

THESIS

SELF-ESTEEM AND FUTURE ORIENTATION PREDICT RISK ENGAGEMENT
AMONG ADOLESCENTS

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ABSTRACT

SELF-ESTEEM AND FUTURE ORIENTATION PREDICT RISK ENGAGEMENT AMONG ADOLESCENTS

Risky behaviors have been defined as the balance between behaviors that have negative consequences with behaviors that have perceived positive consequences (Gullone & Moore, 2000). These risky behaviors include but are not limited to: unsafe sex, delinquency, substance abuse, and impulsive or sensation- seeking (Gullone & Moore, 2000). Research has shown that having a positive outlook on one's future has an inverse relation to adolescents' risk behaviors (Nurmi, 1990; Steinberg, 2004, 2009). Similarly, studies on self-esteem have also shown a complex but mostly inverse relation with adolescent risk taking (Salazar et al., 2005). However, there is a paucity of research studies focused on the possible effects of self-esteem as a mediator between future orientation and adolescents' risk orientation and or the possible effects of future orientation as a mediator between self-esteem and risk orientation.

The premise of this study was to assess the relations among future orientation, self-esteem, and adolescents' risk behaviors. To that end the first hypothesis was that there is an inverse relation between future orientation and adolescents' risk orientation. The second hypothesis was that there is an inverse relation between self-esteem and adolescents' risk orientation. The third hypothesis was that a more optimistic sense of future among young adolescents is associated with higher self-esteem. Two mediational models were also compared. Participants ($N = 438$) were youth who took part in a sex prevention program called Care To Wait.

Controlling for social desirability, results showed that future orientation fully mediated the relation between self-esteem and risk orientation, and self-esteem partially mediated the relation

between future orientation and risk orientation. Implications and proposed future directions discussed.

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TABLE OF CONTENTS

Introduction.....	1
Risk Behaviors among Adolescents.....	2
Conceptual Framework.....	5
Future Orientation and Risk Behaviors.....	9
Self-Esteem and Risk Behaviors.....	12
Self-esteem as a mediating variable.....	14
Current Study.....	17
Method	
Participants.....	19
Care to Wait Program	20
Measures	20
Procedure	24
Plan of Analysis	26
Results	
Preliminary Analyses.....	27
Correlations among Predictors, Mediators, and Risky Behaviors.....	28
Tests of Mediation	30
Discussion.....	34
Limitations and Future Direction.....	40
References	43
Appendix.....	51

Introduction

For many years, researchers have implemented health promotion and risk prevention and intervention programs in an attempt to reduce adolescents' engagement in risky behaviors such as unsafe sex, delinquency, substance abuse, and impulsive sensation seeking (Dolcini, Harper, Boyer, & Pollack, 2010; Hawkins, Catalano, & Miller, 1992; Jemmott, Jemmott, & Fong, 1998). In some cases, self-concept, possible selves, and identity development have been used as theoretical constructs to guide such programs (Dumas, Prinz, Smith, & Laughlin, 1999; Oyserman & Markus, 1990; Oyserman, Terry, & Bybee, 2002). This is so because the general presumption is that those who develop their identities through self-exploration of their possible selves have more positive outlooks towards the future and tend to engage in less risky behaviors (Bolland, 2003, Kerpelman & Mosher, 2004). Sometimes, however, such interventions fail to have the desired effect.

These minimal effects could be due to iatrogenic effects (Dishion & Burraston, 2001; Poulin, Dishion, & Burraston, 2001), the prevention or intervention only affected a subset of the participants (see Coyle et al., 2004), or the intervention effects washed out (see Koo, Dunteman, George, Green, & Vincent, 1994). In addition, sometimes these programs can be too narrow or too fragmented in their aims, which in turn can affect the degree of their impact (Dekovic, 1999).

When such programs fail to have the intended outcomes, questions arise as to whether the program's impact model is sufficiently grounded in theory to understand key proximal processes that influence adolescent risky behaviors. Therefore, a closer look at overarching theories governing adolescents' risky behavioral intervention and prevention programs is a good starting point to uncovering the reasons for such failed programs. In addition to looking at overarching

theories, it is also important to understand the antecedents that contribute to adolescents' risky behaviors. Such antecedents described here are future orientation and self-esteem.

Extant literature has shown that having a positive outlook on one's future has an inverse relation to adolescents' risk behaviors (Nurmi, 1990; Steinberg, 2004, 2009). Similarly, studies on self-esteem have also shown a complex but mostly inverse relation with adolescent risk taking (Salazar et al., 2005). Although self-esteem has been explored as a mediating variable in relation to adolescent risk taking (Komro et al., 2001; Prelow & Weaver, 2006), few research studies have been focused on the possible effects of self-esteem as a mediator between future orientation and adolescents' risk behaviors.

In addition, there has been even less research on the mediating effects of future orientation. Therefore, this study analyzed two mediation models: self-esteem as the mediator between future orientation and adolescents' risk taking, and future orientation as the mediator between self-esteem and adolescents' risk taking. In this way, possible causal pathways can be examined.

In the sections that follow, I will give a synopsis of common adolescent risky behaviors and associated factors. Then I will explain how identity is developed through one aspect of the self-concept theory, possible selves. I will then examine the link between future orientation and risk engagement, followed by a review of the literature on self-esteem and risky behaviors. Finally, I will examine the two mediation models in terms of existing research evidence and theory, and proposed hypotheses and conclusions.

Risk Behaviors among Adolescents

A large body of evidence has shown adolescents (ages 12-18) to be at the peak of engaging in risky behaviors (Jessor, 1991; Lohr, Gillmore, Gilchrist, & Butler, 1992; Gullone & Moore, 2000; Somers & Gizze, 2001; Steinberg, 2004, 2007). Risky behaviors have been defined by

Gullone and Moore (2000) as the balance between behaviors that have negative consequences with behaviors that have perceived positive consequences. Such risky behaviors include but are not limited to unsafe sex (Bolland, 2003; Coleman & Cater, 2005; Cooper, 2002; Rosenthal, Moore, & Flynn, 1991), delinquency (Lohr et al., 1992), alcohol abuse (Mason & Windle, 2001; O'Malley, Johnston, & Bachman, 1999; Rooke & Hine, 2011), and impulsive sensation seeking (Donohew et al., 2000; Hernandez & DiClemente, 1992; Robbins & Bryan, 2004). Often, these risk-taking behaviors co-occur, with 10% or more adolescents being high in every type of risky behavior (Coleman & Cater, 2005; Hernandez & DiClemente, 1992).

Given that risky behavioral engagement among adolescents has been a pervasive issue for many years, researchers have a particular interest in understanding the probable influences on these behaviors. If the mechanisms that contribute to risky behaviors can be better understood, then it may contribute to the development of effective promotive, preventive, and intervention strategies, as well as increase the understanding of the etiology of adolescent development. To that end, there are many factors that have been shown to influence adolescents' risky behavioral engagement.

During adolescence, developmental changes in physiology, cognition, and social status can contribute to engagement in risk behaviors (Dekovic, 1999; Erikson, 1956; Marcia, 1980; Steinberg, 2004). For example, the prefrontal cortex, which is responsible for regulating behavior, emotion, and perception of risk and reward, does not mature until a decade after the adolescent period (Giedd, 2008; Orr, 1988; Steinberg, 2007). Thus, adolescents may be impulsive and display sensation-seeking behaviors due to their inability to completely control their inhibitions and emotions (Orr, 1988; Steinberg, 2007).

Other studies suggest that some adolescents are more predisposed to risk taking than others due to sociodemographic factors such as living in poverty or with one parent (Hill, Ross, & Low, 1997; Turner, Irwin, Tschann, & Millstein, 1993), social mechanisms such as striving for autonomy from parental control (Dolcini & Adler, 1994), and peer influence and pressure (Gardner & Steinberg, 2005; Jessor, 1991). Although these developmental processes are related to engagement in risky behavior, there are other developmental processes that have also been shown to contribute to adolescents' risky behaviors; one such process is identity development.

As adolescents develop, the process of self-discovery is also initiated and becomes a focus for adolescents (Erikson, 1956; Harter, 1990; Marcia, 1980). Marcia (1980) emphasized that a condition for self-discovery is the establishment of an identity. Embedded in the process of developing an identity is the evaluation of one's self-concept. Specifically, it is important to emphasize possible selves and its influence in identity growth and development of orienting one's future. Therefore, in order to understand the implications of future orientation on risk taking in adolescence, I will delve into the literature related to self-concept and possible selves (Dunkel, 2000; Harter, 1990; Oyserman et al., 2002).

Conceptual Framework

Self-Concept

From a constructivist perspective, there are many changes in the self-system that occur during adolescent development that are fundamental influences on their behaviors (Dunkel, 2000; Engel, 1959; Harter, 1990; Hoyle & Sherrill, 2006; Oyserman et al., 2002; Stein, Roeser, & Markus, 1998). Self-concept can be defined as a complex, multidimensional array of self-schemas upon which identity is formed (Baumeister, 1995; Salazar et al., 2004). In turn, self-schemas are content-specific elaborate constructions of the self, formed from experience and appraisals made by the self and others (Dunkel, 2000; Stein et al, 1998.). Self-concept theorists argue that it is an agglomeration of a set of beliefs about one's abilities, experiences, roles, personal characteristics, and skills, in conjunction with one's perception of themselves and self-worth (Harter, 1990; Hughes, Galbraith, & White, 2011).

Several theoretical and empirical articles have supported this theory as a useful tool in understanding adolescents' behaviors (Dunkel, 2000; Hughes et al., 2011; Stein et al., 1998). This is because it encompasses the importance of self-knowledge and self-regulation of one's behaviors (Hoyle & Sherrill, 2006; Markus & Nurius, 1986; Oyserman et al., 2002). Part of regulating one's behavior concerns an understanding of one's psychological past, present, and future, which is also known as the time perspective concept (Hughes et al., 2011; Kauffman & Husman, 2004; Markus & Nurmi, 1986).

This ability to consider the time perspective is critical in positively orienting one's future (Kauffman & Husman, 2004; Nurmi, 1990). Having the ability to cognitively and critically think about past, present, and future allows people to guide their goals, motives, and ultimately their behaviors (Lamm, Schmidt, & Trommsdorff, 1976; Nurmi, 1991). Therefore, in order to

ascertain how future orientation relates to adolescents' behavior, further exploration should be conducted on specific domains of the self-concept theory that deals with the time perspective, namely the concept of possible selves.

Possible Selves

Possible selves are elements of the self-concept that represents an individual's goals, motives, anxieties, and fears (Markus & Nurius, 1986; Oyserman et al., 2002). It is a combination of selves that individuals think of becoming, selves they could become, and selves they are afraid of becoming (Hoyle & Sherrill, 2006; Markus & Nurius, 1986). The concept of possible selves is derived from individuals' cognitive representations of their self in the future as influenced by their representations of their self in the past as well as their self in the present (Markus & Nurius, 1986; Oyserman et al., 2002).

In other words, possible selves are projections into the future and take into account prior performances, past social experiences, and expectations of one's culture, in conjunction with present social experiences (Dunkel, 2000; Markus & Nurius, 1986). Thus, woven into this theory is the fact that the goals and ideals of the future self are considered to be as important as the present and past selves (Dunkel, 2000). For this reason, theorists consider possible selves to be the future-oriented component of self-concept (Hoyle & Sherrill, 2006; Markus & Nurius, 1986; Oyserman et al., 2002).

One limitation of possible selves is its heavy concentration on social influences (Markus & Nurius, 1986; Oyserman et al., 2002). Due to the fact that multiple forces including history, sociocultural contexts, and immediate social experiences shape individuals' possible selves, one can say that possible selves are mainly socially constructed (Markus & Nurius, 1986; Oyserman et al., 2002). As a result, adolescents whose social construction is negative tend to be at greater

risk for poor behavioral regulation and concomitantly greater risk engagement (Connell, Spencer, & Aber, 1994).

Alternatively, adolescents who have a more positive social construction tend to regulate their behaviors more as well as avoid risky behaviors (Connell et al., 1994; Hoyle & Sherrill, 2006; Markus & Nurius, 1986). Furthermore, adolescents who think critically about their future possible selves also tend to explore various aspects of their identity and also fare better than those who do not (Harter, 1990; Hoyle & Sherrill, 2006; Marcia, 1981).

Identity development can be described as multifaceted whereby individuals construct a synthesized self-concept through exploration and commitment of various identities such ethnic, sexual, and physical (Harter, 1990; Phinney, Cantu, & Kurtz, 1997; Simona, 2009). Marcia (1981) extended Erikson's (1956) work on identity statuses and developed an identity status ego model, whereby adolescents who explore identities but have not yet committed to a particular identity (identity moratorium) are considered to be well rounded and highly attuned to developing their identities.

These adolescents tend to be more advanced in developing their possible selves than adolescents who neither explore nor commit to an identity (identity diffusion) or commit without exploring (identity foreclosure). Overall, the analysis of these possible selves aids in the development of adolescents' sense of identity (Marcia, 1981). Therefore, identity exploration and commitment, propelled by thoughts of possible selves, also help to foster positive thoughts about the future (Berzonsky, Rice, & Neimeyer, 1992; Dunkel, 2000; Marcia, 1981).

Needless to say, the concept of possible selves can serve as a solid foundation for understanding the development of one's future and the relation between future orientation and engagement in risky behaviors (Markus & Nurius, 1986). Thoughts of one's possible self

provide a basis upon which adolescents develop goals and motives to guide their future behaviors (Marcia, 1981; Markus & Nurius, 1986; Nurmi, 1990). Thus, the possible selves theoretical framework provides a promising platform upon which to build more effective programs that increases adolescents' future orientation and reduce their engagement in risky behaviors (Connell et al., 1994). To this end, I will now look at how future orientation can be related to adolescents' risky behaviors.

Future Orientation and Risk Behaviors

Future orientation refers to a cognitive-affective-motivational concept that interacts with contextual factors and is concerned with self-percepts of the future (Nurmi, 1991; Steinberg et al., 2009; Trommsdorff, 1983). As a heuristic model, future orientation is a multifaceted and dynamic process (Nurmi, 1991). Involved are processes that entail thinking about interests and goals for the future (motivation), mapping out ways to execute these interests and goals (planning), and assessing a realistic time frame for executing these interests and goals (evaluating) (Nurmi, 1991; Trommsdorff & Lamm, 1980).

Prior studies have shown an inverse relation between positive future orientation and engagement in risk behaviors, in that youth who think pessimistically about their future tend to engage in more risky behaviors (Bolland, 2003; Harris, Duncan, & Boisjoly, 2002; Steinberg et al., 2009). Engagement in risk behaviors appears to presume that future consequences are not taken into consideration or are ignored to satisfy immediate needs or desires (Gottfredson & Hirschi, 1990; Steinberg et al., 2009). For example, in one study that assessed sexual risk taking among inner-city adolescents, youth who did not think they had a very positive future engaged in more sexual risky behaviors such as unprotected sex and multiple sex partners (Bolland, 2003).

In another study of adjudicated adolescents, those who had a more positive future orientation were less impulsive and engaged in less risky behaviors, further emphasizing the negative association between positive future orientation and engaging in risky behaviors (Robbins & Bryan, 2004). These studies highlight a negative relation between thinking positively about the future and engaging in subsequently risky behaviors, suggesting that positive thoughts about the future may serve as a potential protective factor against engaging in risky behaviors.

Although some studies support a relation between future orientation and risky behaviors, there are two important limitations with the extant literature on this topic. First, there is contradictory evidence that future orientation distinguishes those who engage in more risky behaviors from those who do not (Trommsdorff & Lamm, 1980). An early study that assessed future orientation among self-described delinquents and nondelinquents showed no difference in the opinions of the future between the two groups (Losel, 1975). It can be speculated that more opportunities to engage in delinquent behaviors existed for one group than the other regardless of how they felt about their future (Losel, 1975). The conflicting findings from this study, which was conducted several decades ago, suggest that conducting a study of similar nature might elucidate the relation between future orientation and risk engagement.

A second limitation is that few longitudinal studies have been conducted on the relation between future orientation and risky behaviors (Chen, 2009; Trommsdorff, Lamm, & Schmidy, 1979). Considering that future orientation deals with thoughts about the future, it would be beneficial to conduct longitudinal studies to assess change in risk taking as a function of alterations in long-term goals and sense of self. Therefore, my study will focus on changes in perception of future over a 6-month period.

Future orientation is related to affective components of individuals' perceptions of locus of control (Nurmi, 1991; Pulkkinen & Rönkä, 1994). In other words, the extent to which individuals perceive that they have control over their future shapes whether they view their possible selves and roles to be positive or negative (Pulkkinen & Rönkä, 1994; Trommsdorff & Lamm, 1980). Pulkkinen and Rönkä (1994) found that adolescents who perceived themselves to have more control over identity development had a more positive outlook of their future compared to those who perceived themselves to have less control over identity development. Other factors also co-

occur with perceptions of control that influence percepts of the future, which in turn subsequently affect behaviors (Nurmi, 1991; Steinberg et al., 2009).

For instance, low self-perceptions along with low perception of control have been shown to increase pessimistic views of ability and identity, which in turn can increase the likelihood of risk engagement (Harter, 1990; Kerpelman & Mosher, 2004; Wills, 1994). Self-perceptions are multidimensional cognitive constructs that reflect how negatively or positively people perceive themselves (Harter, 1990; Steinberg, 2004). Given that adolescents are in a state of biological and social transition, theoretical models postulate that their self-perceptions and decision-making skills are also in a state of transition (Rosenthal et al., 1990; Steinberg, 2004; Steinberg et al., 2009).

During adolescence, many dimensions of self-perceptions are important, self-appraisals, self-esteem, and self-efficacy among them. For the purposes of this study, however, I will focus only on the relation between self-esteem and adolescents' risky behaviors. By advancing the knowledge of self-esteem, I can further examine the etiology of problem behaviors that are salient among youth (Kerpelman et al., 2008; Wills, 1994). In other words, findings from the current study may be able to provide insights as to how adolescents' self-esteem might contribute to their risky behaviors.

Self-Esteem and Risky Behaviors

Self-esteem is an assessment of one's worth that is a component of self-schema (Biro, Striegel-Moore, Franko, Padgett, & Bean, 2006; Harter, 1990; Marsh, 1986; Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995). It can be described in two ways: global and domain-specific (McGee & Williams, 2000; Rosenberg et al., 1995). Global self-esteem deals with one's assessment of self-worth in its totality whereas domain-specific self-esteem applies more to the assessment of self-worth in a certain context (Harter, 1990). Diverse theories have stated that early adolescents' self-esteem tends to be fragile given that it is more susceptible to social comparison processes during this developmental stage (Dunkel, 2000; Harter & Whitesell, 2003).

In later adolescence, although there are some gender differences, self-esteem tends to gradually increase and becomes more positive as freedom, personal authority, and role-taking ability increase and more opportunities to behave in socially appropriate ways are available (Block & Robins, 1993; Harter & Whitesell, 2003). However, this is not always the case: Some studies have questioned the assumption that high self-esteem inversely correlates with engagement in risks (Baumeister, Heatherton, & Tice, 1993; Baumeister, Smart, & Boden, 1996).

Even though studies have shown high self-esteem to be related to low levels of risk engagement (Donnellan et al., 2005; McGee & Williams, 2000), other studies have argued that threatened egotism results in inflated views of the self, which can then lead to risky behaviors (see Crocker & Park, 2002). This argument is based on the assumption that people sometimes engage in risky behaviors to increase or maintain self-esteem, or to reduce the threat of having low self-esteem (see Baumeister et al., 1993; Crocker & Park, 2002). Although in this study

there is no assessment of threat to adolescents' egos, if there is a positive relation between self-esteem and risky behavioral engagement, one might assume that there is a possibility of threatened egotism.

Another limitation is that a majority of studies focused on such trends have shown conflicting results that call into question the magnitude of influence self-esteem has on adolescents' engagement in risky behavior (Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005; McGee & Williams, 2000; Wills, 1994). Some previous work conducted on the assessment of self-esteem on adolescents' risky behavior showed significant correlations but small effect sizes (e.g., Salazar et al., 2005). Bruhn and Parcel (1982) stated that due to inconsistencies in findings, it is difficult to ascertain the magnitude of the effect of beliefs of the self in relation to behavior. One of the major reasons for the discrepancy is the lack of longitudinal studies compared to cross-sectional studies (Donnellan et al., 2005; McGee & Williams, 2000; Rosenberg, Schooler, & Schoenbach, 1989). Without assessment of change, it is difficult to conclude conclusively that a construct truly has any influence or not. It is for this reason that recent research tends to be longitudinal in order to capture change across time.

For example, Donnellan et al. (2005) conducted three cross-sectional and longitudinal studies that assessed the relation between global self-esteem and externalizing behaviors among adolescents. Overall, they found low self-esteem to be strongly related to externalizing behaviors (Donnellan et al., 2005). Similarly, Wills (1994) conducted a longitudinal study of 8th graders that assessed self-attitudes, including self-esteem and perceived control in relation to adolescent substance use. An inverse relation was found between positive self-attitudes and substance use.

Similar results were also obtained from a later study conducted by McGee and Williams (2000) who also conducted a longitudinal study whereby they evaluated the association among global and domain-specific self-esteem and a multitude of health-compromising behaviors including early sexual activity, substance use, and suicidal ideation. The results showed an inverse relation between global self-esteem and health compromising behaviors. Academic self-esteem, on the other hand, did not significantly relate to any of the health compromising behaviors.

These studies show an inconsistent relation between adolescents' self-esteem and risk taking. Longitudinal data are thus better able to capture change in self-esteem among adolescents and their subsequent risky behavioral engagement. There are still limitations with some of these studies in that self-esteem was assessed as an antecedent that aids in the prediction of adolescents' risk behaviors more than a mediator.

The proposed study attempted to: (a) extend the extant literature by using longitudinal data in order to assess the relation between self-esteem and later risky behavior, and (b) address the gaps in the literature by assessing self-esteem as a mediating variable for risky behaviors. In this way, potential causal links can be assessed between self-esteem in relation to future orientation and adolescents' risky behaviors. In the following section, I will describe how self-esteem might mediate the association between future orientation and adolescents' risky behaviors.

Self-Esteem as a Mediating Variable

Despite the fact that theoretical perspectives suggest that self-esteem is related to future orientation (Nurmi, 2001; Steinberg, 2004; 2009), there is a paucity of empirical research that focuses specifically on this association. Rather, studies have mostly concentrated on self-esteem in relation to behaviors that indirectly reflect aspects of one's future, without directly addressing the influence of self-esteem on future orientation. For instance, Trzesniewski et al. (2006) found

that adolescents who had low self-esteem had poorer mental and physical health and engaged in far more criminal and delinquent behaviors as adults. A different longitudinal study found that children who have poor family connections tended to have low self-esteem and increased levels of hopelessness and suicidal ideation in adolescence and early adulthood (McGee, Williams, & Nada-Raja, 2001).

Even though the above studies did not directly address future orientation in relation to self-esteem, one can extrapolate from their results that self-esteem may influence future thoughts and subsequent behaviors. However, this still leaves the question of whether or not more optimistic future perceptions would enhance one's self-esteem. In other words, can self-esteem be a mediator between future orientation and adolescents' risky behaviors? The next section will address this issue of self-esteem as a mediator.

Intervention studies for adolescents, especially programs targeted at prevention of risky sex or promotion of health or behavioral adjustment, have incorporated self-perceptual concepts such as self-esteem (DuBois et al., 2002; Jemmott, Jemmott, Spears, Hewitt, & Cruz-Collins, 1992; Salazar et al., 2005). The presumption for this focus on self-esteem is that they are causally related to, or mediators of, healthy adolescent behaviors. Outcomes of the few intervention studies on this topic tend to support this presumption.

For instance, Dubois et al. (2002) conducted a 2-year longitudinal study and found that changes in self-esteem mediated the effects of social support on both emotional and behavioral adjustment of early adolescents. In a later study, Salazar et al. (2005) assessed African American female adolescents' self-esteem and sexual risk taking, specifically sexually transmitted diseases (STD) and pregnancy. No association was found between self-esteem and STD or pregnancy, but significant relations were observed between the mediators (domain-specific self-efficacy)

and self-esteem: Those who were higher in self-esteem were more likely to be high in self-efficacy.

Although self-esteem was not considered a mediating variable, Salazar et al. (2005) suggested that self-esteem be included as a mediator in future studies of adolescent health behavior, given that it was strongly related to other self-perceptions (i.e., situational self-efficacy) that were correlated with risk taking. Therefore, self-esteem may explain adolescents' risky behaviors above and beyond future orientation. However, can it also be that future orientation serves as a mediator between self-esteem and adolescents' risky behaviors?

Even though there is a dearth of studies focused on the mediating effects of self-esteem on future orientation and risky behavioral engagement, one can extrapolate from the above studies that future orientation can also possibly mediate the association between self-esteem and risky behaviors. In other words, future orientation may be able to explain adolescents' risky behaviors above and beyond self-esteem. Accordingly, I will examine two mediational models: The first model is to test the role of self-esteem as a mediator of the relation between future orientation and engagement in risky behaviors among adolescents, and the second model is to test the role of future orientation as a mediator between self-esteem and adolescents' risky behaviors.

The Current Study

The main premise of this study is to evaluate the relations between future orientation, self-esteem, and adolescents' risky behaviors. By testing two mediational models, and using data collected from a longitudinal study, possible pathways related to adolescents' engagement in risky behaviors can be examined. To that end, the first hypothesis is that there is an inverse relation between future orientation and adolescents' risky behaviors. The second hypothesis is that there is an inverse relation between self-esteem and adolescents' risky behaviors. The third hypothesis is that a more optimistic sense of future among young adolescents is associated with higher self-esteem.

Two mediational models were also compared. Given the limited literature, exploratory hypotheses were tested. Thus, the fourth hypothesis is that higher levels of self-esteem mediate the inverse relation between future orientation and later engagement in risk orientation (see Figure 1), and the fifth hypothesis is that high levels of future orientation mediate the inverse relation between self-esteem and adolescents' risk orientation (see Figure 2). As part of assessing risky behaviors (i.e., risky sexual behavior, peer delinquency, and impulsivity/sensation seeking) with future orientation and self-esteem, this study also assessed processes that may lead to engaging in risky behaviors, namely sexual attitudes and perceptions of engaging in risk.

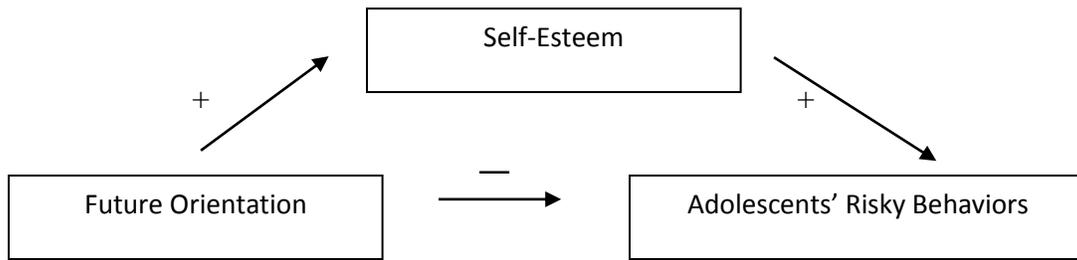


Figure 1. *Conceptual Model for the Associations among Future Orientation and Self-Esteem in Relation to Adolescents' Risky Behaviors where Self-Esteem is the Mediating Variable.*

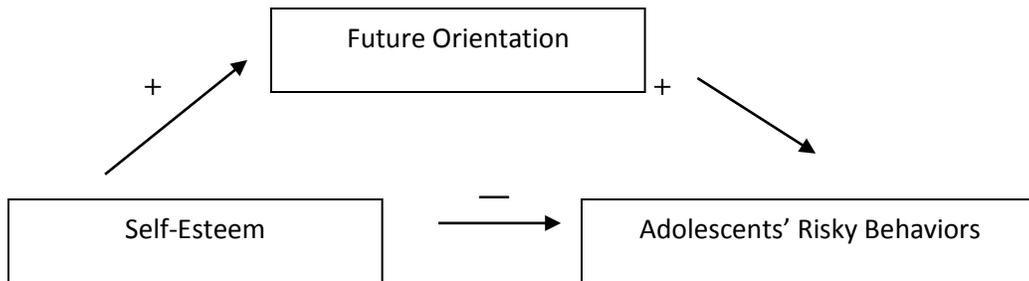


Figure 2. *Conceptual Model for the Associations among Future Orientation and Self-Esteem in Relation to Adolescents' Risky Behaviors where Future Orientation is the Mediating Variable*

Method

Participants

The data analyzed in this study were from a 3-year longitudinal family-based intervention program called DARE to be You (DTBY), which was renamed the Care to Wait (CTW) program. Teens were recruited along with at least one family member, as were community volunteers who work with youth. Families were recruited from diverse sites in order to test how generalizable of the intervention program was.

These sites differed not only in whether they were urban or rural but in ethnicity and risk profile as well. Participants were recruited from three areas in the Rocky Mountain region within Colorado: two urban areas (Denver with an estimated population of 555,000 and Colorado Springs with an estimated population of 361,000) and a rural site (Montezuma County with an estimated population of 27,000).

Recruitment of participants at all sites took place within schools, human service agencies, youth organizations, churches, word of mouth, and flyers. Therefore, this was a nonprobability sample of participants and not generalizable to the population. Families at the Colorado Springs site were randomized into the intervention and control groups, after the baseline was administered, based on the child's school. At the other two sites, assignment to group was at the level of the individual family.

The Denver sample was predominately made up of African American (93% of the site sample); Colorado Springs was a mix of Hispanic (40%), White (46%), and African American (22.5% of the site sample); and the Montezuma site was a mix of Hispanic (11%), White (76%), and Native American (16%). Approximately 26.6% of families within the urban sites and 24.6% at the Montezuma site lived below the poverty line. Although the parents at all three sites were

similar in age ($M = 39.66$ years) and education ($M = 13.32$ years), they differed significantly ($p < .001$) in terms of family composition (68% single or divorced at the Denver site, 52% at the Colorado springs site, and 35% at the Montezuma site).

For this study, I focused on the teen participants ($N = 438$) between the ages of 12 and 14 ($M = 13.02$ years); 57% are female. (Statistical power is greater than .95 to test for a meditational model across three time points and one-tailed significance level of $p = .05$).

Care to Wait Program

Although this study did not focus on the impact of the Care to Wait (CTW) program on adolescent risk taking, it is helpful to describe its main objectives. This curriculum was part of a longitudinal program called DARE To be You (DTBY), which was modified for parents and their 12-14 year olds. The main goal of CTW was to reduce adolescents' sexual risk taking. Subsequent goals were to: increase adolescents' understanding of the health and behavioral benefits from abstaining from sex, provide them with the tools to develop sound decision-making skills to abstain from sex, and increase parental involvement and family togetherness.

In addition to aid in the prevention of engagement in risky sexual behaviors among adolescents, CTW also aimed at increasing aspects of positive youth development by promoting communication, confidence, and positive relations between the adolescents and the rest of their family. The adolescents engaged in a variety of activities that included both one-on-one and teen group and family group activities in order to address these objectives.

Measures

Future orientation. A modified version of a 56-item resiliency questionnaire was used to assess teens' goals and aspirations (Constantine, Bernard, & Diaz, 1999). My measure focused on 8 items that assessed one of the internal assets: Goals and Aspirations (see Appendix). This

subscale included items pertaining to how optimistic or pessimistic teens viewed their future, as well as their views on the likelihood that they will become parents before turning 19 years old, graduate from high school and college, get married, and have a good job. A sample item included “I have goals and plans for the future,” which was rated from 1 (*not at all true*) to 4 (*very much true*). Internal reliability for the internal assets scale was sound, $\alpha = .84$ (Constantine et al., 1999). In the current sample, the reliability of the future orientation scale was marginal, $\alpha = .64$. Validity was not reported.

Self-esteem. The Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) is a 10-item measure of general self-worth and self-acceptance. Sample items included: “I feel that I have a number of good qualities” and “I certainly feel useless at times”, which are rated from 1 (*strongly disagree*) to 4 (*strongly agree*). Evidence for its reliability and validity was collected (Fleming & Courtney, 1984) from a group of 529 first-year psychology students. Internal reliability was high at $\alpha = .88$. Retest reliability was .82 after one week. The RSES is positively correlated with general self-regard, $r = .78$, and with social confidence $r = .51$, demonstrating convergent validity.

In another study that assessed the general self-esteem of a group of 5000 ethnically diverse high school students, the RSES had high internal consistency, $\alpha = .92$, and high test-retest reliability, $r = .88$ (Fischer & Corcoran, 1994). Evidence for the RSES’s predictive and concurrent validity has been found in terms of correlations with depression, anxiety, and peer group reputation as well as other self-esteem measures such as the Coopersmith Self-Esteem Inventory (Fischer & Corcoran).

Perceptions of risk was measured using a subset of the 22-item Adolescent Risk Questionnaire (ARQ; Gullone, Moore, Moss, & Boyd, 2000). Perception of risk was used to

assess the decision-making component to engage in risky behaviors under varying situations: (a) thrill-seeking behaviors (e.g., snow skiing), (b) rebellious behaviors (e.g., underage drinking), (c) reckless behaviors (e.g., having unprotected sex), and (d) antisocial behaviors (e.g., cheating). These items are rated from 0 (*not at all risky*) to 4 (*extremely risky*) in response to questions such as “How risky is it to ... smoke marijuana once or twice a month?” and “...have unprotected sex?” Therefore, the higher the score, the less likely the individual will engage in the risky behavior.

The ARQ was developed and validated with large samples of 11-18 year olds. Both test-retest (.44-.80) and alpha reliabilities ($\alpha = .88$ in this sample) are adequate. The ARQ was validated with confirmatory factor analysis, analyses showing that older teens and males reported lower risk perceptions and greater risky behaviors, and correlations between perceived risk and risk-taking behaviors.

Impulsivity/sensation seeking was measured using an 11-item scale (Cahalan & Room, 1974). Sample items included, “I often act on the spur-of-the-moment without stopping to think,” and “I get a real kick out of doing things that are a little dangerous,” which are rated from 1 (*not at all*) to 4 (*quite a lot*). The scale has a high internal consistency $\alpha = .86$ (Schafer, Blanchard, & Fals-Stewart, 1994). Scale scores correlate highly with substance use (Trocki, Drabble, & Midanik, 2009).

Sexual attitudes was measured using items from the Sexual Risk Behavior Beliefs and Self-efficacy Scales (SRBBS) (Robinson, Shaver, & Wrightsman, 1991) that were used to measure teen attitudes toward nonmarital sex. Sample items include, “People should not have sex before marriage” and “It's okay for two people to have sex before marriage if they are in

love” (reverse scored), with items rated from 1 (*strongly disagree*) to 6 (*strongly agree*).

Therefore, adolescents with high scores were less likely to endorse risky sexual behavior.

Construct validity of the SRBBS has been demonstrated through confirmatory factor analysis; comparisons showing that virgins had more conservative social norms and attitudes toward sexual intercourse than nonvirgin teens; and correlations with sexual self-efficacy (Robinson et al., 1991). Internal consistency was sound, $\alpha = .86$. Recent evaluations of abstinence education programs indicate that intentions and attitudes toward premarital sex are distinct from sexual behaviors: The former may be altered in the short run but the latter typically are not (Kirby, Short, Collins, et al., 1994).

Risky sexual behavior. Four items from the Scale of Sexual Risk-Taking (Metzler, Noell, & Biglan, 1992) were used to assess whether teen participants had ever had intercourse or had in the last 6 months, and if they engaged in the following risky sexual behaviors: multiple partners, casual partners, or failure to use condoms or contraceptives. Items on this scale, which are weighted by risk level, are interrelated consistently across samples ($\alpha = .75-.90$), and scale scores are correlated with measures of peer deviance as well as other problem behaviors (Capaldi & Patterson, 1989). A log transformation was performed as it was highly positively skewed.

Peer delinquency. Participants completed three measures related to peer relations, one of which focused on the frequency with which their friends engaged in deviant behaviors (Capaldi & Patterson, 1989). A sample item includes: “During the last year how many of your friends have ruined or damaged something on purpose that wasn’t theirs?” On this 12-item scale ($\alpha > .86$), respondents rated the extent to which the teen’s peer group engages in activities such as drinking, using drugs, skipping class, delinquency, and sex. Scale scores are correlated with measures of criminal offending behaviors, in which deviant peer affiliation influenced concurrent

offending behavior. However, rates of concurrent offending behavior did not influence deviant peer affiliation (Fergusson & Horwood, 1996).

Social desirability. The 13-item short form of the Marlowe-Crowne Social Desirability Scale (MCSDS), developed by Reynolds (1982), was included because some adolescents' responses to questions about sensitive topics such as sex and peer deviance may be affected by biased self-presentation. This short form has adequate reliability ($\alpha > .76$) and construct validity (Robinson, Shaver, & Wrightsman, 1991). The MCSDS is correlated with various personality traits indicative of high psychological adjustment, such as emotional intelligence, conscientiousness, and self-esteem (see Mesmer-Magnus, Viswesvaran, Deshpande, & Joseph, 2006), which suggests that the MCSDS may be inversely related to measures of risk taking in the current study.

Preliminary analyses were performed on the various risky behaviors in order to test for multicollinearity. As shown in Table 2, the different measures of risky attitudes and behavior were significantly intercorrelated at both Time 1 and Time 2, with the exception of the relation between impulsivity and perceptions of risk. Therefore, an exploratory factor analysis was conducted and it was found that all five risk indicators loaded on a single factor, risk orientation. Accordingly, perceptions of risk and sexual attitudes were reverse scored; all risk variables were then centered and combined into a single indicator of risk orientation at Time 1 and at Time 2.

Procedure

I used secondary data from the DTBY intervention. These data were collected through the administration of surveys at each site to participants in both the intervention and control groups. It was administered on a 6-month schedule, beginning with the baseline pretest, through the 18-month posttest. The administration of surveys was done by trained data collectors who

were neither involved with the conducting the intervention curriculum nor evaluating the surveys. All surveys were administered orally to ensure that all participants understand the items the survey contained. Confidentiality of the participants were maintained as the evaluators did not have access to participants' names or demographic information and the intervention administration team did not have access to the participants' surveys.

For the purposes of this study, I will use baseline measure of future orientation and the 6-month follow-up measures of self-esteem and risk orientation for the first mediational model. For the second mediational model I will use baseline measure of self-esteem, and 6-month follow-up measures of future orientation and risk orientation.

Plan of Analysis

Prior to the testing of any of the hypotheses, potential intervention effects on self-esteem, future orientation, and risky behaviors were examined using repeated measures ANOVA. Repeated measures ANOVA was also performed to test for any moderating effects of gender and ethnicity on both the predictor and outcome variables. Logistic regression analyses were computed to test for selective attrition between the time points. Finally, statistical analyses for the meditational models were conducted by using hierarchal regression analyses.

Rationale for using Hierarchal Regression Analysis

In order to assess if self-esteem could explain the relation between future orientation and risky behaviors, or if future orientation could explain the relation between self-esteem and risky behaviors, a meditational analysis should be performed. One way to assess these possible causal pathways is through the use of hierarchal regression analyses. The benefit of using hierarchal regression analyses is the ability to enter variables in separate steps, which allows covariates to be entered and provides a clearer test of whether predictor variables still explain variance after entering mediators into the regression equation (Holmbeck, 1997).

Therefore, using Baron and Kenny's (1986) steps to conduct mediation, mediation would be supported if future orientation no longer explains variance in risk orientation after self-esteem is entered. Similarly, if self-esteem no longer explains the variance in risk orientation after future orientation is entered, then mediation would be supported. Sobel's test was used to test for partial mediation, and effect sizes were reported as well.

Results

Preliminary Analyses

Preliminary analyses were conducted to determine whether there were any intervention effects on self-esteem, future orientation, or risky behaviors. A repeated measures ANOVA was computed, with Group as the between-subjects factor and Time as the within-subjects factor. No significant Group by Time interactions emerged. Preliminary analyses used to assess gender and ethnicity effects on the variables also showed no significant effects. Therefore, gender, ethnicity, and intervention effects were not included as covariates. Given that intervention effects were not observed, the data were pooled across groups for the analyses of mediation.

Table 1, which shows the means (and standard deviations) for all the measures in the model, also indicates that there was moderate attrition across time (23-28%), depending upon the variable. In order to test whether attrition was systematic, participants who were missing the sexual risk-taking outcome variable at Time 2, for example, were compared, on 26 demographic and Time 1 outcome measures, to participants who remained in the study. One difference was significant at $p = .04$, or what would be expected by chance alone. Therefore, a propensity score to correct for selective attrition was not included as a covariate.

Table 1

Means (and Standard Deviations) for Predictors and Mediators of Adolescents' Risky Behaviors at Baseline and 6-month Follow-up

<i>Variables</i>	Time 1			Time 2		
	<i>M</i>	<i>(SD)</i>	<i>n</i>	<i>M</i>	<i>(SD)</i>	<i>n</i>
Future Orientation	5.05	(.76)	438	5.14	(.76)	341
Self-esteem	4.42	(1.01)	438	4.62	(.94)	337
Perceptions of Risk	3.26	(.78)	437	3.24	(.77)	338
Peer Delinquency	1.96	(.89)	437	1.92	(.82)	338
Sexual Attitudes	4.38	(1.11)	438	4.45	(1.15)	340
Risky Sexual Behavior	.85	(1.76)	430	1.33	(1.91)	308
Impulsivity	3.90	(1.11)	438	3.80	(1.07)	340

Correlations among Predictors, Mediators, and Risky Behavior

The first step in conducting mediation analyses is to compute bivariate correlations among the predictor, mediator, and outcome variables. This step determines if there is an association that could possibly be mediated. If there is no significant correlation between the predictor and outcome variables, then the first condition for mediation is not met (Baron & Kenny, 1986).

Furthermore, the first three hypotheses are tested with correlation analyses.

With regard to the first hypothesis, there is a significant relation between future orientation and the two attitudinal measures, perceptions of risk and sexual attitudes that endorse abstinence (see Table 2). These associations were observed both at baseline and at the 6-month follow-up, and were small to medium effect sizes (Cohen, 1988). In addition, future orientation was significantly associated with peer delinquency at baseline and the 6-month follow-up, with medium effect sizes for both. The relations between future orientation and impulsivity as well as with risky sexual behavior were significant but small at baseline and follow-up. Future orientation was significantly correlated with the composite variable, risk orientation, $r = -.32, p <$

.001 at Time 1, and $r = -.35, p < .001$ at Time 2. Thus, the results support hypothesis one that there is an inverse relation between future orientation and adolescents' risky behaviors.

The second hypothesis is that self-esteem is a protective factor in relation to risky behavior. The correlational results are similar to those involving future orientation as a predictor (see Table 2), although the effect sizes in relation to sexual attitudes are small (whereas they were medium effect sizes for future orientation) and they are larger in relation to impulsivity as compared to the correlations between future orientation and impulsivity. Also, self-esteem was not related significantly to risky sexual engagement at either time point (see Table 2). Self-esteem was significantly related to risk orientation, $r = -.25, p < .001$ at Time 1, and $r = -.26, p < .001$ at Time 2. Thus, the findings support hypothesis two.

Table 2

Within-Time Correlations among Predictors of Adolescent Risky Behaviors

Variables	1	2	3	4	5	6	7
1. Future Orientation	---	.46**	.18**	-.27**	.34**	-.13**	-.09*
2. Self-esteem	.47**	---	.17**	-.16**	.22**	-.06	-.18**
3. Perceptions of Risk	.18**	.10*	---	-.31**	.31**	-.15**	-.07
4. Peer Delinquency	-.29**	-.19**	-.23**	---	-.43**	.27**	.32**
5. Sexual Attitudes	.37**	.20**	.34**	-.47**	---	-.28*	-.33**
6. Risky Sexual Behavior	-.12**	-.07	-.12**	.17**	-.29*	---	.20**
7. Impulsivity	-.17**	-.27**	-.09*	.42**	-.35**	.07	---

Note. Correlations among variables at baseline are above the diagonal; correlations at the 6-month follow-up are below the diagonal.

* $p < .05$

** $p < .01$

A second criterion for mediation is that the putative mediating variable is significantly correlated with both the predictor variable and the outcome variables. Thus, correlations were computed between the baseline predictors and the Time 2 mediators and outcome variables (see Table 3). First, it should be noted that future orientation and self-esteem were stable between the two time points, as were the outcome variables. Second, related to hypothesis three, the

correlation between future orientation at Time 1 and self-esteem at Time 2 is significant, with a medium effect size (see Table 3). Related to hypothesis four, the correlation between self-esteem at Time 1 and future orientation at Time 2 also was significant, $r = .24, p < .001$. Both future orientation and self-esteem were significantly correlated with sexual attitudes and impulsivity (see Table 3), meeting the second condition for mediation. Additionally, future orientation at Time 1 was correlated with risk orientation at Time 2, $r = -.26, p < .001$. Even though self-esteem at Time 1 was not significantly related to three of the follow-up measures of risky attitudes and behaviors (see Table 3), it was significantly related to the Time 2 risk orientation, $r = -.17, p < .01$.

Table 3

Between-Time Correlations at Baseline with Time 2

Time 1 Variables	Time 2						
	1	2	3	4	5	6	7
1. Future Orientation	.58**	.30**	.14**	-.17**	.28**	-.10*	-.16**
2. Self-esteem		.51**	.01	-.07	.16**	-.07	-.23**
3. Perceptions of Risk			.50**	-.20**	.26**	-.15**	-.08
4. Peer Delinquency				.63**	-.40**	.26**	.25**
5. Sexual Attitudes					.59**	-.35**	-.22**
6. Risky Sexual Behavior						.52**	.15**
7. Impulsivity							.65**

Note. Correlations among variables at baseline are above the diagonal; correlations at the 6-month follow-up are below the diagonal.

* $p < .05$

** $p < .01$

Tests of Mediation

Hierarchical regression analyses were computed to test the mediational hypotheses. In that way I was able to test whether self-esteem mediated the relation between future orientation and later risk orientation, or whether future orientation mediated the relation between self-esteem and later risk orientation. As described above, the first condition for mediation (see Baron & Kenny,

1986) – that the predictor and outcome variables are significantly related to each other – was met. The above results also support the second condition, which is that the mediator is associated with both the predictor and outcome variables. Two hierarchical regression analyses were performed to ascertain mediational effects of self-esteem on the relation between future orientation and risk orientation (the fourth hypothesis) as well as the mediational effects of future orientation on the relation between self-esteem and adolescents' risk orientation (the fifth hypothesis). Social desirability at Time 1 was included as a covariate in the analyses because it was correlated with both predictors ($r = .22$ to $.28$, $p < .01$) at Time 1 as well as with risky behavioral engagement at Time 2, $r = -.28$, $p < .001$.

In the first mediational model, the inverse relation between future orientation and adolescents' risk orientation was hypothesized to be mediated by self-esteem. A hierarchical regression was computed, with social desirability entered in step 1 as the covariate, Time 2 self-esteem entered in step 2, and Time 1 future orientation entered in step 3. The regression analysis showed that self-esteem partially mediated the relation between future orientation and risk orientation at Time 2 given that future orientation was still significant, $p < .001$ (see Table 4). The standardized beta weight between the predictor and outcome variable was reduced from $-.214$ to $-.181$ when the mediator was included. The Sobel test value of 3.05 was significant, $p = .001$, indicating that the indirect path was significant and that partial mediation is supported. According to Cohen (1988), the adjusted R^2 is a medium effect size (see Table 4).

Table 4

Mediation of the Relation between Future Orientation and Risky Behavioral Engagement by Self-Esteem

step & predictor	β	ΔR^2
1. Social Desirability	-.301***	.090***
2. Self-Esteem	-.214***	.044***
3. Future Orientation	-.181***	.030**
Total adjusted R^2		.157**
N	339	

** $p < .01$ *** $p < .001$

In the second mediational model, the inverse relation between self-esteem and adolescents' risk orientation was hypothesized to be mediated by future orientation. As with the model tests for hypothesis 4, hierarchical regressions were computed, with the mediating variable now being future orientation. Results showed Time 2 future orientation to fully mediate the relation between Time 1 self-esteem and later risk orientation given that self-esteem was not significant when entered in the last step (see Table 4). The standardized beta weight between the predictor and criterion variable decreased from $-.107$ ($p = .045$) to $-.038$ when the mediating variable was included. According to Cohen (1988), the adjusted R^2 would be a medium to large effect size (see Table 5). Thus, hypothesis five is supported.

Table 5

*Mediation of the Relation between Self-Esteem and
Risky Behavioral Engagement by Future Orientation*

step & predictor	β	ΔR^2
1. Social Desirability	-.292***	.085***
2. Future Orientation	-.314***	.097***
3. Self-Esteem	-.038	.001
Total adjusted R^2		.177***
N	340	

*** $p < .001$.

Discussion

The purpose of this study was to assess the relations among future orientation, self-esteem, and adolescents' risky behaviors. In particular, the hypotheses tested two competing models of how the self-system of adolescents may be related to risky behavior: whether self-esteem mediates the relation between future orientation and risk orientation, or whether future orientation (i.e., possible selves) mediates the association between self-esteem and later risk orientation. The first two hypotheses were supported in that both future orientation and self-esteem were significantly, inversely related to risk orientation. As found in prior research (Bolland, 2003; Gardner & Steinberg, 2005; Lamm et al., 1979), adolescents who engaged in various risky behaviors, such as being impulsive and affiliating with deviant peers, tended to have more negative thoughts about their future and also had lower levels of self-esteem. In addition, the results supported both hypotheses related to mediation, although future orientation played a more significant role in that it fully mediated the relation between self-esteem and later risk orientation, and it also explained variance in later risk orientation even with self-esteem serving as a mediating variable.

Before proceeding with a discussion of the findings in relation to the hypotheses, it is necessary to consider what is meant by risk orientation. This study used multiple indices of young adolescents' attitudes toward risk and sexual activity, as well as engagement in different risky behaviors such as having unprotected sex and or having sex with multiple partners, engaging in delinquent activity with peers, and being impulsive. Consistent with previous research on comorbidity of adolescent behavior problems (Coleman & Cater, 2005; Hernandez & DiClemente, 1992), the various measures of adolescents' attitudes toward and engagement in risky behavior were significantly interrelated and formed a single dimension of risk orientation.

Furthermore, future orientation was significantly correlated with each risk indicator; self-esteem also predicted later sexual attitudes and impulsivity as well as the risk composite, although it was not consistently related to the other measures of risk. These findings indicate that adolescents' engagement in risk behaviors co-occur, as has been found for 30% or more of adolescents (Dryfoos, 1997), and that these problem behaviors may share similar risk and protective factors, or equifinality (Dryfoos, 1997). Of practical import, one implication of these findings is that youth development efforts that target one or several protective factors, such as future orientation (Bolland, 2003; Robbins & Bryan, 2004), may have beneficial effects on a variety of adolescent risk-taking behaviors, as will be discussed in a later section.

The present study supported the first hypothesis that future orientation is inversely related to risky behaviors. Although previous research on this relation is limited, the few studies have observed that future orientation may act as a protective factor in relation to adolescent risk taking (e.g., Nurmi, 1991; Steinberg et al., 2009; Wills, 2004). The inverse relation between future orientation and peer delinquency also is in contrast to Losel's (1975) earlier study in which there was no difference in future orientation between delinquent and nondelinquent teens. One possible explanation for this is that the age of the participants in the current study ranged from 12 to 14 whereas in Losel's study, they were between the ages of 16 and 19. Therefore, the latter probably have thought about their future selves and what they want from life even if they label themselves as being delinquent. The results for future orientation also shed light on the inclusion of the possible selves concept.

The concept of possible selves is based on elements of the self-concept that represent individuals' goals, motives, anxieties, and fears (Oyserman et al., 2002). Considering that it provides a platform for understanding the development of one's future in relation to engagement

in risks, it is an appropriate organizing construct in understanding the current study's findings (Markus & Nurius, 1985). To that end, the findings seem to suggest that possible selves were taken into consideration as those adolescents who had more negative perceptions and attitudes towards engaging in risk behaviors tended to regulate their behaviors more and had higher levels of future orientation (Connell et al., 1994; Hoyle & Sherrill, 2006; Markus & Nurius, 1986).

In addition, the formation of one's possible selves includes their social influences (Hoyle & Sherrill 2006; Markus & Nurius, 1986). The heavy reliance on social cues and influences has been noted as a possible limitation on what adolescents might actually achieve or how they might behave, in that those whose social influence is negative tend to have negative future selves, and may tend to engage in more risky behaviors (Oyserman et al., 2002). As well, individual differences in adolescents' susceptibility to social influence may obscure the relation between future orientation and adolescent risk taking, as was found in this study: Social desirability correlated significantly with both the predictor and criterion variables. In order to avoid confounding results, social desirability was therefore controlled. In that way, the results can reflect more accurately the influence of future orientation and self-esteem on risky behavioral engagement.

In relation to hypothesis two, the results are in accord with the literature in that studies have shown self-esteem to be inversely related to adolescents' risky behaviors (Donnellan et al., 2005; McGee & Williams, 2000). By using longitudinal data, the findings were able to capture the magnitude of self-esteem in relation to risk behaviors across and within time. Interestingly self-esteem was not significantly correlated with risky sexual engagement either across or within time. This null finding could be due to the fact that the measure of self-esteem reflects global perceptions of the self whereas literature shows that using situation-specific self-efficacy might

be a more pertinent protective factor related to risky sexual behaviors (McGee & Williams, 2000). In addition, due to the small number of 12 to 14 year olds who were sexually active, there was not sufficient variability in the measure, even with scores transformed, to significantly relate to self-esteem.

Hypothesis three was supported in that there were significant positive correlations between future orientation and self-esteem. Even though there is limited literature on this association, several studies have shown future orientation and self-esteem to be highly correlated with each other (e.g., McGee et al., 2001; Trzesniewski et al., 2006). A strong, positive sense of self-worth may aid adolescents' identity development (Harter, 1990; Marcia, 1981). Self-theories assert that adolescents who think critically about their future selves as well as have a positive sense of self are more inclined to explore various aspects of their identity and also fare better than those who do not (Harter, 1990; Hoyle & Sherrill, 2006; Steinberg et al., 2009). The correlations between future orientation and self-esteem within each measurement occasion as well as across time suggest that these two processes may develop in tandem, although this postulate has not yet been examined. In addition, the relation between these two processes, as well as their relation to risky behavior, lends credence to the focus of positive youth development efforts on promoting positive futures and competent selves (see Lerner, Almerigi, Theokas, & Lerner, 2005).

Hypothesis four was somewhat supported in that self-esteem partially mediated the relation between future orientation and the composite measure, risk orientation. In contrast, hypothesis five was supported: Future orientation fully mediated the association of self-esteem and risk orientation. Given that there is limited literature related to which mediational model best predicts later risk engagement, the results provide a useful starting point for a discussion of processes that might explain the mediational findings.

One possible explanation for the partial mediation of self-esteem could be that adolescents might engage in risk behaviors as a means to maintain or enhance their self-esteem without regard to their future selves, or as a means to reduce their threatened egos (Baumeister et al., 1993, 1996; Crocker & Park, 2004). In addition, partial mediation could have been due to the use of a composite risk behavioral scale as opposed to single risk behavioral measurements. Previous studies assessed self-esteem in relation to single risk behaviors (Donnellan et al., 2005; Wills, 2004) rather than a composite risk orientation measure that was used in this study. Use of single risk indicators may allow for more precise testing of the effects of self-esteem on risk engagement. The use of a composite risk factor variable in the current study may underestimate the relations between self-esteem and certain forms of adolescent risk taking, or self-esteem may be a protective factor for some types of risky behavior but not others. Therefore, future studies should be cautious about using a composite of risk behaviors.

Moreover, the finding that future orientation mediated the relation between self-esteem and risk orientation is consistent with previous studies, in that more positive thoughts of one's future are associated with controlling and regulating one's behaviors (Harris et al., 2002; Nurmi, 1991; Pulkkinen & Rönkä, 1994; Steinberg et al., 2009). Future orientation also serves as a protective factor against engaging in risky behavior, in that youth with a clear sense of self or purpose are less likely to risk their long-term goals by engaging in delinquent activity or unprotected sex (Nurmi, 1991; Steinberg et al., 2004, 2009). The results, therefore, reflected this as future orientation was positively, strongly associated with attitudes about risk as well as risky behaviors.

As mentioned earlier, future orientation was a more potent mediator in relation to risk orientation as compared to self-esteem. This finding is an important contribution to the extant

literature and theory on future orientation and risk behaviors because it clarifies which processes within the self-system, including possible selves, might be proponent. Furthermore, it can be used to assess factors that can be incorporated in intervention and prevention programs.

Although self-concept frameworks and theories are useful tools to guide prevention efforts such as positive youth development programs (Blake et al., 2001; Jemmott et al., 1992, 1998), an intervention program to reduce risky behaviors should address mitigate risk factors as well as promote protective factors (Cole et al., 2003). Therefore, as mediating variables are better understood, more effective programs can be implemented.

Limitations and Future Research

Although these results were informative and largely supported the hypotheses, it is important to note the study's limitations. The first limitation is the measurements used to assess future orientation and self-esteem. Although both of these scales have adequate internal consistency and the measure for self-esteem has been shown to be valid (Rosenberg, 1965), the items used to assess adolescents' thoughts about their future were restricted in that the 56-item scale (Constantine et al., 1999) was reduced to 8 items. However, other items on the scale, if included, may have potentially altered the results in relation to their engagement in risky behaviors. For instance, inclusion of more items could have possibly linked thoughts of one's future to other factors such as selection of peers that might promote achievement of goals, types of adult support recruited in the service of goals (such as parents, mentors, teachers), planfulness, and consequential thinking. Therefore, even though there were strong correlations between future orientation and engagement in risky behaviors, the limited range of item content makes it difficult to ascertain if adolescents who have positive thoughts of their future truly would not be as inclined to engage in as much risky behavior as someone who holds more pessimistic views of the future. Studies of future orientation would benefit from a revised measure, possibly including more items pertinent to consequential thinking, weighing of short- versus long-term costs, and benefits, and possible selves.

In addition, the self-esteem measure used is an assessment of global self-esteem. However, as other studies have shown, both global and domain-specific measures of self-esteem should be used in order to assess more concretely the relation between self-esteem and risk behaviors (see McGee & Williams, 2000). Therefore, for future research, domain-specific self-esteem measures that are aligned with the specific outcomes being assessed need to be used in

conjunction with global measures of self-esteem. In this way, the findings can truly ascertain the relation between self-esteem and engagement in risky behaviors.

Even though self-esteem did mediate the relation between future orientation and risk behaviors, it did not completely mediate the relation. Thus, there may be other factors that could also explain the relations between future orientation and risk behaviors, particularly other aspects of self-perceptions such as self-efficacy (Kerpelan et al., 2008; Wills, 2004), or the effects of threatened egotism (Baumeister et al., 1993, 1996; Crocker & Park, 2002). Therefore, if other variables such as domain-specific self-efficacy were added to the mediating equation, it may produce different results in terms of how much variance self-esteem explains in the association.

Another critique of this study is the type of analyses conducted to assess the mediating effects. Hierarchical regression analyses were used to assess the mediational models. Although these analyses can show whether there are possible mediating effects, it is not the most robust or sensitive test for assessing mediation. Due to the fact that the data are longitudinal, a more powerful form of statistical analyses such as linear growth modeling would have been more ideal (Hosmer, Taber, & Lemeshow, 1991; Morgan & Teachman, 1988). With linear growth modeling, there could have been an assessment of the changes in the relations among the variables across time. Hierarchical regression analyses cannot capture these gradual changes, including nonlinear change. Thus, there is no knowledge of the amount change that occurred across time in the relations among the variables. However, as this was used to explore possible mediational models, hierarchical regression analyses were appropriate methods. In addition, for the purposes of this study, there were only two time points (baseline and 6-month follow-up). Therefore, linear growth modeling cannot be performed. Nevertheless, for future research, there should be use of more sophisticated statistical techniques so that causal pathways among self-

esteem, future orientation, and adolescents' risk orientation could be assessed (Hosmer et al., 1991; Morgan & Teachman, 1988).

The results of this study illuminate the need for more studies to include future orientation and self-esteem in their intervention and health promotion efforts, and in risk mitigation and prevention programs. This is especially important when developing a program grounded in the positive youth developmental (PYD) framework (Lerner et al., 2005). This framework is comprised of five core developmental components: care, competence, compassion, confidence, and connection (Lerner et al., 2005). These five components are presumed to incorporate or be influenced by both self-esteem and future orientation (Lerner et al., 2005). As a result, if future orientation and self-esteem are included in such programs, further assessments of causality can be made, by determining whether changes in either predictor leads to changes in risky behavior.

The overarching goal of this study was to understand the underlying mechanisms and processes involved in adolescents' risky behavioral engagement. Results from this study extend the existing literature on the relations of self-esteem and future orientation to adolescents' risky behaviors. The effects of mediation also provide a basis for follow-up research. The findings show that future orientation and self-esteem hold unique and prospective associations in relation to risky behaviors and attitudes, which is necessary but not sufficient when attempting to ascertain causal pathways (Nurmi, 1991; Salazar et al., 2004; Wills, 2004).

By identifying some of the underlying mechanisms involved in adolescent risk taking, as well as mediating effects between predictors of risky behaviors and engagement, is useful in informing and extending theoretical and empirical research. Essentially, these findings can contribute to the improvement of health promotion and risk prevention programs that target adolescents' engagement in risky behav

References

- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182. doi: 10.1037/0022-3514.51.6.1173
- Baumeister, R.F., Heatherton, T. F., & Tice D. M. (1993). When ego threats lead to self-regulation failure: negative consequences of high self-esteem. *Journal of Personality and Social Psychology, 64*, 141-156.
- Baumeister, R. F., Smart, L., & Boden, J. M (1996). Relation of threatened egotism to violence and aggression: the dark side of high self-esteem. *Psychological Review, 103*, 5-33.
- Berzonsky, M. D., Rice, K. G., & Neimeyer, G. J. (1990). Identity status and self-construct systems: process X structure interactions. *Journal of Adolescence, 13*, 251-263.
- Biro, F. M., Striegel-Moore, R. H., Franko, D. L., Padgett, J., & Bean, J. A. (2006). Self-esteem in adolescent females. *Journal of Adolescent Health, 39*, 501-507.
doi: 10.1016/j.jadohealth.2006.03.010
- Blake, S. M., Simkin, L., Ledsy, R., Perkins, C., & Calabrese J. M. (2001). Effects of a parent-child communications intervention on young adolescents' risk for early onset of sexual intercourse. *Journal of Family Planning Perspectives, 33*, 52-61.
- Block, J., & Robins, R. W. (1993). A longitudinal study of consistency and change in self-esteem from early adolescence to early adulthood. *Child Development, 64*, 909-923.
- Bolland, J. M. (2003). Hopelessness and risk behaviors among adolescents living in high-poverty, inner city neighborhoods. *Journal of Adolescence, 26*, 145-158.
doi:10.1016/S0140-1971(02)00136-7
- Bruhn, J. & Parcel, G. (1982). Current knowledge about the health behavior of young children: a conference summary. *Health Education Quarterly, 9*, 142-166.
- Cahalan, D., & Room, R. (1974). *Problem drinking among American men* (Monograph No. 7). New Brunswick, N.J. Rutgers Center of Alcohol Studies.
- Capaldi, D. M., & Patterson, G. (1989). *Psychometric properties of fourteen latent constructs from the Oregon Youth Study*. New York, NY: Springer-Verlag.
- Chen, P. (2009). *Future orientation, impulsivity, and deviance: Longitudinal relationships and multilevel processes* (Doctoral dissertation, Auburn University). Retrieved from , <http://etd.auburn.edu/etd/bitstream/handle/10415/1769/PanChenDissertationFinalDraft07062009.pdf?sequence=1>

- Cole, J. D., Watt, N. F., West, S. G., Hawkins, D. J., Asarnow, J. R., Markman, H. J., Ramey, S. L., Shurem M. B., & Long, B. (1993). The science of prevention: a conceptual framework and some directions for a National Research Program. *American Psychologist*, *48*, 1013-1022.
- Coleman, L. M., & Cater, S. M. (2005). A qualitative study of the relationship between alcohol consumption and risky sex in adolescents. *Archives of Sexual Behavior*, *34*, 649-661. doi:10.1007/s10508-005-7917-6
- Connell, J. P., Spencer, M. B., & Aber, J. L. (1994). Educational risk and resilience in African American youth: context, self, actions, and outcomes in school. *Journal of Child Development*, *65*, 493-506. doi: 10.0009-3920/94/6502-0016
- Constantine, N., Bernard, B., & Diaz, M. (1999, June). *Measuring protective factors and resilience traits in youth: the health kids resilience assessment*. Paper presentation, Social Society of Research.
- Cooper, M. L. (2002). Alcohol use and risky sexual behavior among college students and youth: evaluating the evidence. *Journal of Studies on Alcohol*, *14*, 101-117.
- Coyle, K. K., Kirby, D. B., Marin, B. V., Gomez, C. A., & Gregorich, S. E. (2004). Draw the line/respect the line: a randomized trial of a middle school intervention to reduce sexual risk behaviors. *American Journal of Public Health*, *94*, 843-851.
- Crocker, J. & Park, L. E. (2004). The costly pursuit of self-esteem. *Psychological Bulletin*, *130*, 392-414. Doi: 10.1037/0033-2909.130.3.392
- Dekovic, M. (1999). Risk and protective factors in the development of problems during adolescence. *Journal of Youth and Adolescence*, *28*, 667-685. doi: 10.1023/A:1021635516758
- Dishion, T. J., Poulin, F., & Burraston, B. (2001). Peer group dynamics associated with iatrogenic effects in group interventions with high-risk young adolescents. In D. W. Nangle, C. A. Erdley, D. W. Nangle, C. A. Erdley (Eds.). *The role of friendship in psychological adjustment* (pp. 79-92). San Francisco, CA: Jossey-Bass.
- Dolcini, M., Harper, G. W., Boyer, C. B., & Pollack, L. M. (2010). Project ÒRÉ: a friendship-based intervention to prevent HIV/STI in urban African American adolescent females. *Health Education & Behavior*, *37*, 115-132. doi:10.1177/1090198109333280
- Donnellan, B. M., Trzesniewski, K. H., Robins, R. W., Moffitt, T. E., & Caspi, A. (2005). Low self-esteem is related to aggression, antisocial behavior, and delinquency. *Psychological Science*, *16*, 328-335.
- Donohew, L., Zimmerman, R., Cupp, P. S., Novak, S., Colon, S., & Abell, R. (2000). Sensation seeking, impulsive decision-making, and risky sex: implications for risk-taking and design of interventions. *Personality and Individual Differences*, *28*, 1079-1091. doi:10.1016/S0191-8869(99)00158-0

- Dryfoos, J. G. (1997). The prevalence of problem behaviors: Implications for programs. In R. P. Weissberg, T. P. Gullotta, R. L. Hampton, B. A. Ryan, & G. R. Adams (Eds.), *Healthy children 2010: Enhancing children's wellness* (pp. 17-46). Thousand Oaks, CA: Sage.
- DuBois, D. L., Burk-Braxton, C., Swenson, L. P., Tevendale, H. D., Lockerd, E. M., & Moran, B. L. (2002). Getting by with a little help from self and others: Self-esteem and social support as resources during early adolescence. *Developmental Psychology, 38*, 822-839. doi: 10.1037//0012-1649.38.5.822
- Dumas, J. E., Prinz, R. J., Phillips Smith, E., & Laughlin, J. (1999). The EARLY ALLIANCE prevention trial: An integrated set of interventions to promote competence and reduce risk for conduct disorder, substance abuse, and school failure. *Clinical Child and Family Psychology Review, 2*, 37-53
- Dunkel, C. S. (2000). Possible selves as a mechanism for identity exploration. *Journal of Adolescence, 23*, 519-529. doi: 10.1006/jado.2000.0340.
- Engel, M. (1959). The stability of the self-concept in adolescents. *The Journal of Abnormal and Social Psychology, 58*, 211-215.
- Erikson, E. (1956). The problem of ego identity. *Journal of the American Psychoanalytic Association, 4*, 56-121.
- Fergusson, D. M., & Horwood, L. J. (1996). The role of adolescent peer affiliations in the continuity between childhood behavioral adjustment and juvenile offending. *Journal of Abnormal Child Psychology, 24*, 205-221. doi: 10.1007/BF01441485
- Fischer, J. & Corcoran, K. (1994). *Measures for clinical practices: A sourcebook. Vol. 1. Couples, families, and children* (2nd ed.). New York: Free Press.
- Fleming, J. S., & Courtney, B. E. (1984). The dimensionality of self-esteem: II. Hierarchical facet model for revised measurement scales. *Journal Of Personality And Social Psychology, 46*, 404-421. doi:10.1037/0022-3514.46.2.404
- Gardner, M. & Steinberg, L. (2005). Peer influence on risk taking, risk preference, and risky decision making in adolescence and adulthood: An experimental study. *Journal of Developmental Psychology, 41*, 625-635. doi: 10.1037/0012-1649.41.4.625
- Gecas, V., & Schwalbe, M. L. (1986). Parental behaviors and adolescent self-esteem. *Journal of Marriage and Family, 48*, 37-46.
- Giedd, J. (2008). The teen brain: Insights from neuroimaging. *Journal of Adolescent Health, 42*, 335-343. doi: 10.1016/j.jadohealth.2008.01.007
- Gullone, E. & Moore, S. (2000). Adolescent risk taking and the five-factor model of personality. *Journal of Adolescence, 23*, 393-407. doi: 10.1006/jado.2000.0327
- Harris, K. M., Duncan, G. J., & Boisjoly, J. (2002). Evaluating the role of “nothing to lose” attitudes on risky behavior in adolescence. *Social Forces, 80*, 1005-1039.

- Harter, S. (1990). Causes, correlates, and the functional role of global self-worth: A life-span perspective. In R. J. Sternberg, J. R. Kolligian, R. J. Sternberg, J. R. Kolligian (Eds.). *Competence considered* (pp. 67-97). New Haven, CT: Yale University Press.
- Harter, S., Waaters, P., & Whitesell, N. R. (1998). Relational self-worth differences in perceive worth as a person across interpersonal contexts among adolescents. *Child Development, 69*, 756-766.
- Hawkins, D., Catalano, R. D., & Miller, J. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: implications for substance abuse prevention. *Psychological Bulletin, 112*, 64-105.
- Hernandez, J. T. & DiClemente, R. J. (1992). Self-control and ego identity development as predictors of unprotected sex in late adolescent males. *Journal of Adolescence, 15*, 437-447. doi:10.1016/0140-1971(92)90073-E
- Hill, E., Ross, L., & Low, B. (1997). The role of future unpredictability in human risk-taking. *Human Nature, 8*, 287-325.
- Holmbeck, G. N. (1997). Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: Examples from the child-clinical and pediatric psychology literatures. *Journal of Consulting and Clinical Psychology, 65*, 599-610.
- Hosmer, D. W., Taber, S., & Lemeshow, S. (1991). The importance of assessing the fit of logistic regression models: a case study. *American Journal of Public Health, 81*, 1630-1635.
- Hoyle, R. H., & Sherrill, M. R. (2006). Future orientation in the self-system: possible selves, self-regulation, and behavior. *Journal of Personality, 74*, 1673-7696. doi: 10.1111/j/1467-6494.2006.00424.x
- Hughes, A., Galbraith, D., & White, D. (2011). Perceived competence: a common core for self-efficacy and self-concept? *Journal of Personality Assessment, 93*, 278-289. doi: 10.1080/00223891.2011.559390
- Jemmott, J. B., Jemmott, L. S., & Fon, G. T. (1998). Abstinence and safer sex: HIV risk-reduction interventions for African Americans: A randomized trial. *Journal of American Medical Association, 19*, 1529-1536.
- Jemmott, J. B., Jemmott, L. S., Spears, H., Hewitt, N., & Cruz-Collins, M. (1992). Self-efficacy, hedonistic experiences, and condom use intentions among inner-city black adolescent women: a social cognitive approach to AIDS risk behavior. *Journal of Adolescent Health, 13*, 512-519. doi:10.1016/1054-139X(92).0016-5
- Jessor, R. (1991). Risk behavior in adolescence: A psychosocial framework for understanding and action. *Journal of Adolescent Health, 12*, 597-605. doi: 1054- 139X/91
- Kauffman, D. F., & Husman, J. (2004). Effects of time perspective on student motivation: Introduction to a special issue. *Education Psychology Review, 16*, 1-7.

- Kerpelman, J. L., & Mosher, L. S. (2004). Rural African American adolescents' future orientation: The importance of self-efficacy, control and responsibility, and identity development. *Identity: an International Journal of Theory and Research*, 4, 187-208. doi:10.1207/s1532706xid0402_5
- Kirby, D., Short, L., Collins, J., et al. (1994). School-based program to reduce sexual risk behaviors: a review of effectiveness. *Public Health Reports*, 109, 339-360.
- Komro, K. A., Williams, C. L., Stigler, M. H., Farbakhsh, K., & Veblen-Mortenson, S. (2001). How did Project Northland reduce alcohol use among young adolescents? Analysis of mediating variables. *Health Education Research*, 16, 59-70.
- Koo, H. P., Dunteman, G. H., George, C., Green, Y., & Vincent, M. (1994). Reducing adolescent pregnancy through school and community based intervention: Denmark, South Carolina. *Journal of Family Planning Perspectives*, 26, 206-211, 217. Retrieved from jstor.org/stable/213940.
- Lamm, H., Schmidt, R. W., & Trommsdorff, G. (1976). Sex and social class as determinants of future orientation (time perspective) in adolescents. *Journal of Personality and Social Psychology*, 34, 317-326.
- Lerner, R. M., Almerigi, J. B., Theokas, C., & Lerner, J. (2005). Positive youth development: a view of the issues. *The Journal of Early Adolescence*, 25, 10-16. doi: 10.1177/0272431604273211
- Lohr, M. J., Gillmore, M. R., Gilchrist, L. D., & Butler, S. S. (1992). Factors related to substance use by pregnant, school-age adolescents. *Journal of Adolescent Health*, 13, 475-482. doi:10.1016/1054-139X(92)90010-9
- Losel, F. (1975). Handlungskontrolle und Jugenddelinquenz: Persönlichkeitspsychologische Erklärungsansätze delinquenten Verhaltens. Theoretische Integration und empirische Überprüfung [Action-control and youth delinquency: a personality-psychological explanation model for delinquent behaviors theoretical integration and empirical tests]. In Erlangen-Nürnberg: SFB22 (Eds). *Sozialisation und Kommunikation*. (pp. 1- 279). UnivStuttgart: Enke Verlag,
- Mason, W. A. & Windle, M. (2001). Family, religious, school and peer influences on adolescent alcohol use: a longitudinal study. *Journal on Alcohol*, 62, 44-53.
- Marcia, J. E. (1980). Identity in adolescence. In Adelson, J. (Ed.), *Handbook of Adolescent Psychology* (pp. 159-187). New York: Wiley.
- Markus, H., & Nurius, P. (1986). Possible Selves. *American Psychologist*, 41, 954-969.
- Marsh, H. W. (1986). Global self-esteem: Its relation to specific facets of self-concept and their importance. *Journal of Personality and Social Psychology*, 51, 1224-1236. doi:10.1037/0022-3514.51.6.1224

- McGee, R. & Williams, S. (2000). Does low self-esteem predict health compromising behaviors among adolescents? *Journal of Adolescence*, *23*, 569-582. doi: 10.1006/jado.2000.0344
- McGee, R., Williams, S., & Nada-Raja, S. (2001). Low self-esteem and hopelessness in childhood and suicidal ideation in early adulthood. *Journal of Abnormal Child Psychology*, *29*, 281-291.
- Mesmer-Magnus, J., Viswesvaran, C., Deshpande, S., & Joseph, J. (2006). Social desirability: The role of over-claiming, self-esteem, and emotional intelligence. *Psychology Science*, *48*, 336-356.
- Metzler, C. W., Noell, J., & Biglan, A. (1992). The validation of a construct of high-risk sexual behavior in heterosexual adolescents. *Journal of Adolescent Research*, *7*, 233-249. doi: 10.1177/074355489272007
- Morgan, S. P. & Teachman, J. D. (1988). Logistic regression: description, examples, and comparisons. *Journal of Marriage and Family*, *50*, 929-936.
- Nurmi, J. E. (1991). How do adolescents see their future? A review of the development of future orientation and planning. *Development Review*, *11*, 1-59. doi:10.1016/0273-2297(91)90002-6
- O'Malley, P. M., Johnston, L. D., & Bachman, J. G. (1999). Epidemiology of substance abuse in adolescence. In P. J. Ott, R. E. Tarter, & R. T. Ammerman (Eds.), *Sourcebook on substance abuse: Etiology, epidemiology, assessment, and treatment* (pp. 14-31). Needham Heights, MA: Allyn & Bacon.
- Orr, D. A. (1988). *Body image, self-esteem, and depression in burn-injured adolescents and young adults* (Doctoral dissertation). (Order No. 8818472).
- Oyserman, D., & Markus, H. R. (1990). Possible selves and delinquency. *Journal of Personality and Social Psychology*, *39*, 112- 125.
- Oyserman, D., Terry, K., & Bybee, D. (2002). A possible selves intervention to enhance school involvement. *Journal of Adolescence*, *25*, 313-326. doi:10.1006/jado.2002.0474
- Pearlin, L. I., Menaghan, E. G., Lieberman, M. A., & Mullan, J. T. (1981). The stress process. *Journal of Health and Social Behavior*, *22*, 337-356. doi:10.2307/2136676
- Phinney, J. S., Cantu, C., & Kurtz, D. A. (1997). Ethnic and American identity as predictors of self-esteem among African American, Latino, and White adolescents. *Journal of Youth and Adolescence*, *26*, 165-185. doi:10.1023/A:1024500514834
- Poulin, F., Dishion, T. J., & Burraston, B. (2001). 3-Year iatrogenic effects associated with aggregating high-risk adolescents in cognitive-behavioral preventive interventions. *Applied Developmental Science*, *5*, 214-224. doi:10.1207/S1532480XADS0504_03
- Pulkkinen, L., & Rönkä, A. (1994). Personal control over development, identity formation, and future orientation as components of life orientation: A developmental approach. *Developmental Psychology*, *30*, 260-271. doi:10.1037/0012-1649.30.2.260

- Robbins, R. & Bryan, A. (2004). Relationships between future orientation, impulsive sensation seeking adjudicated adolescents. *Journal of Adolescent Research, 19*, 428-445. doi:10.1177/0743558403258860
- Reynolds, W. M. (1982). Development of reliable and valid short forms of the Marlowe-Crowne Social Desirability Scale. *Journal of Clinical Psychology, 38*, 119-125.
- Robinson, J. P., Shaver, P. R., & Wrightsman, L. S. (1991). *Measures of personality and social psychological attitudes*, (Eds.). San Diego, CA: Academic.
- Rooke, S. & Hine, D.W. (2011). A dual-process account of adolescent and adult binge drinking. *Journal of Addictive Behaviors, 36*. 341-346. doi: 10.1016/j.addbeh.2010.12.008
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Rosenberg, M., Schooler, C., & Schoenbach, C. (1989). Self-esteem and adolescent problems: Modeling reciprocal effects. *American Sociological Review, 54*, 1004-1018. doi:10.2307/2095720
- Rosenberg, M., Schooler, C., Schoenbach, C., & Rosenberg, F. (1995). Global self-esteem and specific self-esteem; Different concepts, different outcomes. *American Sociological Review, 60*, 141-156.
- Rosenthal, D., Moore, S., & Flynn, I. (1991). Adolescents' self-efficacy, self-esteem, and sexual risk taking. *Journal of Community and Applied Social Psychology, 1*, 77-88. doi:1052=9282/91/020077
- Salazar, L. E., Crosby, R. A., DiClemente, R. J., Wingood, G. M., Lescano, C. M., Brown, L. K.,... Davies, S. (2005). Self-esteem and theoretical mediators of safer sex among African American female adolescents: Implications for sexual risk reduction interventions. *Health Education and Behavior, 32*, 413-427. doi: 10.1177/1090198104272335
- Salazar, L. F., DiClemente, R. J., Wingood, G. M., Crosby, R. A., Harrington, K., Davies, S...Oh, K. M. (2004). Self-concept and adolescents' refusal of unprotected sex: A test of mediating mechanism among African American girls. *Prevention Science, 5*, 137-149.
- Schafer, J., Blanchard, L., & Fals-Steward, W. (1994). Drug use and risky sexual behaviors. *Psychology of Addictive Behaviors, 8*, 3-7.
- Somers, C. & Gizze, T. J. (2001). Predicting adolescents' risk behaviors. The influence of future orientation, school involvement, and school attachment. *Adolescents and Family Health, 2*, 3-7. doi: 10.1029.82.31.248
- Stein, K. F., Roeser, R., & Markus, H. R. (1998). Self-schemas and possible selves as predictors of outcomes of risky behaviors in adolescents. *Journal of Nursing Research, 47*, 96-106.
- Steinberg, L. (2004). Risk taking in adolescence: What changes and why? *Annals of the New York Academy of Sciences, 1021*, 51-58. doi: 10.1196/annals.1308.005

- Steinberg, L. (2007). Risk taking in adolescence. *Current Directions in Psychological Science*, *16*, 55-59. doi: 10.1111/J.1467-8721.2007.00475.x
- Steinberg, L., O'Brien, L., Cauffman, E., Graham, S., Wooland, J., & Banich, M. (2009). Age differences in future orientation and delay discounting. *Child Development*, *80*, 28-44. doi: 10.1111/j.1467*8624.2008.01244x
- Trocki, K. F., Drabbie, L. A., & Midanik, L. T. (2009). Tobacco, marijuana, and sensation seeking: Comparisons across gay, lesbian, bisexual, and heterosexual group. *Psychology of Addictive Behaviors*, *23*, 620-631. doi: 10.1037/a0017334
- Trommsdorff, G., & Lamm, H. (1980). Future orientation of institutionalized and noninstitutionalized delinquents and nondelinquents. *European Journal of Social Psychology*, *10*, 247-278.
- Trommsdorff, G., Lamm, H., & Schmidt, R. W. (1979). A longitudinal study of adolescent's future orientation (time perspective). *Journal of Youth and Adolescence*, *8*, 131-147.
- Trzesniewski, K. H.,m Donnellan, M. B., Moffitt, T. E., Robbins, R. W., Poulton, R., & Caspi, A. (2006). Low self-esteem during adolescence predicts poor health, criminal behavior, and limited economic prospects during adulthood. *Developmental Psychology*, *42*, 381-390. doi: 10.1037/0012-1649.42.2.381.
- Turner, R. A., Irwin, C. E., Tschann, J. M., & Millstein, S. G. (1993). Autonomy, relatedness, and the initiation of health risk behaviors in early adolescence. *Health Psychology*, *12*, 200-208. doi:10.1037/0278-6133.12.3.200
- Wild, L. G., Flisher, A. J., Bhana, A., & Lombard, C. (2004). Associations among adolescents risk behaviors and self-esteem in six domains. *Journal of Child Psychology and Psychiatry*, *45*, 454-467. doi: 10.1111/j.1469-7610.2004.00330.x
- Wills, T. (1994). Self-esteem and perceived control in adolescent substance use: Comparativetests in concurrent and prospective analyses. *Psychology of Addictive Behaviors*, *8*, 223-234. doi:10.1037/0893-164X.8.4.223

Appendix

Item Content of Future Orientation Scale

Items used to measure Future Orientation, rated from 0 (*not at all true*) to 4 (*very much true*).

I have a good idea of what kind of work I want to pursue.

I plan to graduate from high school.

I don't know what I want out of life. (R)

I believe that school is a waste of time. (R)

I have a clear picture of what I'd like to be doing in the future.

I have goals and plans for the future.

There's a good chance I'll be a parent by the time I'm 19 years old. (R)

After high school, I plan to attend college or some other school.