening experience, the opportunity to engage in healthy behavior (such as physical activity involved in gardening or consuming the vegetables when harvested), and any health behaviors the students see displayed by adults and their classmates. These environmental and personal factors will then lead to increased healthy eating and physical activity, which is the behavioral goal. The process of these interactions is cyclical and self-sustaining. As more students engage in healthy behaviors, younger students will see these behaviors modeled more often, and the attitudes towards being healthy will improve and normalize with time.
Purpose and Research Questions

The purpose of this study was to assess the impact of a school-based gardening project on participants’ healthy attitudes and behaviors. The purpose was guided by the following research questions:

1. What are the health attitudes and behaviors of participants prior to and after a school-based gardening project?
2. Do health attitudes and behaviors of participants change as a result of participating in a school-based gardening project?
3. Do the health attitude or behavior changes associated with participation differ across age, gender, and site location?
4. What are the perceptions of staff regarding the intervention and the health attitudes and behaviors of the participants?

Methods

This study used a pretest/posttest survey research design with a control group along with an open-ended staff assessment to answer the research questions.

Participant Survey

A survey instrument was designed and disseminated in written form to participants at four program sites. A control group consisting of a class of students who were of comparable age, grade, and other demographics to students engaged in the gardening project were also given the survey instrument before and after the program. A control group was used to ensure any notable changes were due to the program and not confounding factors, such as typical classroom education throughout the year.

The survey included 53 questions about the gardening project participants’ attitudes, knowledge, and behaviors associated with specific gardening-related topics. Of the 53 questions, six focused on healthy behaviors and attitudes and were used in this study. An instrument previously developed by Ratcliffe (2007), and found to be valid and reliable, was used as the foundation. Questions were phrased as statements with a five-point Likert-type scale with 1 = Never, 2 = Occasionally, 3 = Sometimes, 4 = Most of the Time, 5 = Always. The “Attitude towards Health” and the “Preference towards Healthy Food” index each included three questions. Scores within each area were combined and averaged to create overall index scores. Prior to use, a panel of experts specializing in survey design for young audiences, school-based gardening techniques, and health attitudes and behaviors reviewed the instruments to ensure validity.
The survey instrument was administrated as a pretest one week before the participants engaged in the gardening project and as a posttest on the last day of the program. Both tests were administered in written form by the program staff.

Descriptive and inferential statistics were used to analyze the data in SPSS. Descriptive statistics were used to describe attitude and behavior levels before and after the gardening project. Dependent t-tests were conducted to assess whether changes in before and after scores were statistically significant. Cross tabulations were conducted to determine whether participant changes differed based upon age, gender, and site location. Last, an Analysis of Covariance (ANCOVA) was used to assess whether differences in scores were related to whether or not the participant was in the control or experimental group. A significance level of .05 was established a priori.

**Project Site Description and Implementation**

The Extension program used three schools and a community-based site, all located in the Florida Panhandle. Sites were chosen for four main reasons: (1) high levels of local poverty, (2) Title 1 designation, (3) high levels of free and reduced lunch recipients, and (4) site administrative support in hosting the gardening project and activities. Two sites were located at elementary schools, one was an afterschool program serving elementary through middle school-aged children, and one was an afterschool program serving just middle school-aged children. Each site had its own coordinator that visited the site and provided instruction to the participants on managing the garden. Site coordinators followed a gardening curriculum to cover different topics throughout the program. The curriculum covered (a) the importance of agriculture, (b) what is a garden and how to keep a gardening journal, (c) importance of composting, (d) fertilizers and pesticide benefits for plants, (e) elements needed for plant growth, (f) climate change, and (g) nutrition. The program took place over one academic year, from September until May.

Participants engaged in the gardening project twice a week, except for the middle school site, which participated once every three weeks. The participants prepared the garden, chose vegetables, planted, weeded, watered, harvested, and either sold the produce to local residents or took the harvest home to their families. The participants learned about various plant/science topics, nutrition and health, and how to set and follow through with personal goals (see Table 1 for a description of the topics covered at each site). Keeping a gardening journal and giving a presentation to others about their gardening experiences were other planned activities.
Table 1. Demographics and Educational Topics Covered at Four School-based Gardening Sites

<table>
<thead>
<tr>
<th>Topic</th>
<th>Site 1: Community-Based</th>
<th>Site 2: Elementary School</th>
<th>Site 3: Middle School</th>
<th>Site 4: Elementary School</th>
</tr>
</thead>
<tbody>
<tr>
<td># of participants</td>
<td>8</td>
<td>22</td>
<td>5</td>
<td>36</td>
</tr>
<tr>
<td>Age range</td>
<td>6-9</td>
<td>9-12</td>
<td>12-14</td>
<td>10-12</td>
</tr>
<tr>
<td>Plant identification</td>
<td>✓</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>Plant classification</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant physiology</td>
<td>✓ ✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant life cycle</td>
<td>✓</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>Soil structure</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Water cycle</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutrients</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Photosynthesis</td>
<td>✓ ✓ ✓</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Harvesting strategies</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Following plant label</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>instructions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutrition/Health</td>
<td>✓ ✓</td>
<td></td>
<td></td>
<td>✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Communication skills</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goal setting</td>
<td>✓ ✓</td>
<td></td>
<td></td>
<td>✓ ✓</td>
</tr>
<tr>
<td>Acting responsibly</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

Note: ✓ indicates each time the associated topic was covered at the site.

Participant Demographics

The communities in which the gardening program took place had a higher than average poverty rate, ranging from 19.8% to 23.8%, when compared to the state average of 13.8% (U.S. Census Bureau, 2012). The eligibility levels for free and reduced lunches within the communities were also high, ranging from 43.4% to 81.7% (The Annie E. Casey Foundation, 2010). A total of 71 students participated in the Extension gardening program. The participants were primarily 4th and 5th grade students (85.5%) between the ages of 8-11 years old (83.1%) and predominately African American (74.6%). Demographics of the participants can be seen in Table 2 with a breakdown of age categories at each site listed in Table 1.
Table 2. Demographics of Participants at Four School-based Gardening Sites (N = 71)

<table>
<thead>
<tr>
<th>Demographic</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st-3rd</td>
<td>6</td>
<td>8.6</td>
</tr>
<tr>
<td>4th</td>
<td>23</td>
<td>33.3</td>
</tr>
<tr>
<td>5th</td>
<td>36</td>
<td>52.2</td>
</tr>
<tr>
<td>6th-9th</td>
<td>4</td>
<td>5.7</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 and under</td>
<td>4</td>
<td>5.6</td>
</tr>
<tr>
<td>8-9</td>
<td>17</td>
<td>23.9</td>
</tr>
<tr>
<td>10-11</td>
<td>42</td>
<td>59.2</td>
</tr>
<tr>
<td>12 and older</td>
<td>8</td>
<td>11.3</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>45</td>
<td>63.4</td>
</tr>
<tr>
<td>Female</td>
<td>26</td>
<td>36.6</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American/Black</td>
<td>53</td>
<td>74.6</td>
</tr>
<tr>
<td>Hispanic</td>
<td>13</td>
<td>18.3</td>
</tr>
<tr>
<td>Caucasian/White</td>
<td>4</td>
<td>5.6</td>
</tr>
<tr>
<td>Native American</td>
<td>1</td>
<td>1.4</td>
</tr>
</tbody>
</table>

Staff Assessment

In addition to surveying the program participants, a 15-question open-ended online survey was administered to staff members and individual teachers whose classrooms participated in the gardening program. Out of the fourteen staff members and teachers who were given the survey, twelve responded (85.7% response rate). The questions asked participants to describe the challenges they faced and the value they saw in the gardening program. The survey also asked participants to describe how they felt the students reacted to the program and whether they thought that community awareness about nutrition and health had changed as a result of the program.

The responses were coded for dominant themes by a researcher who had minimal contact with the gardening project and was viewing the data from an outside perspective. Initially, all statements referring to any aspect of health (physical activity, nutrition, or eating and consuming vegetables) were identified. Quotes were then placed into emergent themes depending on the type of health activity to which the statement most closely pertained. Finally, quotes were examined only within their dominant theme to determine subthemes and finalized. The researcher kept an audit trail, used peer debriefing with two faculty members with extensive Extension programming experience, and then member checked the data with staff members from the program to ensure the trustworthiness of the findings (Lincoln & Guba, 1985).
Results

Health Attitudes and Behaviors

The results of the Attitude towards Health index scores showed no statistical changes in the overall index score and only a slight increase from the initial index score of 4.20 to the score of 4.29 at the end of the school year (Table 3). Also, none of the individual questions making up this averaged index had statistically significant changes. Out of all three questions that made up the Attitude towards Health index, students felt always living in a healthy community was the most important.

Table 3. Participant Attitude towards Health (N = 71)

<table>
<thead>
<tr>
<th></th>
<th>Pretest M (SD)</th>
<th>Posttest M (SD)</th>
<th>Δ M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Attitude towards Health</td>
<td>4.20 (.75)</td>
<td>4.29 (.75)</td>
<td>+.09</td>
</tr>
<tr>
<td>I go to the doctor for a checkup every year</td>
<td>4.00 (1.32)</td>
<td>4.18 (1.21)</td>
<td>+.18</td>
</tr>
<tr>
<td>I do physical exercises every day</td>
<td>3.99 (1.12)</td>
<td>4.08 (1.09)</td>
<td>+.09</td>
</tr>
<tr>
<td>Living in a healthy community is important</td>
<td>4.61 (.73)</td>
<td>4.59 (.82)</td>
<td>-.02</td>
</tr>
</tbody>
</table>

Note: Scale: 1 = Never, 2 = Occasionally, 3 = Sometimes, 4 = Most of the Time, 5 = Always

Prior to engagement in the gardening program, participants scored an average of 3.47 on the Preference towards Healthy Food index (Table 4). At the end of the school year, this score had decreased .07 points to 3.41. This was not a statistically significant change and represents only a slight shift in agreement level and frequency of performing specific activities. The item regarding eating fast food was reverse coded into the index, and the decrease in response to this statement represents a healthy change, but this is also not statistically significant.

Table 4. Participant Preference towards Healthy Food (N = 71)

<table>
<thead>
<tr>
<th></th>
<th>Pretest M (SD)</th>
<th>Posttest M (SD)</th>
<th>Δ M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Preference towards Healthy Food</td>
<td>3.47 (.82)</td>
<td>3.41 (.73)</td>
<td>-.07</td>
</tr>
<tr>
<td>I eat fast food every day (RC)</td>
<td>2.99 (1.24)</td>
<td>2.63 (1.28)</td>
<td>-.36</td>
</tr>
<tr>
<td>I eat green vegetables every day</td>
<td>3.28 (1.15)</td>
<td>3.41 (1.12)</td>
<td>+.13</td>
</tr>
<tr>
<td>I think it is important to eat green vegetables</td>
<td>4.15 (1.20)</td>
<td>4.18 (1.03)</td>
<td>+.03</td>
</tr>
</tbody>
</table>

Note: Scale: 1 = Never, 2 = Occasionally, 3 = Sometimes, 4 = Most of the Time, 5 = Always; RC = Reverse Coded
Changes Based on Age, Gender, and Site Location Differences

Crosstabulations were conducted to determine whether index changes related to health differed among key demographic factors and/or location. Table 5 exhibits changes in participant index scores based on age category (7 years and under; 8-9 years; 10-11 years; and 12 years and above). The indices with the highest positive change occurred within the 8-9 year old group.

Table 5. Mean Index Changes from Pretest to Posttest by Participant Age Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>7 and under (n = 4)</th>
<th>8-9 (n = 17)</th>
<th>10-11 (n = 42)</th>
<th>12 and above (n = 8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude towards Health</td>
<td>-.17</td>
<td>+.18</td>
<td>+.10</td>
<td>0</td>
</tr>
<tr>
<td>Preference towards Healthy Food</td>
<td>-.92</td>
<td>+.02</td>
<td>-.04</td>
<td>+.04</td>
</tr>
</tbody>
</table>

Changes in scores over time were examined by gender (Table 6). Females had slightly higher positive changes to their index scores after the intervention than males.

Table 6. Mean Index Changes from Pretest to Posttest by Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male (n = 45)</th>
<th>Female (n = 26)</th>
<th>Difference (Male–Female)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude towards Health</td>
<td>+.07</td>
<td>+.12</td>
<td>-.05</td>
</tr>
<tr>
<td>Preference towards Healthy Food</td>
<td>-.13</td>
<td>+.04</td>
<td>-.17</td>
</tr>
</tbody>
</table>

Changes in scores were compared across the four different locations, showing the programming at the different locations each had strengths and weaknesses (Table 7). Site 4 had the highest positive changes while Site 2 had a moderate positive increase.

Table 7. Mean Index Changes from Pretest to Posttest by Location

<table>
<thead>
<tr>
<th>Location</th>
<th>Site 1: Community Program (n = 8)</th>
<th>Site 2: Elementary School (n = 22)</th>
<th>Site 3: Middle School (n = 5)</th>
<th>Site 4: Elementary School (n = 36)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude towards Health</td>
<td>-.13</td>
<td>+.02</td>
<td>-.20</td>
<td>+.22</td>
</tr>
<tr>
<td>Preference towards Healthy Food</td>
<td>-1.17</td>
<td>+.14</td>
<td>+.07</td>
<td>+.04</td>
</tr>
</tbody>
</table>

An ANCOVA was conducted to assess whether the difference in scores between the pretest and posttest were related to whether or not the participant was in the control group or in the experimental group. The ANCOVA test allowed the researcher to control for external factors likely to be highly correlated to the dependent variable. A $p$-value of less than .05 represented a significant difference between the control and experimental group. There was not a significant difference between the control and experimental groups on the Attitude towards Health index or the Preference towards Healthy Food index (Table 8).
Table 8. ANCOVA Results Comparing Index Changes between Experimental and Control Groups

<table>
<thead>
<tr>
<th>Index</th>
<th>∆M Control (n = 13)</th>
<th>∆M Experimental (n = 71)</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude towards Health</td>
<td>-.26</td>
<td>.09</td>
<td>2.06</td>
<td>.155</td>
</tr>
<tr>
<td>Preference towards Healthy Food</td>
<td>-.21</td>
<td>-.07</td>
<td>.242</td>
<td>.624</td>
</tr>
</tbody>
</table>

Staff Assessment

The open-ended responses were coded into dominant themes related to health. Four themes emerged including (1) Consumption of Vegetables, (2) Physical Activity, (3) Nutrition Education, and (4) Extending the Lessons to the Home Environment.

The Consumption of Vegetables theme had four subthemes, preference for vegetables, consumption of vegetables by nonstudents, consumption by students’ families, and direct consumption by students themselves. The first subtheme was preference for vegetables. Staff and teachers reported the students increased their preference to eat vegetables, especially those grown in the garden. One respondent mentioned, “When the children grow green foods, their desire to eat them increases.” Another described that the students showed an increased desire to eat the vegetables that they grew. On the other hand, one respondent stated, “The children already know what is healthy and what is not. They still choose candy.”

The second subtheme was consumption of vegetables by nonstudents. Produce grown in the various sites’ gardens was consumed by community members, and in one case, a teacher. One respondent reported, “The students shared what they grew with the adults in the community.” One teacher was given vegetables by students and said, “My most valuable learning experience with the Red Clay garden project was harvesting and then eating the vegetables my own students had a hand in planting.”

The third subtheme was consumption of vegetables by students’ families. A very common use of the vegetables across the various sites was to be harvested and taken home with the children to be shared with their families. Respondents reported the children “had the chance to take home some of the crops” and that they “shared their produce with their families.” The children enjoyed taking the vegetables home, and one respondent noted that the children “thought this was quite grown up.”

The fourth subtheme was consumption of vegetables by students. In one site, “vegetables from the gardens were prepared at the schools with some parents participating.” Another respondent reported that students “tried new [vegetables]” as a result of the program.
The second dominant theme was Physical Activity. Respondents reported the students engaged in activities related to preparing the garden for planting, planting vegetables, caring for the garden, and harvesting. While preparing the garden for planting, students “removed any rocks or debris left from the last garden.” Another respondent reported that “after harvesting, the team and students [worked] on tilling and turning the soil with the compost left from last semester, to prepare them for the upcoming planting season.” They then helped plant the vegetables and took care of the plants as they grew. The students watered, weeded, and removed insects that could be harmful to the plants. When it came time to harvest the plants, the respondents noticed that the students “loved to pick crops” and followed directions well, “The adults would show [the students] how to pick a crop then they would go behind them and do it themselves.”

The third dominant theme was Nutrition Education. The two subthemes emerging within the nutrition education theme were awareness about healthy eating and ability to identify vegetables. Students and community members were more aware of the benefits of healthy eating, mostly as a result of students communicating to friends and family. For example, “This project may have complimented…information [to] help the students learn how to communicate issues concerning good nutrition to their parents” and “Many students [shared] what they learned with family and friends.” Also, students learned how to identify different vegetables by “knowing which vegetables were which and how to tell them apart.”

The final dominant theme was Extending the Lessons to the Home Environment. In some cases, respondents reported students expanded their gardening program by starting gardens of their own at home with their parents. For example “Some students shared that they had started a garden at home as a result of the project” and “One student’s parents decided to grow a garden to help with the cost of groceries.”

Discussion

SCT explains how the environment surrounding an individual influences attitude and behavioral changes (Bandura, 1986). The school gardening intervention described in this study aimed to change the environment by introducing an Extension gardening program into schools and community-based sites. Results from the t-test showed that the two health-related indices, Attitude towards Health and Preference towards Healthy Food, did not change significantly when measurements taken before and after the intervention were compared. The lack of significant results around Attitudes towards Health and Preference towards Healthy Food may suggest that the environment was not altered enough to result in significant attitude and behavioral changes.

There were not many staff members who reported the participants had actually consumed the vegetables even though they participated in hands-on activities. This finding is in direct
opposition to previous studies that have shown school gardening programs increased participants’ willingness to try vegetables grown in the garden (Heim et al., 2009; Morris et al., 2001). Using SCT theory, participants’ attitudes about consuming vegetables should have increased as a result exposure to peer modeling.

In addition, participants did not report being more physically active after engaging in the program. However, the staff and teachers reported that the participants were very involved in all aspects of planting, caring for, and harvesting the gardens. It is possible that the participants did not consider gardening activities to be physical activity, and therefore, did not report a large change over time in their activity level.

When pretest and posttest scores were compared, participants’ knowledge about nutrition did not change significantly. After the program, the participants had a moderately neutral perspective about the importance of eating green vegetables every day, implying that targeted nutrition information may be needed for participants to understand the importance of regular vegetable consumption.

Although it was a proposed activity, only 22% \((n = 15)\) of the participants reported keeping a gardening journal. The SCT framework would suggest that, had it been done, journaling would change the environment (by creating a new activity for the participants) and require a specific behavior (writing in the journal), which could lead to increased knowledge and positive attitudes around good nutrition.

Finally, some participants planting their own gardens at home suggests that the participants were able to gather enough knowledge and practice working in all stages of gardening to feel confident in implementing their own garden with the help of their parents. It also suggests that these participants had high positive attitudes around gardening that made them interested in beginning their own at home.

This study does have limitations. Due to lack of detailed records about individual attendance and low levels of engagement in specific gardening supplemental activities (such as keeping a journal or giving a verbal presentation to others), researchers were not able to examine how these activities may have impacted overall participant learning and behavioral outcomes. Secondly, while there was a gardening curriculum that guided instruction, it was not known how closely site coordinators followed the curriculum and the specific order of topical instruction they chose.

**Recommendations**

The findings of this study show that participants did not engage in eating more vegetables. Perhaps Extension educators need to consider building in vegetable preparation and consumption
as part of the on-site curriculum. Including a taste test during class could introduce participants to new vegetable and fruit choices to which limited resource students are not normally exposed, starting them off on the right food practices. Should this be implemented, research could be conducted examining participants’ willingness to try fruits and vegetables, both before and after the program, to see if exposure and preparation lessons changed their healthy eating behaviors.

While the participants did not believe they had increased their level of physical activity by working in the garden, the program staff disagreed and believed it had increased. It is possible that the participants did not consider the gardening activities to be physical activity. Extension educators should emphasize and discuss the different types of physical activity in which the participants engage while gardening, such as bending, pulling, and lifting. This could increase the participants’ knowledge of different types of physical activity. In addition, a research study tracking participant activity during a set time period while engaged in the gardening program would be a way to objectively measure the actual physical activity carried out by participants. A study of this kind could be used to accurately report the physical benefits of garden programs.

Last, participant nutrition knowledge levels did not increase as expected. Targeted nutritional information about vegetable consumption needs to be shared throughout the program to maximize participant increases in nutritional knowledge. Extension educators could incorporate game show style questions about nutritional information as part of the curriculum when planting and harvesting. Assignments could also be included where students are encouraged to discuss their attitudes towards vegetables and fruits in their gardening journals. Based on Social Cognitive Theory (Bandura, 1986), expressed attitudes are strong drivers of behavior and will interact positively with the learning experience. By encouraging participants to explore their attitudes towards fruits and vegetables and to reflect upon what they like and do not like about them including nutritional value, they will be more likely to retain information. Research examining the impacts of journaling as part of a gardening project would also assist in understanding the direct impact of reflection on knowledge and attitude changes within at-risk youth. With obesity levels increasing among minority populations, it is more important than ever to prepare at-risk children to make healthy lifestyle and nutritional choices to assist them in living longer and healthier lives.

References


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Preliminary Assessment of Diabetic Youth’s Acceptance of Cinnamon in Treating Diabetes: A Telephone Interview

Jay Kandiah
Dawn Vincent
Valerie Amend
Kimberli Pike
Ball State University

Medications in treatment and control of diabetes can be costly for pediatric patients and families. Therefore, individuals may seek complementary and alternative therapies, such as cinnamon, in addition to traditional treatments. The objective of this study was to determine acceptability of using cinnamon in treatment of diabetes in a pediatric population with diabetes. Seventy-six pediatric diabetes patients at a diabetes clinic participated in a one-time telephone interview using an 18-item, validated questionnaire. Descriptive statistics were utilized to determine cinnamon acceptability and preferences. The majority of the subjects were between 16-18 years (43%, n = 33), Caucasian (62%, n = 47), and female (67%, n = 51). More than three-fourths were overweight or at risk of being overweight (80%, n = 60). Seventy-six percent stated that they would be willing to try cinnamon for treatment of their diabetes, whereas 14.5% were undecided and 9.2% unwilling. Most (n = 56, 52.5%) were willing to take the cinnamon supplement 1-2 times per day. The greatest concerns expressed by subjects were side effects, interaction with current medications, and physician’s willingness to approve and prescribe. This research suggests that in consultation with health professionals, diabetic youth are willing to try cinnamon supplementation in the treatment of diabetes.

Keywords: Diabetes, pediatrics, cinnamon, interview

Introduction

According to a 2010 report from the Centers for Disease Control and Prevention (CDC, 2011), in the United States, about 215,000 people under age 20 have diabetes; this is 0.26% of individuals in this age group. Each year from 2002-2005, 15,600 youth were newly diagnosed with type 1 diabetes, and 3,600 were newly diagnosed with type 2 diabetes. Diabetes is associated with higher risks of morbidity and mortality and is the 5th leading cause of death in America.

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Individuals with diabetes have two times the risk of death compared to individuals without diabetes (CDC, 2011). Diabetes is associated with a number of complications that intensify with duration of the condition and is the leading cause of kidney failure, nontraumatic lower-limb amputations, and new cases of blindness among adults (CDC, 2011). Cardiovascular disease accounts for approximately 25% of deaths among patients with onset of diabetes before 20 years of age (American Association of Diabetes Educators, 2012). Heart disease and stroke account for about 65% of deaths among all people with diabetes (American Association of Diabetes Educators, 2012).

Individuals with diabetes aim to maintain proper control of their blood glucose and lipid levels to prevent related complications. Methods to control these levels can include a controlled diet, exercise regimen, weight loss, oral medications, and/or insulin (CDC, 2011).

Medications in treatment and control of diabetes can be costly, and their long-term safety is questionable (Eisenberg et al., 1993). Therefore, individuals may seek complementary and alternative therapies such as use of spices and herbs (e.g., cinnamon, ginseng, davana, supari, and aloe vera) in addition to traditional treatments. Several studies have examined the use of complementary and alternative medicine (CAM) in treatment of diabetes in adults (Broadhurst, Polansky, & Anderson, 2000; Egede, Ye, Zheng, & Silverstein, 2002; Garrow & Egede, 2006; Jarvill-Taylor, Anderson, & Graves, 2001; Khan, Bryden, Polansky & Anderson, 1990; Khan & Safdar, 2003; Ryan, Pick, & Marceau, 2001; Schoenberg, Stoller, Kart, Perzynski, & Chapleski, 2004; Shapiro & Gong, 2002; Yeh, Eisenberg, Davis, & Phillips, 2002; Yeh, Eisenberg, Kaptchuk, & Phillips, 2003).

Recently, more studies have focused on cinnamon supplementation, specifically in adult diabetics (for example Crawford, 2009; Klein et al., 2005; Magistrelli & Chezem, 2012; Vafa et al., 2012), with varying results. While an analysis of ten prospective, parallel-group design, randomized controlled trials on cinnamon and diabetes by Leach and Kumar (2012) found there was not sufficient evidence to support the use of cinnamon for type 1 or 2 diabetes, studies by Hlebowicz, Darwiche, Björgell, and Almér (2007) and Magistrelli and Chezem (2012) suggest cinnamon may be effective in moderating postprandial glucose response in normal weight and obese adults. Altschuler, Casella, MacKenzie, and Curtis (2007) found the use of cinnamon does not produce significant improvements in Hemoglobin A1c (HbA1c) for type 1 diabetes, as the disease has different pathophysiology than type 2 diabetes. Still, the number of type 2 diabetes diagnoses in populations under the age of 20 has climbed. To date, little research has examined the efficacy of using cinnamon with the pediatric population or the willingness of diabetic youth to use cinnamon for treatment of diabetes. Therefore, the purpose of this descriptive pilot study was to determine youth’s preference and acceptability of cinnamon as a complementary therapy in treatment of diabetes.
Materials and Methods

One-hundred and seventy-seven pediatric patients who attend or have previously attended a diabetes clinic at a large Midwestern children’s hospital were invited to participate in the study. Names and contact information of the participants were obtained from the clinic’s pediatric endocrinologist. Subjects’ inclusion criteria for the study included the following: 1) age 10-18 and 2) diagnosed with either type 1 or type 2 diabetes for over 1 year. Patients who were pregnant were excluded from this study. Prior to data collection, parental-patient consent was obtained for release of all pertinent medical information.

An 18-item telephone interview questionnaire (12 questions related to cinnamon use and diabetes; 6 demographic questions) was used as a script. The interview questions were reviewed by one endocrinologist, two pediatric dietitians, and two parents for face validity to ensure appropriateness for the pediatric population. Reliability was not assessed because the interview questionnaire was simply measuring conditions and opinions of youth diabetic patients via telephone; actual use of cinnamon was not assessed. Upon approval of the study protocol from the Institutional Review Board, a one-time telephone interview was conducted using the questionnaire. A single researcher conducted all interviews to ensure uniformity in questions. Heights and weights were retrieved from subject’s most recent medical records. Descriptive statistics were computed using SPSS software. Further statistical analysis was not utilized due to the preliminary nature of the study and relatively small sample size. Also, researchers were not looking at effectiveness of cinnamon, rather acceptance with the population described.

Results

From a pool of 177 pediatric diabetic patients, 76 successfully completed the research. Of the remaining 101 potential subjects, 97 could not be contacted due to disconnection of telephone services, incorrect numbers, and/or lack of telephone accessibility. Two patients were over 18 years of age, and two denied having diabetes.

As shown in Table 1, 67% (n = 51) were female, and 33% (n = 25) were male. A majority of subjects were age 16-18 years (43%, n = 33) and Caucasian (62%, n = 47). Other ethnicities represented were African American (n = 25), Asian (n = 2), Latino (n = 1), or mixed (n = 1). Calculation of Body Mass Index for Age indicated 20% of children (n = 15) were at a healthy weight, 25.3% (n = 19) were at risk for overweight, and 54.7% (n = 41) were overweight.

Table 2 presents descriptive statistics related to the current health regimen of participants, including type of diabetes, special diets used, and types and frequency of medications used to control diabetes. The most commonly used types of insulin were Novolog (n = 24, 31.6%) and Lantus (n = 16, 21.1%). Metformin was the most used oral medication (n = 51, 67.1%).
### Table 1. Demographic Information of Subjects (N = 76)

<table>
<thead>
<tr>
<th></th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>51 (67.1)</td>
</tr>
<tr>
<td>Male</td>
<td>25 (32.9)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>10-12</td>
<td>16 (21.1)</td>
</tr>
<tr>
<td>13-15</td>
<td>27 (35.5)</td>
</tr>
<tr>
<td>16-18</td>
<td>33 (43.4)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>25 (32.9)</td>
</tr>
<tr>
<td>Asian</td>
<td>2 (2.6)</td>
</tr>
<tr>
<td>Latino</td>
<td>1 (1.3)</td>
</tr>
<tr>
<td>Mixed</td>
<td>1 (1.3)</td>
</tr>
<tr>
<td>Caucasian</td>
<td>47 (61.8)</td>
</tr>
</tbody>
</table>

### Table 2. Current Health Regimen of Participants (N = 76)

<table>
<thead>
<tr>
<th></th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Diabetes</strong></td>
<td></td>
</tr>
<tr>
<td>Type 1</td>
<td>24 (31.6)</td>
</tr>
<tr>
<td>Type 2</td>
<td>52 (68.4)</td>
</tr>
<tr>
<td><strong>Type of Diet Used</strong></td>
<td></td>
</tr>
<tr>
<td>1500-1800 ADA</td>
<td>2 (2.6)</td>
</tr>
<tr>
<td>Carbohydrate Counting</td>
<td>23 (30.3)</td>
</tr>
<tr>
<td>Eat Less Food</td>
<td>6 (7.9)</td>
</tr>
<tr>
<td>Eat Less Sweets</td>
<td>3 (3.9)</td>
</tr>
<tr>
<td>Limit Carbohydrates</td>
<td>2 (2.6)</td>
</tr>
<tr>
<td>Low Carb/Low Fat</td>
<td>1 (1.3)</td>
</tr>
<tr>
<td>No Regular Soda</td>
<td>1 (1.3)</td>
</tr>
<tr>
<td>Type Not Provided</td>
<td>2 (2.6)</td>
</tr>
<tr>
<td>No Special Diet Used</td>
<td>36 (47.3)</td>
</tr>
<tr>
<td><strong>Type of Medication</strong></td>
<td></td>
</tr>
<tr>
<td>Actose</td>
<td>5 (6.6)</td>
</tr>
<tr>
<td>Amaryl</td>
<td>2 (2.6)</td>
</tr>
<tr>
<td>Byetta</td>
<td>1 (1.3)</td>
</tr>
<tr>
<td>Humalog/Humulin</td>
<td>16 (21.1)</td>
</tr>
<tr>
<td>Lantus</td>
<td>16 (21.1)</td>
</tr>
<tr>
<td>Lente</td>
<td>2 (2.6)</td>
</tr>
<tr>
<td>Levamir</td>
<td>1 (1.3)</td>
</tr>
<tr>
<td>Metformin</td>
<td>51 (67.1)</td>
</tr>
<tr>
<td>Novolog</td>
<td>24 (31.6)</td>
</tr>
<tr>
<td>NPH</td>
<td>5 (6.6)</td>
</tr>
</tbody>
</table>

Note: Some participants were taking more than one medication.
Over three-fourths of youth (76.3%, n = 58) stated that they would be willing to try cinnamon for treatment of their diabetes, whereas 14.5% (n = 11) were undecided, and 9.2% (n = 7) were unwilling to try (see Table 3). When questioned on their preference for the type of supplement (e.g., pill, liquid, either) and frequency of use, the majority of those who were willing to try cinnamon or were undecided stated they would prefer a pill. Interestingly, more than 30% (34.2%, n = 26) were willing to try either the pill or liquid form of the supplement. More than 50% (60.5%, n = 46) were willing to take the cinnamon supplement 1-2 times per day. A small proportion (2.6%, n = 2) expressed a desire to take it an unlimited number of times daily. When asked if cinnamon could help control blood glucose levels, the majority of youth were undecided, while a little over one-third stated yes.

Table 3. Participants’ Supplement Preferences (N = 76)

<table>
<thead>
<tr>
<th>Willing to Try Cinnamon</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>58 (76.3)</td>
</tr>
<tr>
<td>No</td>
<td>7 (9.2)</td>
</tr>
<tr>
<td>Undecided</td>
<td>11 (14.5)</td>
</tr>
</tbody>
</table>

| Supplement Form | n (%)
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pill</td>
<td>30 (39.5)</td>
</tr>
<tr>
<td>Liquid</td>
<td>13 (17.1)</td>
</tr>
<tr>
<td>Either</td>
<td>26 (34.2)</td>
</tr>
<tr>
<td>Neither</td>
<td>7 (9.2)</td>
</tr>
</tbody>
</table>

| Times per Day | n (%)
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>7 (9.2)</td>
</tr>
<tr>
<td>1</td>
<td>18 (23.7)</td>
</tr>
<tr>
<td>2</td>
<td>28 (36.8)</td>
</tr>
<tr>
<td>3</td>
<td>14 (18.4)</td>
</tr>
<tr>
<td>4</td>
<td>5 (6.6)</td>
</tr>
<tr>
<td>5</td>
<td>1 (1.3)</td>
</tr>
<tr>
<td>6</td>
<td>1 (1.3)</td>
</tr>
<tr>
<td>Unlimited</td>
<td>2 (2.6)</td>
</tr>
</tbody>
</table>

In response to diabetic adolescents, concerns regarding the use of cinnamon, the greatest concerns were side effects (72.4%, n = 55) and interaction with current medications (64.5%, n = 49). The least concern was number of times the cinnamon supplement would have to be taken each day. Other concerns reported by participants that may influence consideration of cinnamon supplement included: 1) the effect on physiological bodily functions (e.g., eyesight, organs, weight, and nerve impairment) and medical conditions (e.g., asthma, allergies, and dermatological issues); 2) palatability (e.g., taste alteration); 3) effectiveness of supplement; and 4) physicians’ willingness to approve and prescribe (see Table 4).
### Table 4. Potential Concerns Expressed by Participants Regarding Cinnamon Supplement Use (N = 76)

<table>
<thead>
<tr>
<th></th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Side Effects</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>55 (72.4)</td>
</tr>
<tr>
<td>No</td>
<td>21 (27.6)</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>45 (59.2)</td>
</tr>
<tr>
<td>No</td>
<td>31 (40.8)</td>
</tr>
<tr>
<td><strong>Insurance Coverage</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>39 (51.3)</td>
</tr>
<tr>
<td>No</td>
<td>37 (48.7)</td>
</tr>
<tr>
<td><strong>Number of Times Taken Per Day</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>29 (38.2)</td>
</tr>
<tr>
<td>No</td>
<td>47 (61.8)</td>
</tr>
<tr>
<td><strong>Interaction with Current Medications</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>49 (64.5)</td>
</tr>
<tr>
<td>No</td>
<td>27 (35.5)</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8 (10.5)</td>
</tr>
<tr>
<td>No</td>
<td>68 (89.5)</td>
</tr>
</tbody>
</table>

### Discussion

Limited investigations have been conducted regarding diabetic youth’s acceptability of cinnamon as treatment for diabetes. However, several studies have looked at complementary and alternative (CAM) medicine use and the effectiveness of cinnamon. Research by Low, Murray, O’Mahony, and O’B Hourihane (2008) looked at the prevalence of CAM use among the pediatric population in Ireland. Questionnaires were distributed over 4 months to 13 pediatric settings. Researchers found 57% of parents reported using CAM for their child, with the highest usage reported in 2-4 year olds. A similar study conducted in 2010 by Birdee, Phillips, Davis, and Gardiner examined factors associated with pediatric use of CAM in the United States. They found pediatric CAM users (n = 9,417) were more likely to be adolescents (AOR 1.36 [1.02-1.80], to have a parent who used some form of CAM (AOR 3.83 [3.04-4.84], and more likely to take prescription medications (AOR 1.51 [1.19-1.92]). A Finnish study by Hämeen-Anttila, Niskala, Siponen, and Ahonen (2011) examined the use of CAM among the parents of children under the age of 12 to determine parents’ influence on the children’s future use. The study examined 4,032 surveys. Thirty-one percent of subjects reported using some type of CAM in the preceding two days. Researchers concluded that women over 30 years of age, with higher education and higher incomes, were more likely to use CAM.
Research most similar to the present study was conducted in 2005 by Klein et al. (2005) and explored adolescents’ knowledge of and beliefs about dietary supplements, herbs, and over-the-counter medications. Subjects included 81 adolescents from various groups: suburban adolescents, urban minority adolescents, adolescents with chronic illness (including diabetes), and patients of complementary and alternative medicine practitioners. Focus group results indicated that most adolescents understood the terms “herbal medicine,” “herbal remedies,” or “nutritional supplements,” but many were unfamiliar with the term “alternative medicine.” In addition, most adolescents were familiar with CAM therapies used by people from their own culture, and most linked use of CAM for treatment of illness rather than preventative care.

The effectiveness of cinnamon as an alternative or adjunctive therapy for blood glucose control in the adult population has been studied in recent years, with varying results. Crawford (2009) utilized a randomized controlled trial to determine the effectiveness of cinnamon in lowering Hemoglobin A1c (HbA1c) levels in 109 patients with type 2 diabetes. The control group received usual medical care, while the experimental group received medical care in addition to cinnamon capsules. Results indicated HbA1c levels in the experimental group were lowered by 0.83% (95% CI, 0.46-1.2) compared to usual care lowering of HbA1c by 0.37% (95% CI, 0.15-0.59). Vafa et al. (2012) examined the effects of cinnamon consumption on glycemic status of 44 patients with type 2 diabetes in a double-blind placebo-controlled study. They found no significant differences in glycemic indicators between the placebo and treatment groups. Research conducted by Hlebowicz et al. (2007) investigated the effect of cinnamon on postprandial glucose in 14 healthy subjects using a crossover trial. Results indicated the addition of 6 grams of cinnamon to a meal lowered the postprandial glucose response ($p < 0.05$). The recent study from Magistrelli and Chezem (2012) found the addition of 6 grams of cinnamon to the cereal significantly reduced 120-minute glucose AUC ($p=0.008$) and blood glucose at 15 ($p = 0.001$), 30 ($p < 0.001$), 45 ($p < 0.001$), and 60 ($p = 0.001$) minutes. At 120 minutes, blood glucose was significantly higher with cinnamon consumption ($p < 0.001$) compared to a control group.

The present study was unique for several reasons: 1) diabetic youths’ perceptions on cinnamon use was gathered using telephone interviews; 2) it is one of the few to examine the pediatric diabetic population’s acceptance of cinnamon in regulation of blood glucose levels; and 3) in addition to information on current usage, this research obtained detailed information on mode of administration (including form and frequency) and potential concerns reported by diabetic youth with the use of cinnamon as CAM. There were limitations to this pilot study, including the sample selection which was confined to diabetic children and adolescents at one hospital with telephone accessibility. The use of a closed-ended questionnaire could lead to bias, and parents may have influenced the participants and possibly their answers to interview questions. Future research could focus on a qualitative inquiry to further explore the results of the present study, with additional statistical analysis.
The rise in diabetes in the pediatric population has encouraged health professionals to examine alternative forms of treatment. When compared to conventional therapies, it is possible that utilization of cinnamon may be beneficial in diabetes control resulting in greater patient compliance with decreased side effects. While it is premature to recommend cinnamon as a treatment for pediatric diabetes based on lack of research with this population, this preliminary study suggests that in consultation with health professionals, diabetic youth are willing to try cinnamon in the form of a pill as an alternative (or in conjunction with traditional medical care) in the treatment of diabetes.

Diabetes management is a collaborative effort and alternative treatments add another avenue to address the growing issue of pediatric diabetes. Barriers may be addressed by working with community organizations, hospitals and schools to disperse information on new treatments as they become available. Should research continue to support improved outcomes with the use of cinnamon for blood glucose control in type 2 diabetes, it is important to know if prospective patients would be open to utilizing new methods of treatment. The findings of the present study reveal that the majority would be open to trying cinnamon if it is proven a reliable treatment. Therefore, randomized clinical trials with this population would be recommended to determine the efficacy of using cinnamon as a complementary treatment for diabetes.

References


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**MyPlate, Children, and Lack of Formative Evaluation:**
A Systematic Review

Nina Roofe
Elson Bihm
University of Central Arkansas

Beginning at the critical preschool level, preventing childhood obesity is a multifaceted challenge with health, economic, ethical, and social implications. In particular, increasing emphasis will be placed upon educating children and their caregivers about the USDA’s MyPlate model of good nutrition. To date, evidence-based efforts to teach preschool children nutrition facts and appropriate behaviors are limited, and developers of evidence-based practices do not appear to use formative evaluation to an adequate extent. Crucial among these evaluations is assessing what the preschool child already knows about the MyPlate components (fruits, vegetables, grains, protein, and dairy). University researchers along with graduate students in nutrition and psychology conducted a review of current research regarding the use of MyPlate in early childhood education settings. Minimal empirical studies were found, indicating a need to expand the literature in the areas of MyPlate, early childhood nutrition education, and formative evaluation. In the current article, authors present the systematic review process of the scant knowledge that exists regarding formative evaluation research to document what preschool-age children already know about nutrition, suggest ways that this research base might be expanded, and advocate for the increased use of formative evaluation in both research and curriculum development.

*Keywords: MyPlate, formative evaluation, nutrition education, children, pediatric*

**Introduction**

**Health Implications**

Beginning at the critical preschool level, preventing childhood obesity is a multifaceted challenge with health, economic, ethical, and social implications. In particular, increasing emphasis will be placed on educating children and their caregivers about the U.S. Department of Agriculture’s (USDA) MyPlate model of good nutrition. As we later demonstrate, evidence-based efforts to teach preschool-age children nutrition facts and appropriate behaviors are limited, and developers of evidence-based practices do not appear to use formative evaluation to
an adequate extent. Crucial among these evaluations is assessing what the preschool child already knows about the MyPlate components (fruits, vegetables, grains, protein, and dairy).

Pediatric obesity has reached epidemic proportions in the U.S. According to the latest national survey conducted by the Centers for Disease Control and Prevention (CDC), 17% of children and adolescents aged 12-19 years are overweight (Ogden & Carroll, 2010), and one in seven low-income preschool children is obese (CDC, 2010). Unfortunately, ethnic minority status and low socioeconomic status correlate with pediatric obesity (CDC, 2012). The increasing prevalence of overweight youth presents a huge public health challenge, since overweight youth are more likely to become overweight adults. Additionally, improved body image and reduced teasing provide psychological and social benefits to children, which may enhance academic learning (Pyle et al., 2006).

**Education Implications**

Effective school-based programs are critical for addressing this problem (Briggs, Fleischhacker, & Mueller, 2010; Ritchie, Crawford, Hoelscher, & Sothern, 2006). However, studies show varying degrees of effectiveness of school-based programs in certain areas, such as enhancing nutrition knowledge and behavior change (Heim, Stang, & Ireland, 2009; Sweitzer et al., 2011). Despite considerable efforts, effective prevention of pediatric overweight and obesity remains elusive; therefore, it is imperative that such programs begin very early—in the preschool years when life-long habits are established—and involve the family in a comprehensive manner.

**Formative Evaluation**

Formative evaluation, or formative assessment, is defined as “a range of formal and informal assessment procedures employed by teachers during the learning process in order to modify teaching and learning activities to improve student attainment” (Crooks, 2001, p. 838). What children know about specific components of the new MyPlate will be critical in coming years, as government, the public, and educators in formal and informal settings strive to educate children on the components of MyPlate, its benefits, and the behaviors involved in maintaining a balanced diet (Post, Haven, & Maniscalco, 2012). MyPlate has five basic food groups that children can learn, including fruits, vegetables, grains, proteins, and dairy. These are very sophisticated concepts, and one wonders how to simplify them, especially for preschool-age children. Further, USDA suggests these components of the MyPlate movement: Enjoy your food, but eat less; Make half your plate fruits and vegetables; Make half your grains whole grains; Switch to fat-free or low-fat (1%) milk; Choose foods with lower amounts of sodium; and Drink water instead of sugary drinks. Providing interesting and pedagogically-sound interventions in a variety of settings, both formal (school-based) and informal (other than school-based) provide children the opportunity to learn and use the concepts (cf. Fisch & Bernstein, 2001).
Whatever the setting, both summative and formative evaluation are critical. Summative evaluation is typically the focus of program developers, as this is required by most grant funders to demonstrate that the program works. Barriers to formative research include concerns about the time it takes to conduct and the usefulness of results which can be addressed with proper education and training (Looney, 2011). The results of this project confirm that formative evaluation receives less focus in the literature. Thus, a need exists for program developers and researchers to take formative evaluation seriously and to more openly describe these activities.

An essential first step in formative evaluation is to ask: What does the child already know? This question can be addressed by: (a) reviewing the published research literature on children’s age-related knowledge and understanding and (b) asking the child directly as part of the curriculum development process. The latter was pioneered in informal settings by Edward Palmer & the Children’s Television Workshop who developed the Sesame Street television program (Palmer, 1976). In this research, preschool-age children were observed watching various scenes. Their verbal responses, facial expressions and other nonverbal reactions were meticulously recorded to determine their level of acceptance of various puppets and engagement with the various topics. This information was then used to make programming decisions. The formative evaluation process used by the Children’s Television Workshop remains the gold standard for evaluation of informal education (Fisch & Bernstein, 2001; Truglio, Lovelace, Seguí, & Scheiner, 2001).

In the current study, researchers attempted to locate research articles that had relevance to understanding children’s knowledge of the components of MyPlate and to determine if any of these articles addressed formative evaluation in any way. This type of information, more so than the results of summative studies, reveals preconceptions, misconceptions, and effective pedagogical practices.

**Method**

Researchers conducted a research review with the following databases: ERIC, PsycINFO, and Medline via EBSCO. To search, the following keywords were used: fruit(s), vegetable(s), calcium, dairy, protein, grains, and digestion. When a search yielded an unwieldy number of articles, the search was further limited with the keyword “knowledge.” Searches were limited to preschoolers and original research in full-text, peer-reviewed journal articles within the past ten years. Three researchers (the senior author and two graduate students) classified the abstract of each article as relevant to MyPlate or not, then divided all relevant articles into (a) empirically-based programs to teach children any one of the components of MyPlate (e.g., eating more fruits) or (b) a developmental study that assessed children’s pre-existing knowledge (accurate or misconceptions) relevant to MyPlate, including the processes of digestion and growth. The full article was obtained and reviewed when there was a need for greater clarity.
Findings

The number of peer-reviewed, empirical research articles identified by this search was minimal (see Table 1). Of the empirically-based educational programs designed to teach preschoolers about any of these concepts, there were thirteen articles. However, an analysis of these articles indicated that only one (Pivonka, Seymour, McKenna, Baxter, & Williams, 2011) focused on formative evaluation. Three experimental studies were found which focused on teaching methods; however, these articles did not include a program development emphasis, and therefore, no formative evaluation. The results of this search suggest that researchers do not emphasize formative evaluation in their work; however, this type of information, if published, would be invaluable for those who design nutrition programs for preschool-age children.

Table 1: Results of Article Search

<table>
<thead>
<tr>
<th>Database</th>
<th>Keywords</th>
<th>Citation</th>
</tr>
</thead>
</table>
This review suggests a need to focus on formative evaluation in program and research development related to *MyPlate* education for preschool-age children. Further, if detailed

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**Discussion and Application**

This review suggests a need to focus on formative evaluation in program and research development related to *MyPlate* education for preschool-age children. Further, if detailed
qualitative and narrative studies are published in addition to quantitative studies, a clearer picture of what the preschool child knows about these matters could be determined. This will better equip practitioners and educators to introduce children to fruits, vegetables, dairy, grains, and protein, as well as the self-monitoring skills that are crucial to appropriate eating behaviors. According to the Transtheoretical Model, behavior change is most effective when tailored to an individual’s stage of change (Prochaska, DiClemente, & Norcross, 1992). Knowledge and understanding are fundamental to the model, and increased formative evaluation research would assist in better establishing these stages for children. To date, the literature provides a vague understanding of what preschoolers know about these topics, and none relates it to the stages-of-change model.

There are many practical reasons for developing a better understanding of what children already know. For example, if children do not know the difference between a fruit and a vegetable, then programming should focus on defining characteristics of fruits and vegetables and how to tell these apart. However, if children already know the difference between fruits and vegetables, but do not understand why they should eat these foods, then programming should focus on the role these foods play in their health.

The public sharing of formative research would yield information about children’s pre-existing knowledge and skills relevant to learning MyPlate. This type of research could also document the process of developing instructional materials that addressed learning objectives such as:
1. Labeling appropriately the five sections of MyPlate;
2. Listing examples of fruits, vegetables, whole grains, and sources of protein and dairy (given these category labels) that occupy MyPlate;
3. Classifying examples fruits, vegetables, etc., into the appropriate categories on MyPlate (when the examples are in the form of objects, pictures, diagrams, or words);
4. Saying “no” to foods that are not part of the MyPlate (e.g., candies and sodas); and
5. Shopping for MyPlate foods with parents or guardians.

Conclusion

Formative evaluation should be used to guide program development because it gives immediate feedback regarding effectiveness in meeting learning outcomes. Nutrition education programs can be delivered in a variety of formal (school) and informal settings including television, museums, libraries, clubs, playgrounds, and the day-to-day interactions between parents and children (e.g., Fenichel & Schweingruber, 2010). As children develop a greater understanding of the components and value of MyPlate, they begin to acquire the needed skills necessary for weight management (Ritchie et al., 2006). Nutrition education programs are more effective with an increased emphasis on formative evaluation because attention can be given to effectiveness throughout the education process. Researchers must use and publish the results of formative evaluation.
evaluation studies to help educators create effective education programs, which help children understand the choices that impact their health.

References


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*Elson Bihm*, PhD, is a Professor of Psychology and Counseling at the University of Central Arkansas.
Conversations About the Weight of America's Children: Barriers Which Prevent Healthcare Providers from Discussing Childhood Obesity

Catherine Blow
Alisa Allicock
Carolynn DeSandre
Chandra Cooper-Samuels
University of North Georgia

A systematic review of the literature was conducted to identify the barriers that prevent practitioners from identifying and counseling parents and caregivers of overweight or obese children. Once identified, barriers were organized into thematic categories (parental, provider, and professional barriers) and recommendations were generated to facilitate discussion about childhood obesity between professionals and parents. Childhood obesity is a significant public health problem. Healthcare providers must be able to effectively communicate with caregivers and put childhood obesity at the front of healthcare discussions. This article provides a synthesis of the relevant literature and makes recommendations for healthcare providers to overcome the barriers allowing healthier outcomes for children.

Keywords: Childhood obesity, pediatric, barriers, parental perception, communication, and discussing obesity

Childhood obesity is a serious public health concern not only in the United States but worldwide. According to the World Health Organization (2013), childhood obesity is one of the most significant public health problems in the 21st century. The Centers for Disease Control and Prevention (CDC, n.d.) defines obesity as a body mass index (BMI) at or above the 95th percentile and overweight as a BMI at or above 85% but less than 95%. A recent update from the American Heart Association (AHA) finds 1 in 3 children ages 2-18 are overweight and 1 in 6 are obese (Roger et al., 2012). Furthermore, early onset obesity is a strong predictor for adult obesity. Research has found that overweight children have a 70-80% chance of becoming an overweight or obese adult (Haboush, Phebus, Ashby, Zaikina-Montgomery, & Kindig, 2011). In 2008, 21% of the national healthcare spending was for obesity; by 2030 obesity is expected to account for $48-$66 billion dollars in healthcare spending (Brill, 2013). Obesity is also linked to an increased risk of the development of chronic disease. The relationship between obesity and chronic diseases such as hypertension, cardiovascular disease, type 2 diabetes, and metabolic
syndrome well-identified in adults is now emerging at an alarming rate in children (Fox & Trautman, 2009).

While there are many factors that contribute to childhood obesity, recent studies have shown that many healthcare providers do not prioritize or discuss obesity with parents or child care providers (Alexander et al., 2007; Benson, Baer, & Kaelber, 2009; Chadwick, Sacher, & Swain, 2008; Kim, Haemer, & Krebs, 2008; Mikhailovich & Morrison, 2007; Patel et al., 2010). Patel et al. (2010) found that only 18% of patients whose BMI was greater than 95% were diagnosed with obesity. Healthcare provider reluctance to discuss obesity with parents and child care providers is the main contributing factor for a missed diagnosis of obesity in children (Alexander et al., 2007; Benson et al., 2009; Patel et al., 2010; Turner, Shield, & Salisbury, 2009).

Numerous barriers exist which prevent physicians and nurse practitioners from having frank conversations about children's weights with parents. These barriers can be grouped into three major categories: (1) parental barriers, such as failure to recognize obesity in children, parental lack of control, and parental time limitations; (2) provider barriers, such as hesitancy to discuss childhood obesity; and (3) professional barriers, such as lack of reimbursement from insurers, lack of educational resources for addressing obesity, and time constraints (Farnesi, Ball, & Newton, 2011; Larsen, Mandleco, Williams, & Tiedeman, 2006; Murray & Anzeljc, 2011; Noy, Walter, Matsunaga, & Maddock, 2006; Steele et al., 2011; Walker, Strong, Atchinson, Saunders, & Abbott, 2007). Although there were other barriers mentioned briefly in the literature, the abovementioned categories were found to be the most prominent.

The purpose of this article is to synthesize the literature to uncover the barriers that prevent healthcare providers from discussing obesity with caregivers. Several databases were used to conduct the search including PubMed, CINAHL, ProQuest, PsychInfo, and Medline. Major search keywords used consisted of childhood obesity, pediatric, barriers, parental perception, communication, and discussing obesity. A variety of articles and studies including integrative and systematic literature reviews, cross sectional studies, convenience samples, and commentary articles were evaluated and used to help identify barriers to discussing pediatric obesity. Table 1 shows a summary of the empirical studies related to childhood obesity management which were reviewed. With the alarming rate of childhood obesity, it is imperative that healthcare providers recognize and overcome these barriers. In addition, we provide recommendations for healthcare providers and other professionals who promote children’s health to begin conversations with parents about the risk and impact of childhood obesity.

**Development of Childhood Obesity Guidelines**

Childhood obesity is a devastating condition that has increased in prevalence in the past 20 years (Steele et al., 2011). According to Ogden and Carroll (2010), childhood obesity has almost
tripled since the 1980s. Additionally, one out of three low income children are overweight or obese by the time they reach their 5\textsuperscript{th} birthday (CDC, 2012). According to the CDC (2012), childhood obesity has both immediate and long-term health effects on children. Immediate effects include higher risk of developing comorbid conditions, such as high cholesterol, hypertension, and cardiac disease. Long-term obesity increases a child’s risk of bone and joint disease, type 2 diabetes, stroke, multiple forms of cancer, and osteoarthritis (CDC, 2012). The Patient Protection and Affordable Care Act of 2010 focused on health preventive services which encouraged primary care providers to help curtail childhood obesity (Silberberg et al., 2012). Current guidelines by the U.S. Preventive Services Task Force (USPSTF) recommend screening children 6 years and older for obesity, and if a child is identified as overweight or obese, offering comprehensive behavioral interventions to promote a healthy weight (USPSTF, 2010). In contrast, the American Academy of Pediatrics and the CDC recommend BMI assessments begin at age 2 (Perpich, Russ, Rizzolo, & Sedrak, 2011). The USPSTF (2010) recommends using BMI as an acceptable screening.

Despite the recommendations of the USPSTF, more than half of healthcare providers never or rarely use BMI to identify excessive weight gain in children (Flower, Perrin, Viadro, & Ammerman, 2007; Larsen et al., 2006; O’Brien, Holubkov, & Reis, 2004). Barlow and Dietz (2002) found that many providers felt least proficient in behavioral counseling. As a result, these providers were reluctant to screen for obesity in the absence of no associated medical condition. As childhood obesity-related illnesses continue to rise in this country, one quarter of preventive pediatric visits were found to lack documentation of height and weight measurements (Patel et al., 2010). Screening for overweight and obese children continues to be suboptimal (Smith, Gately, & Rudolf, 2008). With the epidemic of childhood obesity upon us, healthcare providers must be able to have therapeutic discussions with parents and caregivers of overweight and obese children. To initiate discussions, practitioners must overcome barriers to conversations about childhood obesity.

<table>
<thead>
<tr>
<th>Research Study (Date)</th>
<th>Sample (N)</th>
<th>Measurements</th>
</tr>
</thead>
</table>
| Akerman et al. (2007) | –1,205 children ages 6-14  
–1,205 caregivers | –Perceived BMI  
–Measured BMI |
| Alexander et al. (2007) | 17 physicians at Duke University | Qualitative analysis of focus groups |
| Barlow & Dietz (2002) | –1,088 pediatricians  
–879 pediatric nurse practitioners  
–1,652 registered dieticians | Needs assessment questionnaire to measure practices of practitioners |
<p>| Baughcum et al. (2000) | 622 mothers of preschoolers on WIC program | Office survey of mothers’ perceptions of children as overweight |</p>
<table>
<thead>
<tr>
<th>Study</th>
<th>Sample Size/Description</th>
<th>Method/Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benson et al. (2009)</td>
<td>60,711 electronic medical records of children ages 2-18</td>
<td>Medical record review of BMI measurement and diagnosis of overweight or obesity</td>
</tr>
<tr>
<td>Bolling et al. (2009)</td>
<td>23 parents</td>
<td>Focus group qualitative analysis</td>
</tr>
<tr>
<td>Boyle et al. (2009)</td>
<td>−248 Healthy Eating, Active Communities providers in California</td>
<td>−Written survey of providers</td>
</tr>
<tr>
<td></td>
<td>−56 health care stakeholders</td>
<td>−Telephone interviews of stakeholders</td>
</tr>
<tr>
<td>Eckstein et al. (2006)</td>
<td>223 parents of children ages 2-17 years</td>
<td>Parental survey of child’s appearance</td>
</tr>
<tr>
<td>Evans et al. (2005)</td>
<td>1,047 US households</td>
<td>Survey of perceptions of severity, causes, and public support of childhood obesity</td>
</tr>
<tr>
<td>Flower et al. (2007)</td>
<td>38 health care providers</td>
<td>Focus group analysis of BMI use and identification of obesity in children</td>
</tr>
<tr>
<td>Genovese et al. (2005)</td>
<td>569 mother/child dyads</td>
<td>−Measured height and weight to determine obesity status</td>
</tr>
<tr>
<td></td>
<td></td>
<td>−Used questionnaires to measure perceptions of weight</td>
</tr>
<tr>
<td>Gordon-Larsen et al. (2004)</td>
<td>−12 AA girls, mean age 7.8 years −11 caregivers of girls</td>
<td>Used qualitative thematic analysis of interviews over a 6-month period to evaluate perceptions of physical exercise</td>
</tr>
<tr>
<td>Haboush et al. (2011)</td>
<td>3,628 surveys of Nevada parents</td>
<td>Children’s BMI scores</td>
</tr>
<tr>
<td>He &amp; Evans (2007)</td>
<td>770 child/parent pairs</td>
<td>Questionnaires to measure parental perceptions of children’s weights</td>
</tr>
<tr>
<td>Jackson et al. (2005)</td>
<td>11 mothers of overweight children</td>
<td>Interviews to measure weight perception of mothers</td>
</tr>
<tr>
<td>Jelalian et al. (2003)</td>
<td>1,066 New England physicians</td>
<td>Surveys measuring attitudes towards obesity</td>
</tr>
<tr>
<td>Larsen et al. (2006)</td>
<td>99 family and pediatric nurse practitioners</td>
<td>Questionnaires which assessed current practices</td>
</tr>
<tr>
<td>Lee et al. (2010)</td>
<td>50-state review of Medicaid and private insurance laws regarding obesity prevention</td>
<td>Coverage of obesity treatment via Medicaid and private insurance</td>
</tr>
</tbody>
</table>
Lindsay et al. (2006)  
31 Spanish speaking, low-income mothers  
Focus groups and then in-depth interviews to assess beliefs about child feeding behaviors and beliefs about weight status

Lowenstein et al. (2013)  
3 focus groups with a total of 24 fathers  
Analysis of fathers’ responses to provider communication about their child

Nolan et al. (2012)  
22 nurses in England  
Thematic analysis of semi-structured interviews

Noy et al. (2006)  
Charts of 60 children diagnosed as overweight or obese at a pediatric clinic in Hawaii  
Used BMI measurement to evaluate correct classification of children as overweight or obese

O’Brien et al. (2004)  
244 obese children medical records  
Provider practice to measure consistency with recommended guidelines

Ogden et al. (2010)  
3,281 children ages 2-19  
Heights and weights from National Health and Nutrition Examination Survey to determine trends

Pan et al. (2012)  
26,708,516 children in federally funded nutrition programs  
Measured trends in BMI from 1998-2000

Patel et al. (2010)  
1,155 preventive care visits made by children classified as obese (>95%)  
Documentation by physician as obesity

Perrin et al. (2005)  
356 members of North Carolina Pediatrics Society & American Academy of Pediatrics who practiced primary care  
Self-reported self-efficacy in obesity management

Perrin et al. (2010)  
115 parents of children ages 4-12 years enrolled in Medicaid  
Questionnaires to measure communication with providers about child’s weight

Pettigrew & Roberts (2007)  
20 mothers of children ages 1-12 years  
In-depth interviews measuring perceptions

Rhee et al. (2005)  
151 parents of children ages 2-12 years  
Surveys to assess parental stage of behavioral change in regard to weight management behaviors for their children

Schwartz et al. (2007)  
15 pediatricians  
Randomized clinical trial measuring 3 levels of motivational intervention
<table>
<thead>
<tr>
<th>Study</th>
<th>Sample Description</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silberberg et al. (2012)</td>
<td>273 providers and staff in primary care practices in North Carolina</td>
<td>Surveys to measure knowledge on pediatric obesity management</td>
</tr>
<tr>
<td>Singh et al. (2008)</td>
<td>46,707 ethnically diverse children</td>
<td>Used race and SES to evaluate risk of obesity status</td>
</tr>
<tr>
<td>Smith et al. (2008)</td>
<td>80 healthcare professionals</td>
<td>Identify obesity via pictures of children</td>
</tr>
<tr>
<td>Spivack et al. (2010)</td>
<td>192 primary care providers</td>
<td>Surveys to measure knowledge, beliefs, practices, and perceived barriers to treating childhood obesity</td>
</tr>
<tr>
<td>Steele et al. (2011)</td>
<td>22 school nurses</td>
<td>Focus groups to measure perceived barriers to discussing childhood obesity</td>
</tr>
<tr>
<td>Story et al. (2002)</td>
<td>–202 pediatricians, –293 pediatric nurse practitioners, –444 registered dieticians</td>
<td>Survey to measure provider needs to adequately manage childhood obesity</td>
</tr>
<tr>
<td>Thomas et al. (2008)</td>
<td>17 Black women, 13 White women</td>
<td>Group discussions on perceptions of weight</td>
</tr>
<tr>
<td>Turner et al. (2009)</td>
<td>30 practitioners in England</td>
<td>Interviews to explore practitioners’ experience with childhood obesity management</td>
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<td>Wald et al. (2007)</td>
<td>612 parents</td>
<td>Surveys to measure parental beliefs about childhood obesity</td>
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<td>Walker et al. (2007)</td>
<td>18 practitioners</td>
<td>Interviews to survey practitioners’ perceptions of their roles in relation to childhood obesity management</td>
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<td>West et al. (2008)</td>
<td>–1,551 parents before policy implementation, –2,508 parents after policy implementation</td>
<td>Telephone surveys to measure parental accuracy in their child’s obesity measurement before and after childhood obesity policy implementation</td>
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<tr>
<td>Whitaker et al. (2004)</td>
<td>155 health professionals</td>
<td>Group discussion following viewing a 20-minute video on WIC families to identify barriers to discussing childhood obesity</td>
</tr>
<tr>
<td>Yarnall et al. (2003)</td>
<td>Published USPSTF data on time for primary care preventive services</td>
<td>Compared USPSTF standards to actual working hours to determine if recommended primary care services can be performed as recommended</td>
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Barriers to Conversations about Childhood Obesity

Parental Barriers

Evans, Finkelstein, Kamerow, and Renaud (2005) found that almost 91% of people surveyed believed parents were most responsible for reducing their children’s weight. These results demonstrated the importance for parents and healthcare providers to effectively communicate about the overweight or obese child. In a study by Lowenstein et al. (2013), the quality of the parental-provider relationship was a major influence on a father’s receptivity to childhood obesity discussions with respect to their child. Fathers in this study commented that despite feeling responsible for the health and well-being of their children they often felt “left out” by providers in their children’s healthcare visits. These feelings led to a decrease in fathers’ perceptions of the quality of their relationship with their children’s healthcare providers which resulted in poorer communication in regard to their children’s weights and eating habits (Lowenstein et al., 2013). According to Kim et al. (2008), a parent who does not acknowledge a weight problem with their child will be unlikely to discuss the topic of childhood obesity with the healthcare provider and even less likely to adhere to a therapeutic plan. Often the parents’ recognition that their child is overweight or obese is the first issue that must be addressed (Howard, 2007). Research showed that parental perception of the overweight or obese child is a key variable in establishing the family’s willingness to make positive changes that will impact the child’s lifestyle (Towns & D’Auria, 2009; Wald et al., 2007). Furthermore, recognition of the overweight or obese child was an essential component of successful behavioral changes (Howard, 2007; Kim et al., 2008; Rhee, DeLago, Arscott-Mills, Mehta, & Davis, 2005).

Parental perception versus actual weight. A common barrier found in the literature is the discrepancy between a child's actual weight and the perceived weight by the parent or caregiver. Multiple studies suggested that parents underestimate their children’s weights as normal and do not perceive their families’ lifestyles as unhealthy (Akerman, Williams, & Meunier, 2007; Doolen, Alpert, & Miller, 2009; Eckstein et al., 2006; He & Evans, 2007; Howard, 2007; Wald et al., 2007; West et al., 2008). In a benchmark study \( N = 662 \) child/parent pairs, Baughcum, Chamberlin, Deeks, Powers, and Whitaker (2000) found that 79% of mothers of overweight or obese children did not recognize their children’s overweight status. Interestingly, 95% of the mothers who were obese identified themselves correctly, but failed to recognize their overweight or obese children as such. In addition, of the 21% of mothers who recognized their children’s weight issue, only two-thirds were concerned about the weight causing a health issue (Baughcum et al., 2000).

Akerman et al. (2007) found over 61% of parents with an obese child and 54% of parents of an overweight child underestimated their child’s weight. They also found that parents of underweight children actually tended to overestimate their children’s weight. Additionally,
Eckstein et al. (2006) found parents were more likely to consider their children underweight than obese. In their study, 63% of children who met the criteria for clinical diagnosis of overweight (BMI between 85-95%) were considered normal weight by their parents (Eckstein et al., 2006).

Akerman et al. (2007) concluded their research provided evidence of a parental positivity bias where the parents fail to recognize their overweight or obese child allowing them to preserve a positive self-image. Findings from the aforementioned research demonstrate perceptions do not match reality, and parents’ distorted views of their children's actual weight may perpetuate rather than prevent obesity in their children. Parental distortion of children's weights hinders discussion with healthcare providers, thus, contributing to the childhood obesity epidemic. Studies show that parental misperceptions of children’s weights influence providers’ beliefs that their impact on influencing childhood obesity is limited. This in turn leads to the reluctance of providers to initiate conversations and interventions with parents of at-risk children (Nolan, Deehan, Wylie, & Jones, 2012; Perrin, Flower, Garrett, & Ammerman, 2005; Story et al., 2002; Whitaker, Sherman, Chamberlin, & Powers, 2004).

Parents’ perceived lack of control. Another parental barrier prevalent in the literature was the belief of lack of control over child’s lifestyle choices as a result of time constraints, child preferences, and familial beliefs about behavior change (Mikhailovich & Morrison, 2007; Pettigrew & Roberts, 2007). As suggested by Pocock, Trivedi, Wills, Bunn, and Magnusson (2010), parents often cited child food preferences, low motivation to exercise, and familial beliefs about their children’s inability to change behavior as reasons for unhealthy lifestyles. Mothers felt undermined in their attempt to feed their children a healthy diet. They complained of fathers, grandparents, and schools disrupting their attempts to consistently provide healthy foods (Jackson, Mannix, Faga, & McDonald, 2005; Pettigrew & Roberts, 2007; Pocock et al., 2010). Mothers claimed that grandparents weakened parental efforts at providing a healthy diet by permitting children to eat anything they desired when grandparents cared for the children while the mother was at work. In addition, mothers acknowledged feeling like “spoilsports” if they attempted to limit junk foods (Pocock et al., 2010). Furthermore, Eckstein et al. (2006) found 26% of caregivers of overweight children were concerned about their child’s weight status, but most felt they could not motivate their children to increase their physical activity level.

A contributing characteristic to lack of parental control found in the literature was the limitation of time (Jackson et al., 2005; Mikhailovich & Morrison, 2007; Pocock et al., 2010). Mikhailovich and Morrison (2007) found parents’ work responsibilities were cited as reasons for providing fast foods more frequently as well as preventing exercise time with their children. Additionally, Pocock et al. (2010) found parental tiredness as a barrier to preparing healthy foods, requiring parents to often choose fast food options for meals for their children. Pocock et al. (2010) also indicated that fast food consumption increased a child's risk of obesity.
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exponentially; the more fast food a child consumes, the greater his or risk of being overweight and eventually obese. This study showed that while parents acknowledged a healthy diet and exercise as important, they sometimes felt it was adequate to just urge their children to exercise, without participating in physical activity themselves. Fatigue and lack of time were also shown to affect parents’ willingness to participate in physical activity with their children (Gordon-Larsen et al., 2004; Pocock et al., 2010). Lack of parental involvement in exercise and use of fast foods for convenience further complicate the problem of childhood obesity (Jackson et al., 2005; Mikhailovich & Morrison, 2007; Pocock et al., 2010).

Ethnic, cultural, and socioeconomic roles in childhood obesity. An important parental factor to consider when discussing childhood obesity is the impact of cultural and ethnic beliefs on feeding habits of children, as well as the maternal education and socioeconomic status (Eckstein et al., 2006; He & Evans, 2007; Mikhailovich & Morrison, 2007; Peña, Dixon, & Taveras, 2012; Singh, Kogan, Van Dyck, & Siahpush, 2008; Towns & D’Auria, 2009). According to Peña et al. (2012), research has revealed that socioeconomic and racial differences exist as risk factors for childhood obesity. Statistically, Ogden, Carroll, Curtin, Lamb, and Flegal (2010) found the prevalence of obese children ages 2-19 years was 20% among African American children, 21% among Mexican-American children, and 15% among non-Hispanic White children. In addition, Singh et al. (2008) found Native American and Alaskan children’s obesity rates to be 26%. An explanation for cultural differences that contribute to childhood obesity may include the cultural context of body image where Black and Hispanic women are more accepting of a larger body habitus, as well as biological differences in the development of obesity (Caprio et al., 2008; Rhee et al., 2005).

Opinions regarding views of a healthy child differ among ethnic minority parents (Peña et al., 2012). In the Hispanic culture, mothers tend to view overweight children as being healthy and thinner children as being malnourished (He & Evans, 2007; Lindsay, Sussner, Greaney, & Peterson, 2011). Additionally, the Hispanic culture views health as the absence of illness, and Latina mothers may not recognize an overweight or obese child as unhealthy as long as he or she is free from disease (Peña et al., 2012). Thomas, Moseley, Stallings, Nichols-English, and Wagner (2008) found that larger body size is more acceptable among African Americans, thereby causing a reduced stigma of obesity and less motivation to make positive weight changes. It is clear that cultural and ethnic beliefs must be considered when discussing childhood obesity. Questioning parents about their beliefs and cultural practices can assist healthcare providers in appreciating the parents’ viewpoints and allow respectful communication to better serve the needs of overweight and obese children.

Research has also shown that lower maternal education and lower socioeconomic status has a major impact on the ability of mothers to correctly identify their overweight or obese children (Baughcum et al., 2000; Genovesi et al., 2005). Singh et al. (2008) found children had an 83%
higher chance of obesity when living below the poverty level. Genovesi et al. (2005) found parents with a higher level of education were more likely to have children with lower weights, as well as perceive their children's weights correctly. This research indicated that providers must be especially cognizant of obesity screening in children from lower socioeconomic and parental education environments (Baughcum et al., 2000; Genovesi et al., 2005; Singh et al., 2008).

Provider Barriers

Synthesis of the literature revealed many barriers and factors that contribute to lack of discussion between healthcare providers and caregivers of pediatric patients at risk for obesity. These barriers directly influence the propensity of healthcare providers to initiate conversation about childhood obesity. In an integrative review by Farnesi et al. (2011), literature suggested that most healthcare providers were unlikely to initiate conversation about obesity with families. The reasons for provider hesitancy were diverse and included the following concerns: risk of damage to provider-caregiver relationship, provider perception of caregiver responsibility, and provider frustration and professional constraints.

Perceived risk of damage to provider-caregiver relationship. Healthcare providers’ concerns over raising the issue of an overweight child and the potential damage to the family-provider relationship are major barriers to initiating conversation about obesity. In reviewing the literature, numerous articles were found which illustrated clinicians’ discomfort at addressing the issue of pediatric obesity because of fear of caregiver reaction (Farnesi et al., 2011; Steele et al., 2011; Walker et al., 2007). In a study by Larsen et al. (2006), 32% of nurse practitioners reported fear of offending parents when discussing obesity risk factors and complications. Other studies reiterated the provider's fear of parent or caregiver reaction as discouragement for pursuing a conversation about a child's weight (Banks, Shield, & Sharp, 2011; Chadwick et al., 2008; Steele et al., 2011; Walker et al., 2007).

Provider perception of caregiver responsibility. In many studies, providers indicated that they believed parents and caregivers were responsible for healthy behaviors in children, including weight management (Lindsay, Sussner, Kim, & Gortmaker, 2006; Plourde, 2012; Walker et al., 2007). This belief about parental/caregiver responsibility also served as a barrier to communication about obesity between healthcare providers and parents/caregivers. Providers believed that the caregivers were ultimately responsible for their obese children. This view was congruent with public opinion that places blame on the individual or parent for the obese child (Alexander & Baur, 2007; Mikhailovich & Morrison, 2007).

Several articles suggested that while clinicians acknowledged responsibility for raising the issue of obesity, in the end, they considered it a social and family problem (Plourde, 2012; Walker et al., 2007). It was only when obesity was attributable to another comorbid condition that
providers were more willing to initiate conversations with parents and caregivers (Jelalian, Boergers, Alday, & Frank, 2003; Walker et al., 2007). Jelalian et al. (2003) confirmed that healthcare providers were more likely to bring up the topic of childhood obesity if it caused or was related to another comorbid disease process, such as diabetes, hypertension, or hyperlipidemia.

In an article by Spivack, Swietlik, Alessandrini, and Faith (2010), healthcare providers listed perceived family problems, such as lack of motivation from parents, excessive television viewing, lack of exercise, and consumption of too many fast-food meals, as barriers to obesity prevention and treatment. The provider belief of parental/caregiver responsibility of obesity is compounded when one considers socialization of children. Parents serve as role models for children, thus, they have a significant influence on what their children eat, how often they exercise, and other lifestyle choices that contribute to the development of obesity (Pocock et al., 2010). Healthcare professionals can feel overwhelmed by addressing the topic of childhood obesity, because in some cases, it results in conversations about better parenting and role modeling for children (Kim et al., 2008; Mikhailovich & Morrison, 2007). Some parents may consider these conversations distressing, thus, they become defensive and less open to suggestions for reducing weight in their children (Mikhailovich & Morrison, 2007).

**Provider perception of inadequacy of childhood obesity assessment tools.** An additional barrier that healthcare providers expressed in regards to discussing pediatric obesity with caregivers included the belief that interventions currently approved for treatment, screening, and education were not working. While both the USPSTF and the CDC recommend the use of the Body Mass Index calculator for classifying children as overweight or obese, there is relatively little research which shows improved weight outcomes related to BMI measurement programs (Nihiser et al., 2009). No consensus exists on the use of BMI screening programs, and this may contribute to provider perceptions of inadequacy of assessment tools for childhood obesity. In 2007, Walker et al. found that providers felt there was a lack of evidence for the effectiveness of obesity interventions in pediatric patients. Furthermore, some healthcare providers were found to have a pessimistic view of treating obesity (Plourde, 2012; Story et al., 2002; Walker et al., 2007). In a study by Story et al. (2002), healthcare providers acknowledged they felt lower proficiency in behavioral management of childhood obesity as compared to registered dietitians. These feelings of lower proficiency of ability to manage childhood obesity may have contributed to a more pessimistic view of overall childhood obesity treatment (Story et al., 2002).

In a study by Jelalian et al. (2003), only one-third of providers felt that they would be effective in changing patient’s behaviors regarding dietary intake. This view held by providers greatly impacts the provider’s ability to properly screen and treat obesity in children (Jelalian et al., 2003). It may even serve as one reason why providers do not screen or diagnose obese children as often as indicated.
**Additional provider barriers.** Clinicians who treat and interact with pediatric patients expressed their frustration in managing childhood obesity and viewed that as a barrier that kept them from discussing obesity with caregivers (Story et al., 2002; Walker et al., 2007). Providers stated that due to barriers outside of their control, including family income, community resources, and caregiver’s lack of concern, they felt that managing obese pediatric patients was unrewarding (Walker et al., 2007). Clinicians also affirmed that treating obesity in children was overwhelming (Murray & Anzeljc, 2011). Providers stated that the extensiveness of the problem and level of difficulty in treatment creates frustration and reluctance to accept the responsibility of treating obese children (Banks et al., 2011; Walker et al., 2007). This results in providers who are frustrated and less likely to discuss and educate families about childhood obesity. As the literature suggested, providers often wait to initiate discussions about a child’s weight until he/she develops another comorbid condition, such as diabetes, hypertension, or hyperlipidemia (Jelalian et al., 2003; Walker et al., 2007).

**Professional Barriers**

Healthcare providers are in a position to suggest preventive measures which promote healthier lifestyle choices for children at risk for obesity. Professionally, numerous barriers prevent healthcare providers from having discussions with parents and caregivers about weight management in children. Obstacles identified included lack of educational resources for addressing obesity, time constraints, and reimbursements from insurers (Kim et al., 2008; Story et al., 2002). One study found that some healthcare providers did not feel the primary care setting was the right environment for the discussion of childhood obesity (Turner et al., 2009). These providers cited lack of time and expertise in managing obesity in the primary care environment as barriers preventing them from initiating conversations about children’s weights (Turner et al., 2009).

**Lack of professional knowledge and educational resources.** Lack of educational resources and healthcare provider's knowledge are professional barriers that limit the discussion of childhood obesity with caregivers. According to an institutional review by Spivack et al. (2010), there were inconsistencies in clinicians’ knowledge of obesity and their specific practice guidelines. Only 39% of providers surveyed were familiar with the American Academy of Pediatrics (AAP) guidelines for exercise, and 26% of providers correctly identified the definition of overweight (Spivack et al., 2010).

Furthermore, Story et al. (2002) found that healthcare providers felt they had minimal opportunities to keep abreast of the most current information on pediatric obesity treatment. This may hinder the providers’ abilities to recognize children with weight problems. Proper identification of obese children is essential to promoting discussion about lifestyle changes to decrease weight and health risks (Walker et al., 2007). Spivack et al. (2010) found that 95% of
healthcare providers would be willing to spend an additional one minute discussing diet, nutrition, and exercise if educational materials were readily available. Thus, lack of educational resources exacerbates practitioners’ reluctance to communicate obesity prevention strategies with parents and caregivers.

**Perceived time constraints.** According to Boyle, Lawrence, Schwarte, Samuels, and McCarthy (2009), many providers cited the lack of time available per patient as a barrier to assessing and discussing childhood obesity. Research found the average time required during a preventive healthcare visit for conducting brief but helpful nutrition counseling was approximately 8.2 minutes (Yarnall, Pollak, Ostbye, Krause, & Michener, 2003). Scheduling 15-minute time slots in primary care offices leaves little time to have frank discussions about childhood obesity, and yet a 15-minute time slot is a common appointment time allocation in pediatric primary care.

Additionally, obesity is not viewed as a primary health concern for children by many healthcare professionals. Turner et al. (2009) found healthcare providers felt they did not have the time to manage childhood obesity and considered it more a social problem rather than a medical one. However, research indicates that discussion with parents and proper assessment of children at risk for obesity can have a profound effect on the propensity of children to become overweight (Farnesi et al., 2011; Larsen et al., 2006; Lindsay et al., 2006).

**Lack of reimbursement.** Financially, reimbursement policies hinder ongoing support for weight management programs in pediatric primary care practices. Providers often cited lack of reimbursement as a barrier to discussing childhood obesity with caregivers (Farnesi et al., 2011; Jelalian et al., 2003; Spivack et al., 2010). Results of a survey of 248 healthcare providers showed 88% felt there should be better insurance coverage for obesity counseling, prevention, and management (Boyle et al., 2009). Furthermore, national support for childhood obesity prevention is minimal. Lee, Sheer, Lopez, and Rosenbaum (2010) found only 11 states which provide reimbursement for obesity prevention, and even fewer had published treatment guidelines for providers. Researchers concluded that due to the current economic recession, many states were dealing with budget constraints and were unlikely to cover obesity treatments or make changes to current policy (Lee et al., 2010). This delay could prove catastrophic if childhood obesity continues to increase at a rate similar to the last twenty years. Even though there are numerous barriers to initiating conversations about childhood obesity in the primary care setting, healthcare providers can employ strategies to overcome these barriers and have a positive influence on improving the weight of America’s children.

**Recommendations for Facilitating Discussion about Childhood Obesity**

Overcoming barriers requires practitioners to stay abreast of obesity prevention guidelines for pediatric patients, learn techniques which facilitate conversations, and partner with parents and
caregivers to educate them about the risks of having an overweight child. Skills such as motivational interviewing, asking open-ended questions, and presenting an honest, nonjudgmental attitude can facilitate conversations between providers and parents. These skills promote a nonthreatening environment which permits parents to acknowledge the risk of childhood obesity in their family and generate a plan of action in partnership with their healthcare provider (Bolling, Crosby, Boles, & Stark, 2009; Schwartz et al., 2007; Teixeira, Silva, Mata, Palmeira, & Markland, 2012).

Motivational interviewing helps the healthcare provider and caregiver examine what is important to each of them in terms of the health of the child and assess readiness for change. According to Schwartz (2010), motivational interviewing focuses on the patient’s or caregiver’s perception on how obesity affects daily living while seeking to understand the patient’s point of view without being judgmental. This is a useful tool to help overcome the barrier of provider perception of caregiver responsibility. This skill allows providers an opportunity to overcome their own personal judgment and biases. Effective listening, focused advice, and positive affirmations are all parts of motivational interviewing and can assist clinicians with initiating discussions with patients (“Let’s go!,” 2012). In a study by Schwartz et al. (2007), motivational interviewing accounted for a 6% – 2.6% decrease in BMI over six months (N= 91, children ages 3-7 with BMI ≥ 85%). The drop in BMI was greatest when there was an increase in the level of intervention, and 94% of parents reported that motivational interviewing helped them change their family’s eating behaviors (Schwartz et al., 2007). Motivational interviewing employs a patient-centered approach (rather than provider-centered) and leads to better clinical outcomes in patients (Schwartz, 2010).

The National Institutes of Health—National Heart, Lung, and Blood Institute (2002) suggest setting an effective tone for communication when discussing weight. Communicating with parents/caregivers of obese children should include providing clear information, empathy and support, anticipation of a wide range of responses, and a focus on solutions (Mikhailovich & Morrison, 2007). It is essential to consider the demographic characteristics of the patient, parental perceptions, and comfort level of the healthcare provider when discussing childhood obesity (Mikhailovich & Morrison, 2007). Clear communication between providers and caregivers can facilitate overcoming barriers, such as parental perception of weight, so that the healthcare provider may address them. Additionally, effective communication would allow providers an opportunity to identify some of the issues that are related to parent’s perceived lack of control and offer suggestions.

Exploring the concept of health with respect to cultural differences ensures that the topic of weight is presented to the caregiver in a sensitive and respectful manner. The provider has the responsibility to introduce the topic in a way that is nonthreatening and nonjudgmental. This can be done initially by assessing readiness for change with the parents/caregivers and the patient. In
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a recent review of empirical findings from weight loss studies, Teixeira et al. (2012) found that communication focused on understanding internal motivation with a patient endorsement of weight loss goals resulted in long-lasting behavior change which resulted in maintenance of a healthy body weight. Ultimately, the goal is to ensure the best possible health of the child without jeopardizing the parent/caregiver-provider relationship.

Semantics and language play a huge role in initiating therapeutic conversations about childhood obesity with parents and caregivers. Proper terminology is essential to create a trusting environment. Open-ended questions encourage honest communication between providers and parents that can help to eliminate the concern of damage to the provider-caregiver relationship. A qualitative study by Bolling et al. (2009) revealed that parents were more likely to discuss children’s weight issues with healthcare providers when providers asked open-ended questions to facilitate conversation. Relating child’s weight back to familial health risks, such as heart disease and diabetes, also facilitated conversation between parents and caregivers (Bolling et al., 2009). Additionally, establishing baseline familial knowledge, perceptions, and openness to discussion helps the provider address childhood obesity without sounding patronizing or accusatory (Chadwick et al., 2008).

If the topic of obesity is presented on a societal level, parental defensiveness is reduced, and more opportunities for conversation may emerge (Mikhailovich & Morrison, 2007). Providers should avoid stigmatizing terms such as “fat” and “fatness,” as these terms can have negative connotations. The terms “healthier,” “leaner,” and “fitter” can be used to describe the desirable outcome without a judgmental attitude (Chadwick et al., 2008). Bolling et al. (2009) suggested that parents preferred the terms “overweight” and “obese” when discussing children’s weights because parents felt those terms were more accurately descriptive and motivational.

One way to spur the discussion of healthy weight and eating habits can be through visual aids placed in the workspace (“Let’s go!,” 2012). Caregivers can see those visual cues and be encouraged to start a discussion with providers. The visual aids can also be a focal point for the healthcare provider when bringing up the topic of childhood obesity. Visual aids also serve as an education tool and resource for providers and families to assist with decreasing any knowledge deficits. There are numerous resources for teaching and education available through agencies such as Choosemyplate.gov and the National Initiative for Children’s Healthcare Quality (NICHQ) that can be utilized in the workspace (U.S. Department of Agriculture, n.d.). Research indicates that use of toolkits, such as a BMI color-coded chart and nutritional and exercise counseling, improves parental accuracy of child’s weight status, as well as dietary and physical activity behaviors which reduce risk of childhood obesity (Perrin et al., 2010).

Any visit with a healthcare provider should include the establishment of clear cut goals for the patient and family at the outset. Caregivers play an important role in terms of diet, physical
activity, and motivation for their children, thus, it is important for caregivers and providers to decide on mutually agreeable goals and allow for subsequent discussions on achievement and modification of goals. The National Institutes of Health—National Heart, Lung, and Blood Institute (2002) recommend creating a partnership with the patient and family as one of the steps to initiating discussion about weight management in children. This partnership would help to reduce the risk of potential damage to the provider-caregiver relationship because both parties would work together to develop a treatment plan. Caregivers may feel less attacked and less offended if a partnership existed with the healthcare provider (Lowenstein et al., 2013).

Healthcare provider frustration can stem from feeling uncomfortable and inadequate in treating childhood obesity. Mikhailovich and Morrison (2007) recommend developing a plan for communication, as well as examining one's own biases and attitudes toward obesity. Specifically, providers can use existing practice guidelines to create resources for discussing childhood obesity with parents or caregivers. The lack of resources and adequate assessment tools that providers cite as a barrier can be easily overcome through a variety of toolkits, publications, and national guidelines that are available (as described). Provider continuing education and awareness are paramount to successfully diagnosing, managing, treating, and discussing childhood obesity with caregivers. The NICHQ (2011) provides a toolkit that includes documentation templates for patient encounters, billing and coding, and patient education. In addition, the NICHQ along with the Health Resources and Services Administration (HRSA) published “Joining Forces for Healthier Communities: Collaborate for Healthy Weight” (2012) for healthcare providers, community leaders, and public health professionals to address obesity at the community level. Included in this publication are evidenced-based tips for increasing awareness and adopting lifestyle changes to reduce childhood obesity. According to Gee, Ravel, Roberts, and Wylie (2008), the well-child visit is the best time to provide concise but focused advice that can be given in less than three minutes for the established overweight or obese child. A more focused weight management consultation can subsequently be scheduled for a longer follow-up session to discuss the health risks of obesity, share more detailed information about the BMI, and negotiate a plan (Gee et al., 2008). The provider-cited time constraint barrier can be addressed by utilizing this approach.

**Summary**

Both parental and provider barriers limit the care and education that obese children and their families are receiving. It is unfortunate that in today's society, there are clinicians who perceive their efforts to manage childhood obesity as ineffective (Plourde, 2012). It is not unreasonable to hypothesize that once these barriers are addressed, healthcare providers will be more comfortable discussing childhood obesity. Based on the information gathered from a review of the literature, more research is needed to study the terminology used to discuss pediatric obesity, the manner in which obesity is addressed, and how providers can better assess and discuss pediatric obesity in
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the primary care setting. Overcoming professional barriers such as lack of time and education in childhood obesity can be addressed by increasing resources for healthcare professionals. Continuing education focused on childhood obesity identification and education is essential, and national efforts at increasing awareness among all professionals who work with children's health should be paramount (National Institutes of Health, 2002).

Professional barriers play a significant role in preventing healthcare providers from discussing childhood obesity with caregivers. Research indicates that the most influential barriers include the provider’s inability to properly identify overweight and obese children, lack of time, and lack of proper reimbursement. A more detailed analysis is needed to understand how to overcome these barriers and which steps must be taken to increase knowledge among clinicians in the pediatric primary care setting (Larsen et al., 2006).

As more clinicians understand the importance of screening, educating, and addressing childhood obesity in today’s society, perhaps those “barriers” may not seem quite so insurmountable. It is disheartening to read and hear about the effects of childhood obesity on a family, yet some providers still rank it less important than other health problems (Jelalian et al., 2003). With the epidemic of obesity being referred to by the World Health Organization as “globesity” (2006), it is time to put childhood obesity at the forefront of our discussions with caregivers and overcome the barriers to communication that threaten the welfare of overweight children. Proper and timely discussion with parents and caregivers can lead to earlier diagnosis of children at risk, and ultimately, improve morbidity and mortality among overweight and obese children (National Institutes of Health, 2002). Providers need to consider the potential repercussions of unscreened, undiagnosed, and untreated obesity in children.

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