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The Contribution of Self-Determination Theory to an Understanding of Psychological Distress Among Young Adults: Mediation of Practical Involvement and Autonomy Support by Autonomy, Controlled, and Impersonal Orientations

Bradley D. Rockafellow

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Running Head: A SELF-DETERMINATION THEORY MODEL

The Contribution of Self-Determination Theory to an Understanding of Psychological Distress

Among Young Adults: Mediation of Parental Involvement and Autonomy Support by

Autonomy, Controlled, and Impersonal Orientations

by

Bradley D. Rockafellow

Dissertation

Submitted to the Department of Psychology

Eastern Michigan University

in partial fulfillment of the requirements for the degree of

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in

Clinical Psychology

Dissertation Committee:

Alissa Huth-Bocks, Ph.D.

Karen Saules, Ph.D., Chair

Denise Marie Tanguay, Ph.D.

Amy Young, Ph.D.

September 28, 2006

Ypsilanti, Michigan

Dedication

This work is dedicated to Lawrence T. Wentworth, Ph.D., a friend and mentor who is a source of inspiration, and to whom I am eternally grateful.

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Also, special thanks go to Ginger, my Border Collie.

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Abstract

The concept of autonomy, as conceptualized by SDT researchers, in relationship to the development of psychopathology has received little empirical attention. According to Self-determination theory (SDT; Ryan, Deci, & Grolnick, 1995), if parents facilitate, rather than undermine, the critical parenting dimensions of autonomy support, involvement, and structure, then children will develop as psychologically healthy adults. In addition, SDT would also predict that based on these critical parenting dimensions, children will develop differential inner motivational orientations (i.e., autonomy, control, and impersonal) representing varying degrees of autonomy (i.e., self determined behavior), which in turn should predict psychological distress or health. To test these theoretical relationships, this study, in a sample of college students (n= 261), investigated the direct effects of parental autonomy support and involvement and the mediating effects of autonomy, control, and impersonal orientations on psychological distress. Overall, parental autonomy support and involvement was found to have a direct (positive) effect on an autonomous orientation and direct (negative) effects on control and impersonal orientations. In addition, an impersonal orientation mediated the relationship to psychological distress. Results suggest that understanding how motivational orientations contribute to psychological distress may provide an opportunity for SDT-guided interventions to be developed to assist individuals to adhere to treatment and increase motivation for treatment.

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The Contribution of Self-Determination Theory to an Understanding of Psychological Distress Among Young Adults: Mediation of Parental Involvement and Autonomy Support by Autonomy, Controlled, and Impersonal Orientations

Introduction and Background

Statement of the Problem

Self-Determination Theory (SDT; Deci & Ryan, 1985b) is a theory of human motivation that attempts to account for the energy and direction of behavior. SDT is an organismic theory, which states that individuals do not passively react to the environment but rather continually explore and adapt to their surroundings. According to SDT, there are three primary psychological needs: autonomy (i.e., feeling free to choose one's own behavior), competence (i.e., interacting effectively with one's environment), and relatedness (i.e., feeling meaningfully connected to others) that fuel this exploration and adaptation. Conditions that allow satisfaction of these three primary psychological needs support intrinsic motivation (i.e., self-determined autonomous behavior), and conditions that thwart the satisfaction of these psychological needs undermine intrinsic motivation (Ryan, Deci, & Grolnick, 1995).

Theoretically, according to Ryan, Deci, and Grolnick (1995), there are three parenting dimensions that facilitate children's basic psychological need for autonomy, competence, and relatedness. These critical contextual (i.e., parenting) dimensions are autonomy support, involvement, and structure. A considerable amount of research has substantiated that these parenting dimensions are essential components in healthy psychological development (Ainsworth, Blehar, Waters, & Wall, 1978; Deci, 1975; Hunt, 1965; Stern, 1985). Ryan et al. hypothesize that if parents facilitate, rather than undermine, these critical parenting

dimensions, then children will develop as psychologically healthy adults. In addition, SDT would also predict that based on these critical parenting dimensions, children will develop differential motivational regulatory styles (i.e., intrinsic, extrinsic, amotivation) representing varying degrees of autonomy (i.e., self determined behavior), which in turn should predict psychological distress or health. When an individual engages in an activity for its inherent satisfaction, s/he is intrinsically motivated; intrinsic motivation is considered the most autonomous form of motivation. Conversely, when an individual engages in an activity to attain some separable outcome, s/he is extrinsically motivated; extrinsically motivated actions are clearly pressured or compelled by outside forces. Extrinsically motivated actions are considered the least autonomous form of motivation. Whether people are intrinsically or extrinsically motivated, they are engaged in intentional behavior. By contrast, the absence of intentionality represents an amotivational state. Therefore, amotivation refers to a relative lack of action. Although the concept of autonomy, as conceptualized by SDT researchers, appears in many theoretical writings related to the development of psychopathology, it has received little empirical attention from investigators outside of the SDT group (Ryan et al., 1995).

Attachment theory (Bowlby, 1969/1982) has some theoretical similarities with SDT. Unlike SDT, there has been a plethora of research conducted with attachment theory that suggests a connection between some types of attachment styles (i.e., avoidant, resistant, and disorganized) and psychopathology. Because of theoretical similarities and to guide hypothesis development regarding the relationships and role, if any, that parental autonomy support and involvement and current motivational regulatory styles play regarding psychological distress, the pertinent SDT and attachment theory literature will be reviewed.

Specifically, the SDT and attachment theory literature will be reviewed to assist in the development of a proposed SDT model to explicate factors that might contribute to adult psychopathology.

Self-Determination Theory and Psychopathology

In this section, I will discuss and set forth a definition of autonomy as provided by Ryan, Deci, and Grolnick (1995). I will then explore how autonomy is intertwined with the developmental processes of intrinsic motivation, internalization, and integrated emotional regulation. Particular attention will be paid to how conditions in the social context either support the motivational bases of normal development or, alternatively, undermine these bases leading to psychopathology. Finally, I will discuss the role of autonomy with regard to the psychological disorders of depression, antisocial personality disorder, and borderline personality disorder.

Autonomy.

The concept of autonomy is important in organismic (i.e., psychological development emanates from within and results from the activity of the organism) as well as dynamic (i.e., psychological development results from an independent ego energy) theories of development and psychopathology. In addition, a number of developmental theories have considered the movement toward greater autonomy to be a characteristic of healthy psychological development (e.g., Jahoda, 1958; Loevinger, 1976; Piaget, 1981).

The term “autonomy,” according to Ryan, Deci, and Grolnick (1995), refers to “self-rule” or actions that are initiated and regulated by the self. Theoretically, autonomous actions involve concepts such as operating from one’s “true self,” acting authentically, demonstrating free will, and acting agentically.

Regarding the concept of “true self,” Ryan, Deci, and Grolnick (1995) speak of it, or integrated self, as a set of coherently organized processes, structures, and energies. This concept of self is akin to what some have referred to as one’s “real” or “true” self (Horney, 1950; Winnicott, 1960). Conversely, according to Ryan et al., when acting from false self or unintegrated regulatory processes, “people display ‘as-if’ personalities that formed while they were attempting to gain approval in a nonaccepting social context” (p. 622). The term “authentic” is conceptualized by Ryan and Deci (2004) as a continuum, which describes the degree an action is a true expression of one’s self (i.e., autonomous) versus an expression of false self (i.e., controlled or amotivated). Ryan and Deci state that the concept of “will” (as autonomy) refers to actions that are self-directed as well as congruent with one’s beliefs and values. Finally, when one is autonomous s/he acts “agentically,” which means that one feels there is willingness and choice in one’s actions.

Thus, autonomy relates to the experience of an internal perceived locus of causality. In addition, according to Ryan, Deci, & Grolnick (1995), failures in self-regulation (i.e., controlling and/or amotivational processes) result in impairments in the development of one’s self, which relates directly to developmental psychopathology.

The construct of autonomy.

Ryan, Deci, and Grolnick’s (1995) conceptualization of autonomy is explained in the SDT continuum (Deci & Ryan, 1985b), which delineates an understanding of intrinsically and extrinsically motivated behaviors as well as amotivation. Figure 1 illustrates the SDT continuum of motivational types, arranged from left to right in terms of the extent to which motivations (i.e., degree of autonomy) emanate from the self (Ryan & Deci, 2000, Figure 1). The construct of autonomy includes terms such as motivation, regulatory styles, perceived

locus of causality, and regulatory processes, which represent varying degrees of autonomy.

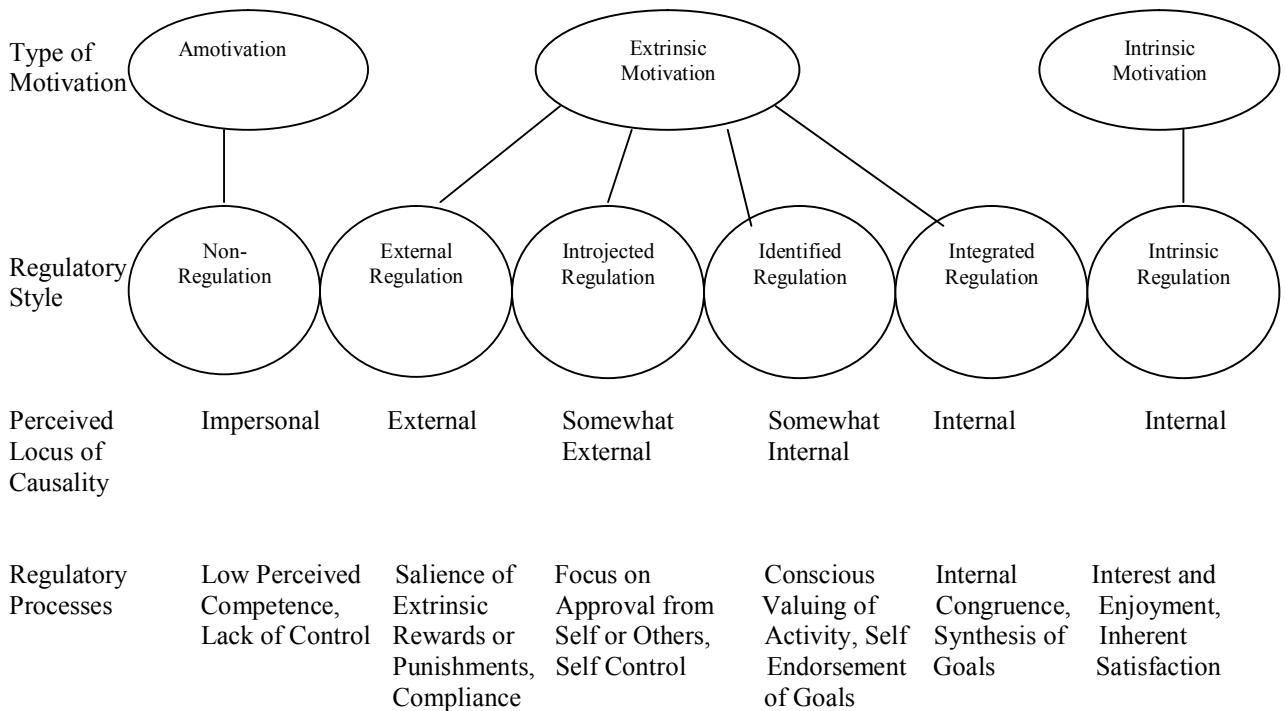


Figure 1. The Self-Determination Continuum Illustrating Types of Motivation, Regulatory Styles, Perceived Locus of Causality, and Regulatory Processes

At the far right of the continuum is intrinsic (autonomous) motivation, which is said to be in commission when a person engages in an activity for its innate satisfaction. These behaviors are the most autonomous (Ryan, Deci, & Grolnick, 1995).

In contrast, Ryan and Deci (1999) define extrinsically (i.e., controlled) motivated behavior as being in commission whenever a person engages in an activity to accomplish some separable outcome. Extrinsically motivated behaviors can vary considerably in their relative autonomy via four regulatory styles (i.e., external, introjected, identified, and integrated). Some extrinsically motivated actions are clearly pressured or compelled by outside forces (external and introjected). Conversely, other extrinsically motivated actions can have an internal perceived locus of causality (identification and integration). Refer to

Figure 1 for a description of the relevant regulatory processes associated with each type of motivation or regulatory style.

According to Ryan, Deci, and Grolnick, (1995), when people are engaged in intentional behavior they are extrinsically or intrinsically motivated. Conversely, the absence of intentionality represents an amotivational (i.e., impersonal) state. Deci and Ryan (1985b) indicate that when an individual is amotivated, that person would feel hopeless and/or feel incompetent.

These regulatory styles (i.e., intrinsic, integrated, identified, introjected, external, and non-regulation) outlined by Deci and Ryan (1985b) are subtypes of motivation, and they represent the relative autonomy of one's regulation for a behavior or class of behaviors. Therefore, it is important to note that the autonomy continuum is intended to descriptively organize types of behavior regulation with respect to the concept of self-determination (Deci & Ryan, 2000). As such, SDT behavior regulatory styles are differentiated from emotional regulation. For example, according to attachment theory (Sroufe, 1983), infants are not capable of regulating their own emotions and therefore require the assistance of their caregivers. How the infant learns to regulate his/her emotions will depend on how the caregiver regulates his/her emotions. Conversely, according to SDT (Deci & Ryan, 1985b), an individual will regulate his/her behavior based on caretakers being autonomy supportive, facilitating competence, and providing structure.

In addition, according to Ryan, Deci, and Grolnick, (1995), theories of motivation distinguish motivation from amotivation but treat the concept of motivation as unitary (e.g., Bandura, 1989; Rotter, 1966; Seligman, 1991). However, Ryan et al. focus on the degree to which an individual's motivated actions are controlled versus autonomous.

For example, Deci and Ryan's (1985b) conceptualization of external versus internal perceived locus of causality is dissimilar from Rotter's (1966) conceptualization of external versus internal locus of control. According to Rotter, an internal locus of control (i.e., extrinsic and intrinsic motivation) is when an individual believes that desired outcomes can be obtained through intentional actions. Conversely, an external locus of control (i.e., amotivated) is when an individual believes that they cannot control outcomes. This concept of external versus internal locus of control is similar to the concept of self-efficacy (Bandura, 1989) and perceived control (Skinner & Edge, 2002).

Because the majority of motivational theories overlap conceptually, Table 1 is presented for clarity (Ryan, Deci, & Grolnick, 1995, Table 20.1). According to Ryan, et al., self-determination theory differentiates between motivated and amotivated acts as well as motivated actions characterized as autonomous and controlled. In addition, although not discussed, attribution theory (Heider, 1958) and personal causation theory (deCharms, 1968) are also presented for comparative purposes.

Table 1

Theoretical Constructs as They Relate to Type of Regulation

Type of Regulation	Efficacy Theory (Bandura, 1977)	Locus of Control (Rotter, 1966)	Helplessness Theory (Seligman, 1995)	Attribution Theory (Heider, 1958)	Personal Causation Theory (deCharms, 1968)	Self-determination Theory (Deci & Ryan, 1985b)
Autonomous Regulation (Intrinsic)	X	X	X	Personal Causation	Intrinsic Motivation	Intrinsic, Integrated, Identified; Internal PLOC ^a
Controlling Regulation (Extrinsic)	Self-Efficacy	Internal Locus of Control	Perceived Control	Personal Causation	Extrinsic Motivation	Introjected, External; External PLOC ^a
Non-Regulation (Amotivated)	In-effectance	External Locus of Control	Helplessness	Impersonal Causation	Impersonal Causality	Amotivation; Impersonal PLOC ^a

X refers to the autonomy control differentiation that is not made within these theories.

PLOC^a refers to Perceived Locus of Causality.

The importance of this approach to autonomy is that by applying the perceived locus of causality construct, Ryan, Deci, and Grolnick (1995) have been able to utilize empirical strategies (i.e., measurement of locus of causality) to address issues concerning the experience and development of autonomy. As such, factors that affect the perceived locus of causality may bear significantly on issues of self-development and psychopathology.

Autonomy and the facilitation of psychological development.

The discussion now turns to an elaboration of the three developmental processes in which autonomy figures heavily--intrinsic motivation, internalization, and integrated emotional regulation--as well as the related social contexts that facilitate or undermine healthy psychological development.

Intrinsic motivation.

Numerous developmental theorists (e.g., Bruner, 1962; Harter, 1993; White, 1963) have argued that intrinsic motivational tendencies are apparent in children's active curiosity, exploration, and exercise of skills that nurture the growth of competencies (Ryan, Deci, Grolnick, & LaGuardia, 2006). These motivational tendencies manifest prior to a child's first birthday (Ainsworth et al., 1978; Yarrow, Rubenstein, & Pedersen, 1975) and eventually differentiate into specific interests as children grow older (Deci & Ryan, 2000).

Research has found that lower levels of intrinsic motivation (autonomy) are linked to anorexia nervosa (Straus & Ryan, 1987), lower subjective well-being (Sheldon, Ryan, Deci, & Kasser, 2004), depression (Kasser & Ryan, 1999), more maladaptive coping (Skinner & Edge, 2002), and more high-risk behaviors among adolescents (Williams, Cox, Hedberg, & Deci, 2000). In addition, intrinsic motivation has been positively related to feelings of self-worth (Ryan & Grolnick, 1986). In light of these findings, it seems important to explicate the social conditions that enhance versus undermine intrinsic motivation.

A considerable amount of research has explored the effects of various social contexts on intrinsic motivation. A specific sub-theory of SDT describes these processes, namely, Cognitive Evaluation Theory (CET; Deci & Ryan, 1980). According to this theory, individuals develop intrinsic and extrinsic motivations through self-evaluations of perceived competence (Guay, Boggiano, & Vallerand, 2001). Therefore, contextual conditions such as autonomy supportive techniques (i.e., taking another's perspective, acknowledging another's feelings and perceptions, providing another with information and choice, and minimizing the use of pressure and control) afford people the opportunity to satisfy their sense of

competence and thereby to foster intrinsic motivation. Conversely, controlling techniques undermine perceived competence and produce extrinsic motivation.

Deci (1971, 1972a, 1972b) conducted a number of experimental studies in which conditions were varied in terms of factors affecting perceived autonomy, competence, or both, in order to assess participants' varying degrees of autonomy. Deci found that participants who solved interesting puzzles and received monetary rewards displayed significantly less intrinsic motivation than participants who had received no monetary rewards. Deci (1971) hypothesized that participants who were rewarded monetarily saw the cause of their activity as coming from external, rather than internal sources, which, according to Deci, prompted a change in participants' perceived locus of causality. Over the past 30 years, more than 100 experimental studies (e.g., Kruglanski, Friedman, & Zeevi, 1971; Lepper, Greene, & Nisbett, 1973), including meta-analyses (Rummel & Feinberg, 1988; Tang & Hall, 1995; Wiersma, 1992), have reported similar findings in support of Deci's initial report.

Furthermore, research has found that coercive motivational tactics, such as manipulative praise (Ryan, 1982), surveillance (Lepper & Greene, 1975; Pittman, Davey, Alafat, Wetherill, & Kramer, 1980; Plant & Ryan, 1985), the use of threatened punishments (Deci & Cascio, 1972), evaluations (Smith, 1974), and controlling language (Ryan, 1982) can undermine intrinsic motivation. In contrast, studies have explored whether any external events will enhance, rather than undermine, the sense of autonomy essential to intrinsic motivation and related psychological processes. For example, Zuckerman, Porac, Lathin, Smith, and Deci (1978) conducted a study with college students and found that when participants were allowed to make task choices, they were significantly more intrinsically

motivated than those who were not allowed. Similar results were found with children (Pittman, Emery, & Boggiano, 1982). In addition, acknowledging an individual's feelings is another external event that has been found to have positive effects on intrinsic motivation for children (Koestner, Ryan, Bernieri, & Holt, 1984) and college students (Deci, Eghrari, Patrick, & Leone, 1994).

In sum, these experiments suggest that social contextual conditions that are experienced by individuals as controlling (i.e., pressure to feel, think, or behave in specific ways) undermine autonomy, which results in greater psychological rigidity. Conversely, contextual conditions that are perceived by individuals as autonomy supportive (i.e., provide choice and take the target individual's frame of reference) appear to have positive effects on one's intrinsic motivation. Thus, it is reasonable to hypothesize that contexts that are overly controlling, rather than autonomy supportive, represent one particular input to the development of various psychopathologies (Ryan, Deci, & Grolnick, 1995). In addition, previous research has demonstrated that controlling parenting environments thwarts autonomy (e.g., Baumrind, 1971; Grusec & Goodnow, 1994). The literature on psychopathology also frequently references autonomy disturbances (e.g., Bruch, 1973; Shapiro, 1965; Winnicott, 1965), and the obstruction of children's autonomy has been implicated in the onset of many psychopathologies (e.g., McCullough & Maltzberger, 1995; Miller, 1981).

Internalization.

Internalization, another developmental process associated with autonomy, is the change from an external motivation and maintenance of behaviors to an internal one (Ryan, Connell, & Deci, 1985). Internalization and integration represent the means by which

activities that are not intrinsically interesting can become more autonomous. By integrating values and regulatory processes into one's self, those values and processes become the basis for self-determination of extrinsically motivated (i.e., instrumental) activities (Ryan, Deci, & Grolnick, 1995).

A number of studies on self-regulation using the constructs outlined above have been conducted in a number of domains such as health care (Ryan, Plant, & O'Malley, 1995), aging (Kasser & Ryan, 1999), education (Grolnick, Ryan, & Deci, 1991), and relationships (Deci & Vansteenkiste, 2004). Across these multiple domains, findings have indicated consistently that the less autonomous one's motivations, the less positive one's adjustment and well-being. Thus, it seems important to explicate the social contextual conditions that enhance, versus undermine, internalization of extrinsically motivated activities.

While internalization and integration are natural processes, they, like intrinsic motivation, require supports from the social context (Ryan, Deci, Grolnick, & LaGuardia, 2006). Internalization is conceptualized by Ryan et al. as accepting attitudes, values, and behaviors endorsed by one's social world, and theoretically functions effectively when individuals experience competence and autonomy. However, there is a third basic psychological need that, according to SDT, is critical for integration and internalization to function effectively. Specifically, according to Ryan et al., people have a basic need for connectedness or relatedness with others. This plays a crucial role in internalization, as well as in healthy development and, theoretically, the prevention of psychopathology. Research and theoretical writings have made it clear that the desire for relatedness or connectedness to others is a crucial ingredient for optimal psychological development (e.g., Bowlby, 1988; Harlow, 1958; Winnicott, 1965).

Grolnick and Ryan (1989) have proposed three parenting dimensions that are fundamentally important for facilitating children's basic psychological need for competence, autonomy, and relatedness, as well as their intrinsic motivation and the internalization and eventual integration of extrinsic motivations. According to Grolnick and Ryan, the critical parenting dimensions are structure, involvement, and autonomy support.

Parents' involvement with their children, which is conceptualized as relating to them and providing a moderate amount of consistent, clear structure, facilitates internalization of values and regulatory processes (Ryan, Deci, & Grolnick, 1995), which is consistent with what others have found (Ainsworth et al., 1978; Deci, 1975). However, for these internalized processes to be integrated, parents must also impart autonomy support. In other words, parents should attempt to understand and acknowledge the child's perspective, provide choice when possible, and use minimal controls to nurture behavior. On the other hand, if parents are excessively controlling, it is probable that any internalized processes will simply be introjected, not integrated.

Research has found that children who perceived their parents as less involved and less autonomy supportive also reported poorer perceived competence and self-regulation (Grolnick, Ryan, & Deci, 1991; Elmen, Mounts, & Steinberg, 1989). In addition, in an experimental study of pre-adolescent overweight children, the difference between identified and introjected regulation was confirmed (Simons, Vansteenkiste, Braet, & Deci, 2005). In the first condition, approximately half of the overweight children were encouraged with the use of autonomy supportive techniques (i.e., providing opportunities for choice and self-initiative) to follow a simplified version of the food pyramid. In the second condition, children were pressured to follow the guidelines of the simplified version of the food

pyramid with self-esteem contingent (“you might feel better about yourself if you would do so”) practices and guilt induction (“you might feel guilty for not doing so”). The autonomy supportive approach was proposed to encourage identified regulation, and the controlling approach was proposed to elicit introjects readily available within the pre-adolescents. Results suggest that children in both experimental conditions had a healthier life style during the week that followed. However, after three weeks, the weight loss gains made by the pre-adolescents were maintained and further weight was lost when identified regulation was promoted. Conversely, when an introjected regulation was produced, the pre-adolescent’s weight loss and attendance started to decline after two sessions.

In summary, Ryan, Deci, and Grolnick (1995) conclude that parental structure, involvement, and autonomy support are necessary for the internalization of social values and regulations and for psychological adjustment. In addition, according to Ryan et al., parental structure and involvement is not sufficient. That is, without autonomy support whatever internalization happens is likely to be introjected rather than integrated.

Integrated emotional regulation.

Emotional regulation refers to the capacity to modulate or manage one’s emotions and impulses (Ryan, Deci, & Grolnick, 1995). According to Ryan et al., integrated emotional regulation, which is the final developmental process influencing autonomy, is the most autonomous form of emotional regulation. Specifically, integrated emotional regulation involves an awareness of one’s emotional states and the ability to use this awareness in the volitional regulation of action. In Ryan et al.’s view, autonomous functioning is dependent on integrated emotional regulation. Conversely, internally controlling regulation, which involves blocking or repressing emotions, is implicated in various forms of psychopathology

(Ryan et al.). Since the characteristics that define integrated emotional regulation have been discussed, I will now discuss how social environments can undermine or enhance an individual's capacity for both integration and regulation of emotional experiences.

Involvement, autonomy support, and structure are the elements that encompass the model of optimal care-giving presented by Grolnick and Ryan (1989), which are considered essential for children being able to self-regulate emotion. As previously stated, these elements will facilitate children's basic psychological needs for autonomy, competence, and relatedness.

Research conducted by Calkins (1997) and Calkins and Johnson (1998) found that mothers' use of autonomy support was associated with children's use of constructive coping in emotion-inducing situations. Conversely, children of mothers who used negative control during free play spent more time orienting to a stimulus that was preferred but forbidden. These children used less self-distraction and were less physiologically regulated during a waiting situation compared to those children of mothers who used less negative control.

Research conducted by Grolnick, Kurowski, McMenemy, Rivkin, and Bridges (1998) also investigated the strategies mothers employ to assist their children in regulating distress. Grolnick et al. found that mothers who took responsibility for regulating their child's distress actually undermined their child's self-regulatory capacities. According to Ryan, Deci, and Grolnick (1995), the capacity to manage one's emotional distress is so important in the prevention of psychopathology that an environment supporting this capacity is of utmost importance.

While allowing and encouraging the adaptive use of emotions and responding to and supporting one's child is certainly important, parents must endeavor to set appropriate limits

on behavior yet still permit adequate expression of feelings (Koestner, Ryan, Bernieri, & Holt, 1984). According to Ryan, Deci, and Grolnick (1995), parents should help children develop the ability to respect others and delay gratification. In addition, children should learn when it is appropriate to express one's feelings and to use that information in a way that enhances the autonomous regulation of behavior. In summary, integrated emotional regulation entails internalizing values and regulatory structures provided by caregivers.

Autonomy Disturbances

Thus far, the research reviewed has demonstrated that when social contexts do not foster autonomy, competence, and relatedness, the processes of intrinsic motivation, internalization, and integrated emotional regulation are impaired which, according to Ryan, Deci, and Grolnick (1995), could result in psychopathology characterized by disturbances of autonomy. The discussion will now focus on SDT's conceptualization of depression, antisocial personality disorder, and borderline personality disorder, given that these psychological disorders were given the most theoretical attention by Ryan et al.

Depression.

The National Institute of Mental Health (NIMH, 2003) points to major depression as one of the most common disorders encountered by mental health professionals. The NIMH stated that more than 19 million Americans will experience some form of depression each year. Depression is also expected to be the second most costly illness worldwide by the year 2010 (Keller & Bolland, 1998).

Ryan, Deci, and Grolnick (1995) suggest that the etiology and course of depression is complex, involving both biologic and social environmental factors, and parental style can contribute to depressive problems. In other words, depression can partially result from social

contexts not providing autonomy support, competence, and relatedness, which results in a disturbance of autonomy. “In this disorder, there are rigid standards or ideals that have been introjected, along with the belief that failure to attain them means one is unlovable and unworthy” (Ryan et al., p. 643). For example, one’s standard or ideal is to be slim like a model, but the individual has been unable to achieve the standard or ideal. With such introjects, there is little the person can do that is good enough; thus, s/he will invariably feel worthless.

Ryan, Deci, and Grolnick (1995) also state that “with respect to significant self-goals, the individual sees the self as responsible and yet incapable” (p. 643). Consequently, the absence of felt competence to achieve internalized goals results in a sense of amotivation (Deci & Ryan, 1985b) or helplessness (Abramson, Seligman, & Teasdale, 1978). Together, many of the specific demands on the self to be successful or achieve goals have the character of “have to” and “must,” revealing their characteristic as having an external perceived locus of causality (Ryan et al.). In addition, research is consistent with the speculations that social contexts that undermine autonomy are implicated in the development of childhood and adult depression (McCrairie & Bass, 1984; Miller, Birnbaum, & Durbin, 1990; Whiffen & Sassville, 1991).

SDT (Deci & Ryan, 1985b) adds to the literature base by providing an empirically based conceptualization of depression that is postulated to occur from non-optimal social contexts that do not provide autonomy support, competence, and relatedness, resulting in a disturbance of autonomy. However, on a critical note, SDT’s conceptualization of depression is limited in that it considers depression as occurring only from rigidly introjected controls, which is a self-critical form of depression.

Antisocial personality disorder.

According to Ryan, Deci, and Grolnick (1995), the etiologic theories of Antisocial Personality Disorder (ASPD) vary and include both biologic and genetic factors (e.g., poor autonomic reactivity). However, they contend that ASPD can be linked to deficits during a child's early development in the social contextual factors that they contend are necessary for internalization to occur.

According to Ryan, Deci, and Grolnick (1995), ASPD is an externalizing disorder that is an autonomy disturbance resulting in failures to internalize significant values and regulatory processes. As previously stated, the internalization process is theoretically dependent on certain conditions in the care-giving environment (i.e., autonomy support, structure, and involvement), which facilitate attachment to caregivers and a readiness to assimilate the values they model (Ryan, Deci, & Grolnick, 1995). Caretaking environments, characterized either by coldness and hostility or neglect, conduce toward poor quality of attachments and lessened internalization (Weiss & Grolnick, 1991). Ryan et al. state that internalization represents an interesting mix of motivation and amotivation. That is, actions are motivated because they are energized by the individual. On the other hand, actions involve amotivational regulation when a person is incapable of regulating urges in accord with social values. In summary, Ryan et al.'s etiologic contention is that ASPD is a psychopathology of failed internalization.

SDT (Deci & Ryan, 1985b) can add to the literature base by providing an empirically based conceptualization of ASPD, which is postulated to occur from non-optimal social contexts, resulting in a disturbance of autonomy. However, on a critical note, caution is required; to date, there has been no research conducted to verify the link between Ryan, Deci,

and Grolnick's (1995) postulate on the development of ASPD and its occurrence in a sampled population.

Borderline personality disorder.

There are a number of leading theories regarding the etiology of Borderline Personality Disorder (BPD; see Clarkin & Lenzenweger, 1996). These theories approach the disorder from differential points of view and with varying degrees of theoretical and empirical adequacy. For the purposes of this paper, the conceptualization of BPD according to SDT will be discussed.

According to Ryan, Deci, and Grolnick (1995), there is some evidence of a genetic contribution to BPD (Joel, 1998; Silk, 1998), but much of the evidence focuses on the early environment of the child. SDT postulates that BPD results from severely impoverished caregiving (i.e., failure to provide autonomy support, competence, and relatedness) during the early years and the parents' difficulty in allowing the child to move toward self-sufficiency and autonomy (Ryan et al.). Accordingly, those with BPD show the externalizing attributes of impulsivity along with some of the features of internalizing disorders such as susceptibility to depression, anxiety, and fragmentation in the face of self-esteem-related losses (Ryan et al.). Research shows that individuals with BPD report coming from impoverished caretaking environments in which their caretakers abused them physically, sexually, and emotionally (Herman, Perry, & van der Kolk, 1989; Westen, Lodolph, Misle, Ruffins, & Block, 1990; Zanarini, 1997), and caretakers were described as unavailable, inconsistent, and neglectful (Masterson, 1985).

In conclusion, SDT explicates the psychological needs (i.e., autonomy, competence, and relatedness) in the social context that either support the motivational and emotional bases

of normal development or, alternatively, undermine these bases leading to psychopathology. On a critical note, there has been little or no research conducted to verify the link between Ryan, Deci, and Gronlnick's (1995) theoretical conceptualization of psychological disorders and their occurrence in an adult population. Specifically, to date, no research has been conducted to test a model that parental autonomy support and involvement will be mediated by current motivational orientation, which will predict psychological distress.

In contrast to the dearth of research on the relationship between SDT variables and psychopathology, there has been a plethora of research conducted using attachment theory, suggesting that there is a connection between early caregiving, some types of attachment styles (i.e., avoidant, resistant, and disorganized), and psychopathology. Attachment theory (Bowlby, 1969/1982) has some theoretical similarities with SDT; in light of these similarities, the attachment theory literature will be reviewed to inform hypothesis development with respect to SDT's possible contributions to our understanding of psychopathology. Attachment theory is being used as a roadmap for hypothesis development because the relationship between early parenting and later psychopathology has been well documented by attachment researchers. Notably, despite the theoretical similarities between SDT and attachment theory, to date, these similarities have been virtually ignored in the literature by SDT researchers. To avoid this oversight, the present study will survey the attachment theory literature to assist in the development of the best test of the theoretical underpinnings of SDT and contrast the attachment theory literature to the SDT literature. I will begin with a discussion on the basic theoretical premise of attachment theory, then the continuity of attachment, followed by a discussion on the theoretical similarities and fundamental differences between SDT and attachment theory. I will conclude with a

literature review on attachment theory and psychopathology, which will lead to the rationale for the current investigation and the associated hypotheses.

Attachment Theory

There has been a plethora of research conducted with attachment theory which suggests that there is a connection between early caregiving environments and psychopathology. In addition, there are some theoretical similarities between SDT and attachment theory that merit discussion. However, before these subjects are discussed, it is necessary for the reader to have an understanding of the basic theoretical premise of attachment theory.

Attachment theory was originally developed by John Bowlby (1907-1990). Bowlby was a British psychoanalyst who sought to understand the intense distress exhibited by infants who had been separated from their parents. He observed that infants separated from their parents would go to extraordinary lengths (e.g., clinging, frantically searching, crying) to prevent the separation from their parents or to reestablish proximity to a missing parent. Conversely, psychoanalytic writers indicated that these expressions were merely manifestations of immature defense mechanisms that were operating to repress emotional pain. However, Bowlby (1969/1982) noted that these expressions are common in a wide variety of mammalian species and postulated that these behaviors may serve an evolutionary function.

Drawing on ethological Theory, Bowlby (1969/1982) postulated that attachment behaviors (e.g., orienting, smiling, crying, clinging, signaling, and, with locomotion, proximity seeking) were adaptive responses to separation from a primary attachment figure (i.e., a caregiver who provides support, protection, and care). Human infants cannot protect

nor feed themselves; they are dependent upon their caregivers. According to Bowlby, over the course of evolutionary history, infants who maintained proximity to an attachment figure were more likely to survive to a reproductive age. In addition, the attachment behavioral system was eventually designed by natural selection to regulate proximity to a caregiver. See Figure 2 (Fraley & Shaver, 2000, Figure 1).

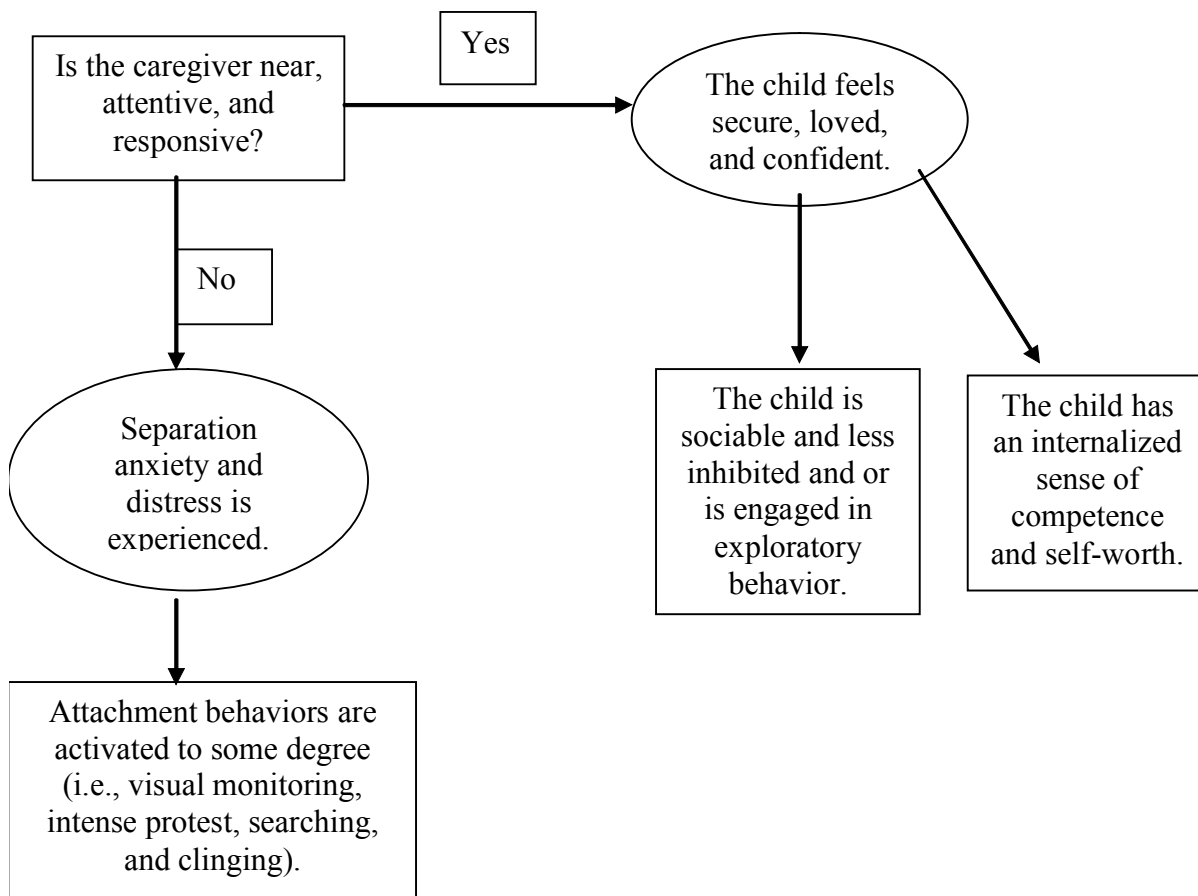


Figure 2. The Attachment Behavioral System illustrates the effect of caretaker(s) being near, attentive, and responsive.

The attachment behavioral system essentially asks one fundamental question: “Is the primary caregiver nearby, accessible, and attentive?” If the infant perceives the answer to this question to be “yes,” s/he feels loved, secure, and confident, and is likely to explore his or her environment by playing with others and being sociable. However, if the child perceives

the answer to be “no,” the child experiences anxiety and is likely to exhibit attachment behaviors ranging from simple visual searching to active vocal signaling (Bowlby, 1969/1982). According to Bowlby, these behaviors will continue until the infant is able to reestablish a desirable level of physical or psychological proximity to the attachment figure or until the child wears down, as may happen in the context of a prolonged separation or loss. Notably, in most environments, infants organize their behaviors around one caregiving figure (i.e., the primary caregiver) and one or more secondary figures (Ainsworth, 1982; Rutter, 1981). According to Bowlby (1969/1982) by the end of the first year, virtually all infants, however treated, become attached. Attachment occurs even when infants are maltreated and severely punished (Ainsworth, 1969; Crittenden, 1981; Egeland & Sroufe, 1981). The individual variation in attachment is found in the quality of attachment, which, in turn, depends on the sensitivity and responsivity of the caregiver and the degree of reciprocity between the infant and caregiver (Carlson & Sroufe, 1995).

Ainsworth, Blehar, Waters, and Wall (1978) developed an assessment procedure to examine the individual differences in the quality of the attachment relationship based on hundreds of hours of home observation. In addition, cross-cultural field research was also conducted (Ainsworth, 1967). The laboratory procedure, called the Strange Situation, was developed to study infant-parent attachment. The Strange Situation procedure represents a series of increasingly stressful infant-caregiver separations and reunions. The procedure was designed to approximate situations that most 12- to 18-month-old infants in Western societies encounter in everyday life (Carlson & Sroufe, 1995). Based on ratings of reunion behavior (i.e., proximity seeking, contact maintaining, contact resistance, and avoidance) and patterns of infant behavior throughout the procedure, infant-mother dyads are classified into one of

three major categories: (a) secure attachment, (b) anxious/avoidant attachment, (c) anxious/resistant attachment (Ainsworth et al., 1978).

Secure attachment.

When infants are securely attached, they typically readily separate from the caregiver and become engaged in exploration (Ainsworth et al., 1978). When these infants are wary of a stranger, threatened, or distressed by separation, these infants will actively seek out contact or proximity and maintain it until they are settled. If these infants are not threatened or distressed, they may not seek physical contact, but will actively seek interaction. These securely attached infants show a clear preference for the caregiver when distressed. When they are reunited with their caregiver, they show no reluctance to re-engage the caregiver and no mixture of anger, petulance, or rejection with contact seeking in relation to the caregiver (Carlson & Sroufe, 1995). In addition, for securely attached infants, emotion regulation is thought to operate in an integrated, smoothly regulated fashion to serve the inner organization and felt security of the child (Sroufe, 1990). Accordingly, in connection to a supportive, caregiving relationship, the secure infant has positive expectations regarding their exploratory competence, and a sense of self as an autonomous agent (Emde & Buchsbaum, 1990; Liberman & Pawl, 1990).

Anxious/avoidant attachment.

Conversely, anxious/avoidant infants will become engaged in exploration but with little affective interaction with caregivers (Ainsworth et al., 1978). Unlike securely attached infants, they do not show wariness of a stranger and generally are upset only if left alone. Notably, avoidant infants do not show any preference for the caregiver over strangers, and when a caregiver returns following a separation, these infants fail to initiate interaction. In

addition, these infants are not responsive to caregiver attempts at interaction and may look or turn away from the caregiver. Avoidance tends to increase in the second reunion; thus, as stress increases, avoidance increases. The infant's exploration is compromised in reunions despite the lack of overt distress. It is hypothesized that avoidant infants have experienced an overly rigid style of emotion regulation resulting in a "de-activation" of needs (Sroufe, 1990). In addition, the infants' experience with caregiver rejection of infant signals and restrictions of affect support a precocious independence in toddler-hood, compromising the child's development of a genuine sense of competence and autonomy (Carlson & Sroufe, 1995).

Anxious/resistant attachment.

On the other hand, anxious, resistant infants show impoverished exploration and play and are wary of novel situations and strangers (Ainsworth et al., 1978). These infants might seek contact with the caregiver, or cry, even before separation from the caregiver. When reunited with the caregiver, they will have great difficulty settling and may mix active contact-seeking with stiffness, struggling, and continued crying, or they may cry or fuss in a passive way. Clearly, these infants are not comforted or reassured by the mother's presence, in part because their anxiety and explicit anger interferes with effective attempts to derive comfort through proximity (Sroufe, 1990). These infants are lacking flexibility in behavioral organization and cannot use the caregiver to help them regulate arousal; as a result, they do not return to active exploration. For infants who are resistant, the anxious, insecure quality of attachment is revealed in their obvious ambivalence and failure to explore. Both avoidant and resistant infants are believed to be uncertain about caregiver availability. However, for avoidant infants, the desire for contact and feelings of anger are not expressed. As such, the

infant copes with arousal and ambivalence through precocious overcontrol of affect or through ignoring or displacement of behavior (Sroufe, 1990). It is presumed that avoidant and resistant strategies reflect coherent means of maintaining proximity (in case of extreme threat) in the context of rejection or unpredictable caregiving. Resistant infants are thought to have experienced intermittent caregiver responsiveness to signals of distress, supporting a constant state of emotional dysregulation (Sroufe, 1990). In addition, for children with resistant histories a lack of positive experiences in effective regulation of emotion, insecurity about separating from the caregiver, and poverty of exploration are likely to support a view of the self as unworthy and/or incompetent.

Disorganized/disoriented attachment style.

Unfortunately, for some infants, no coherent strategy may evolve from the caregiver relationship (Carlson & Sroufe, 1995). These infants may demonstrate an assortment of disorganized/disoriented and seemingly undirected behavioral responses in the Strange Situation (Main & Solomon, 1990). For example, these could include inconsistencies in usual sequences of behavior and unusual behaviors such as freezing, hand flapping, and other stereotypies. According to Main and Hesse (1990), it is believed that, for these infants, unfathomable or frightening caregiver behavior has interfered with the formation of a coherent strategy with respect to attachment. For the disorganized infant, the caregiver may have served as both a source of fear and a biologically-based, expectable source of reassurance. This conflict is thought to impede in a dramatic way the development and stability of effective strategies of emotional communication and the aptitude to sustain internal organization. For these infants, the lack of a coherent strategy results in a constant state of emotional dysregulation and felt incompetence (Sroufe, 1990).

Most notably, from all four relationship patterns, internalized regulatory styles derived from a history of parent-child interactions form the basis for rules that preside over the child's interpretation and expression of emotions and behavior. Well-functioning regulatory styles or distortions in early dyadic regulation function as prototypes for later mediating processes for maintaining organization or felt security under stress (Main & Hesse, 1990; Sroufe & Waters, 1977).

Taken together, Bowlby (1969/1982) indicated that differences in quality of care will lead to differences in quality of attachment and to dyadic regulation of emotion. Because of the infant's interactive history with the caregiver, the infant forms "internal working models" or expectations regarding caregiver responsiveness and, in a corresponding manner, expectations of the self in eliciting care. Through exchanges coordinated by the caregiver, the infant learns whether the caregiver is likely to be available and how emotional regulation may be maintained or re-achieved if lost. These expectations are thought to be exposed in the organization of attachment behavior. Bowlby also indicated that the experience of dyadic regulation provides a basis for self-regulation. To the degree that the caregiver is responsive, the child attains self-confidence in his or her own ability to influence the environment, as well as internal states. The development of self-regulation advances as the child develops the capacity to make more distal and adaptable use of the caregiver as an aid in regulation. Confidence in the caregiver becomes confidence in relationship with the caregiver and, in time, self-confidence. Now that attachment theory has been sufficiently explicated, it is necessary to review the empirical literature on the continuity of attachment styles to continue to guide hypothesis development. To date, there has been no empirical research conducted on the continuity of SDT motivational regulatory styles. Therefore, in light of the theoretical

similarities that will be explicated in the next section, it is reasonable to assume that continuity of motivational regulatory styles might be comparable to the continuity of attachment.

Continuity of attachment.

Current attachment theory hypothesizes that attachment security during infancy will influence individual differences in adult representations of attachment (Waters, Hamilton, & Weinfield, 2000). However, there are those who question the formative significance of infancy and the continuity of individual differences in attachment (e.g., Fogel, 1993; Lewis, 1997), and as such this literature merits a brief review.

A number of longitudinal studies have demonstrated continuity in individual differences in attachment during a child's early years (Gloger-Tiplet, Gomille, Koenig, & Vetter, 2002; Symons, Clark, Isaksen, & Marshall, 1998; Wartner, Grossmann, Fremmer-Bombik, & Suess, 1994). For example, Gloger-Tiplet et al. tested continuity of attachment in 28 German families by using the Strange Situation procedure with mothers and their one-year old infants and later when the children were six years of age. Attachment representations were assessed using the story completion procedure in doll play (SCDPDP). This procedure involves the observation of children's doll play centering on attachment relevant themes. For example, an adult will introduce a story and describe to the child what has happened thus far, and the child is then asked to describe as well as enact what happens next. Results demonstrated a significant continuity of attachment from one to six years of age. Similar results have been found regarding the continuity of attachment classifications over a one month period during infancy (Gossens, Van Ijzendoorn, Tavecchio, & Kroonenberg, 1986; Main & Cassidy, 1988).

Conversely, Bar-Haim, Sutton, Fox, & Marvin (2000) conducted a longitudinal study on the stability of attachment in a group of 48 children at 14, 24, and 58 months of age. These researchers found that attachment classifications remained stable between 14 and 24 months. However, lack of stability was evident between both 14 or 24 months and 58 months. Notably, the mothers of children who did not exhibit stable attachment reported more negative life events than positive life events as measured by the Social Readjustment Rating Scale (Holmes & Rahe, 1967).

In addition, Teti, Sakin, Kucera, Corns, and DasEisen (1996) studied attachment security in toddlers following the birth of a new sibling. Results suggested that attachment security in firstborn preschoolers decreased following the new birth and that the children whose security scores dropped most dramatically had mothers with significantly higher scores on depression and anxiety. Erickson, Sroufe, and Egeland (1985) and Egeland, Kalkoske, Gottesman, and Erickson (1990) reported similar results. These researchers noted that when infant attachment security failed to predict problems at ages 4 ½ to 5, it was often due to intervening changes in the quality of the parent-child relationship. Thus, it appears that there are factors that can affect attachment styles over time.

The last study to be reviewed was conducted by Ammaniti, Van Ijzendoorn, Speranza and Tambelli (2000), who conducted a longitudinal study with an adolescent sample to explore the stability of attachment styles from late childhood (10 years of age) to adolescence (14 years of age). The sample consisted of 31 Italian participants (14 girls and 17 boys) who completed the Attachment Interview for Childhood and Adolescence (AICA). Overall, the stability of different attachment styles was found to be considerable at 74%.

Taken together, these findings suggest that attachment styles in early childhood are indeed relatively stable. However, when mothers report a greater frequency of negative events than positive events, attachment styles are not as stable. Likewise, intervening variables in the parent-child relationship appear to negatively affect the stability of attachment. Based on these findings it is necessary to review the literature on the continuity of attachment styles from infancy to adolescence and early adulthood.

Waters, Merrick, Treboux, Crowell, and Albersheim (2000) conducted a twenty-year longitudinal study on attachment security in infancy and early adulthood. Sixty Caucasian middle-class infants were recruited. These infants were exposed to the Ainsworth Strange Situation at the age of 12 months. Twenty years later, 50 of these participants (21 males, 29 females) were interviewed using the Berkeley Adult Attachment Interview (AAI). Notably, the interviewers were blind to the participants' Strange Situation classifications. In summary, 72% of the sample received the same secure versus insecure attachment classification in infancy as in early adulthood. However, 44% of mothers who reported negative life events had children whose attachment classifications (i.e., secure to insecure) changed from infancy to early adulthood. Negative life events were defined as (1) loss of a parent, (2) parental divorce, (3) life-threatening illness of a parent or child (e.g., diabetes, cancer, and heart attack), (4) parental psychiatric disorder, and (5) physical or sexual abuse by a family member.

In summary, Waters et al. (2000) indicate that their results support Bowlby's hypothesis that individual differences in attachment security can be stable across significant portions of the lifespan and yet remain open to revision based on the individual's experience.

Lewis, Feiring, and Rosenthal (2000) also conducted a study on continuity in attachment classification from infancy to late adolescence with 84 Caucasian middle-class children. These children were seen in a modified Strange Situation at 12 months and were administered the Adult Attachment Interview at 18 years. Additionally, at 13 and 18 years of age, data were collected on childhood recollections of divorce and maladjustment. The results revealed no continuity in attachment styles from 1 to 18 years of age, and the relationship was not significant between infant attachment status and adolescent maladjustment. However, divorce was related to 13-year-olds' childhood recollections as well as to insecure attachment status at the age of 18. In summary, these findings also support Bowlby's hypothesis that the stability of attachment remains open to revision based on the individual's experience.

Likewise, Weinfield (1997) conducted a study to explore the stability of attachment security from infancy to young adulthood in a poverty sample. This sample was chosen specifically because the environments and relationships in such a sample are consistently not stable, which poses a challenge to attachment stability. The participants for this study were 57 young adults who were part of an ongoing prospective study of development and adaptation in a high risk sample. Attachment was assessed using the Strange Situation in infancy (Ainsworth et al., 1978) and at age 19, with the Adult Attachment Interview (George, Kaplan, & Main, 1985). Additionally, Weinfield collected data on the possible correlates of continuity and discontinuity such as maternal life stress, child maltreatment, maternal depression, family functioning in early adolescence, and the quality of secondary caregiving relationships. In summary, this study's results revealed no significant relation between infant attachment classification and adult attachment classification.

Weinfield and Whaley (2004) conducted another longitudinal study which examined the continuity and discontinuity of attachment quality from infancy to late adolescence in a sample of 125 participants who were considered at birth to be at high risk due to poverty. In this sample Strange Situations were conducted at 12 and 18 months. Adult attachment interviews were administered at the age of 19. Once again, data were collected on the possible correlates of continuity and discontinuity. In summary, results of the Weinfield and Whaley (2004) study indicated no significant overall continuity in attachment security. However, these researchers reported that disorganized infants were significantly more likely than secure infants to be insecure or unresolved in late adolescence. In addition, there were significant correlates of continuity and change such as infant temperament, maternal life stress, family functioning at pre-adolescence, child maltreatment, and features of the home environment.

Taken together, what can be concluded from the literature review conducted? It appears that attachment styles are subject to change, and Bowlby did address this issue. Bowlby (1969, 1973) hypothesized that early relationship experiences with primary caregivers eventually lead to generalized expectations about the self, others, and the world. However, Bowlby also stated that although these generalized expectations emerge early in development, they continue to evolve in light of attachment-related experiences during childhood and adolescence (Bowlby, 1973; Oppenheim & Waters, 1995). Bowlby (1953) indicated that the stability of attachment can be influenced by directly altering the child-parent relationship and indirectly by increasing life stress for the parents. These events, identified by Bowlby, included the death of a parent, foster care, parental divorce, chronic and severe illness of a parent or child, single parenthood, parental psychiatric disorder, drug

and alcohol abuse, and child experience of physical or sexual abuse. Taken together, the empirical literature largely supports Bowlby's early hypotheses.

Clearly there are a number of factors (i.e., negative life events) that can affect the continuity of attachment over time (i.e., infancy to late adolescence and adulthood), and it is reasonable to assume that negative life events can also affect the continuity of motivational regulatory styles as outlined by Deci and Ryan (1985b). However, there are several limitations in including the assessment of negative life events in this study. First, when assessing negative or positive events in a child's life, the parents usually complete the questionnaire. It is possible that a child may not be aware of any negative or positive events in their parent's lives that could affect the child (i.e., financial difficulties, some forms of psychopathology). Second, when assessing for negative or positive events in a child's life, the parent may view the event as negative and the child could view the event as positive (i.e., divorce), or the parent may view the event as positive and the child could view the event as negative (i.e., parent's promotion resulting in less time at home). These are only some of the limitations that merited discussion. If the proposed SDT model predicts the mediation of parental involvement and autonomy support by autonomy, controlled, and impersonal orientations, then it may be most appropriate to conduct additional testing regarding the potential mediating effects of negative and positive life events in a sampled population. However, at this time, the focus of this research project is on testing a model that parental autonomy support and involvement will be mediated by current motivational orientation, which will predict psychological distress.

Theoretical Similarities and Differences between SDT and Attachment Theory

Based on the review of the empirical literature, there are considerable theoretical similarities between SDT (Deci & Ryan, 1985b) and attachment theory (Bowlby, 1969/1982). Conversely, there are theoretical differences that also merit discussion.

Bowlby (1969/1982) contends that the differences in the quality of care will lead to differences in the quality of attachment and to dyadic regulation of emotion, which provides a basis for self-regulation. The fundamental element in Bowlby's theory is the quality of care, which can be defined as the degree to which sensitive caregivers respond appropriately to the initiations, signals, and needs of the infant. From the SDT perspective, sensitive relational caregivers contribute to the development of the three psychological needs for autonomy, competence, and relatedness (LaGuardia, Ryan, Couchman, & Deci (2000). In contrast, according to attachment theorists, sensitive relational caregiving results in infants being securely attached to their caregivers. Therefore, the fundamental difference between the two theories is the focus on autonomy in SDT versus the focus on relatedness in attachment theory.

Autonomy.

According to SDT, autonomy refers to people's feelings of volition, agency, and initiative (e.g., deCharms, 1968; Deci & Ryan, 1985b). According to LaGuardia, Ryan, Couchman, & Deci, (2000), the description of sensitivity by Bretherton (1987) and Sroufe and Watters (1977) is "wholly consistent with the idea of supporting children's sense of self-initiation and agentic action" (p. 368). Notably, according to SDT, autonomy is not defined as independence or separateness (Chirkov, Ryan, Kim, & Kaplan (2003). According to SDT, autonomy relates to the experience of agency and authenticity, to the experience of an

internal perceived locus of causality (see Figure 1). When an individual operates based on an internal perceived locus of causality, they have felt competence and their actions are autonomous. Likewise, according to attachment theory, when an infant is securely attached, s/he has positive expectations regarding exploratory competence, and a sense of self as an autonomous agent (Bowlby, 1969/1982). In summary, the SDT's theoretical construct provides one with the empirical means to assess one's perceived locus of causality (i.e., degree of autonomy), whereas attachment theory allows the empirical examination of autonomous behaviors (e.g., exploratory behaviors away from mom).

Competence.

According to SDT, competence refers to an individual's feelings of curiosity, challenge, and efficacy (Deci, 1975; White, 1959). Theoretically this view of competence is similar to that espoused within attachment theory. According to attachment theory, appropriate responsiveness to infants' activity supports their effectance and self-confidence (Sroufe & Waters, 1977), which are encompassed by the notion of competence as first presented by White (1959). Once again the fundamental theoretical difference is that SDT emphasizes one's perceived locus of causality, whereas attachment theory focuses on the quality of attachment to caregivers.

Relatedness.

Theoretically, according to SDT, relatedness involves feeling connected with and cared for by another (Baumeister & Leary, 1995; Connell & Thompson, 1986; Ryan, 1993). Sensitive parenting can be characterized as loving, warm, and nurturant, which implies supports for relatedness. Thus the theoretical similarities between SDT and Attachment theory with respect to relatedness is clear. When parents are sensitive and respond to

initiatives, encourage exploration, and provide noncontingent positive regard for their developing children, they are indeed supporting their children's basic psychological needs for autonomy, competence, and relatedness, according to both theories.

Autonomy, competence, and relatedness in adult relationships.

Similarly, in adult relationships, LaGuardia, Ryan, Couchman, and Deci (2003) suggest that sensitive responding can also be understood as supports for others' needs for relatedness, autonomy, and competence. The notion that sensitive responding represents supports for one's relatedness need is quite straightforward. Furthermore, the notion that support for autonomy is also central for secure attachments can also be extrapolated from object relations psychology (see J. R. Greenberg & Mitchell, 1983), which considers healthy adult relationships to be distinguished by mutuality of autonomy. That is, maturation into adulthood and ego synthesis requires the repudiation of merger components of attachments in favor of relationships that are based on differentiation and exchange. As such, for healthy adult functioning to occur, each partner must support the autonomy of the other.

The notion of competence as an important outcome of sensitive responding may be less straightforward. When individuals are criticized for their performance and/or one interferes with their competent engagement, secure attachment is unlikely to develop. On the other hand, people often find competence satisfaction that is not within their primary relationships, such as at work or school. As such, individuals may not need a great deal of support for competence from a relationship partner in order to feel securely attached in that relationship. Thus, within adult relationships, the satisfaction of the competence need is likely to be less important for attachment security than the satisfaction of the relatedness and autonomy needs.

Parenting dimensions.

SDT also proposes that there are three parenting dimensions that are important for children's basic psychological need for autonomy, competence, and relatedness, as well as their intrinsic motivation and the internalization and eventual integration of extrinsic motivations (Ryan, Deci, & Grolnick, 1995). These critical contextual parenting dimensions are involvement, structure, and autonomy support. Similarly, Bowlby (1973) explicitly referred to parental support (involvement) as essential to firmly establish healthy autonomy. However, the conceptualization of parental involvement between these theories is dissimilar. According to Bowlby (1969, 1988), parental monitoring involves parents providing guidance in navigating the environmental opportunities and dangers. This involves parents monitoring their children's whereabouts, friends, and so on. Conversely, SDT views parental involvement as providing structure in the home, classroom, and other environments (i.e., providing consistent, clear guidelines in differential environments). However, both theories view parental involvement as facilitating the infant's ability to safely negotiate autonomy toward healthy, adaptive functioning. In summary, SDT's critical parenting dimensions are involvement, structure, and autonomy support, whereas the critical parenting dimensions in attachment theory are sensitivity and responsiveness to the child's affective cues, which facilitate the negotiation of autonomous behavior. Therefore, with respect to parenting dimensions, these theories are similar, despite the differences in conceptualizing involvement, structure, and autonomy support.

Taken together, the literature review conducted thus far indicates that these theories are fundamentally similar. That is, the concept of sensitivity or responsiveness in attachment theory is theoretically similar to the concepts of autonomy, competence, and relatedness in

SDT. However, according to attachment theory, quality of early caregiving is represented by the individual differences in attachment to caregivers, whereas according to SDT, quality of early caregiving is represented by individual differences in one's motivational regulatory style.

Attachment Theory and Psychopathology

The literature on attachment styles strongly attests to the importance of secure attachments for well-being and interpersonal functioning, which is similar with SDT. For example, studies have shown that individuals who are securely attached displayed fewer physical symptoms (Hazan & Shaver, 1990), less emotional distress and negative affect (Simpson, 1990), and less fear of death (Mikulincer, Florian, & Tolmacz, 1990). With respect to interpersonal functioning, the literature demonstrates that people who report more secure attachments have relationships characterized by more positive affect (Simpson, 1990), more willingness to seek support when needed (Butzel & Ryan, 1997; Florian, Mikulincer, & Bucholtz, 1995), greater longevity (Feeney & Noler, 1990; Hazan & Shaver, 1987), more stability (Collins & Reed, 1990; Kirkpatrick & Hazan, 1994), and greater trust, satisfaction, interdependence, and commitment (Collins & Reed, 1990; Mikulincer, 1998).

The relationship between SDT and childhood or adult psychopathology and/or psychological distress has not been empirically tested; however, the relationship between the quality of the early attachment relationship and childhood psychopathology (Lewis, Feiring, McGuffog, & Jaskir, 1984; Marvinney, 1985; Renken, England, Marvinney, Sroufe, & Mangelsdorf, 1989), as well as adulthood psychopathology (Carlson, 1998; Warren, Huston, Egeland, Sroufe, 1997; Faravelli, Webb, Ambonetti, Fonnesu, & Sessarego, 1985) has been empirically examined by a number of researchers. Because there are a number of theoretical

similarities between SDT and attachment theory, it is necessary to briefly review the empirical literature regarding the relationship between attachment theory and childhood/adulthood psychopathology. If the literature demonstrates a relationship between insecure attachment styles and psychopathology, it would be reasonable to assume that a lack of parental autonomy support and involvement could lead to lower levels of intrinsic motivation (i.e., controlled and impersonal), which could result in psychological distress.

Attachment and psychopathology in childhood.

Research on the relationship between attachment and psychopathology in early childhood has been conducted in both clinical and non-clinical populations. As such, the findings of several studies will be discussed.

DeKlyen, Speltz, and Greenberg (1996) conducted research within a clinic-referred sample of children who met criteria for oppositional defiant disorder (ODD) and comparison children who were matched on age, social class, and family composition. In this study approximately 80% of the clinic children demonstrated insecure attachments, whereas 30% of the comparison children demonstrated insecure attachments. The clinic children showed all styles of insecure attachment; however, they showed a disproportionately higher rate of the resistant classification. This classification is characterized by a child's attempt to actively direct control of the interaction with the parent upon reunion. Similar results were found by Greenberg, Speltz, DeKlyen, and Endriga (1991).

Birkenfeld-Adams (2000) assessed preschool attachment classification in a group of boys with gender identity disorder and compared them to a nonspecific clinic sample with behavioral difficulties and to nonreferred control boys. Results showed that both clinic samples demonstrated lower rates of security and that they could be differentiated by type of

insecurity. The boys with gender identity disorder were more likely to show resistant attachments, while the non-specific clinic sample demonstrated higher rates of avoidant and controlling/disorganized classifications.

Turner (1991) conducted a study with a nonclinical sample of English 4-year-olds, which demonstrated that insecure girls were more dependent and less assertive and controlling than secure girls, but they did not find any differences in aggression or disruption. The results also demonstrated that boys with concurrent insecurity with their mothers showed more aggression, disruption, and attention-seeking in preschool than did secure boys.

In summary, these studies indicate that insecure attachments have been found to play a role in the development of psychopathology in childhood. However, a thorough literature review has revealed that no studies have been conducted on the role that attachment may play in the pathogenesis of depression and anxiety disorders in children. There has been considerable theorizing about the role that attachment might play in depression (Cicchetti & Cummings, 1990) as well as anxiety (Cassidy, 1995), but there appear to be no published studies of attachment in any childhood population with depression or anxiety disorders.

Infant attachment and later psychopathology.

Research on infant attachment and later psychopathology has been conducted. The findings of several studies will be briefly reviewed and discussed.

The addition of attachment disorganization has increased the predictive validity of the attachment construct in relation to psychopathology (Green & Goldwyn, 2002).

Disorganization in infancy has been powerfully associated with a wide range of externalizing or internalizing behavior problems in the early school years (see Lyons-Ruth, 1996, and Lyons-Ruth & Jacobvitz, 1999, for a review). For example, in a large Minnesota longitudinal

study (Carlson, 1998), results suggest that children who were disorganized in infancy scored higher than organized children on teacher ratings of dissociative behavior and internalizing symptoms in middle childhood and had higher levels of overall psychopathology at 17 years of age. Likewise in the same Minnesota project, findings at two different time periods showed differentiation. First, teacher ratings in middle childhood showed that infant anxious/avoidant behavior was linked to later aggressiveness, and resistant/avoidant behavior was linked to passive withdrawal (Renken, Egeland, Marvinney, Mangelsdorf, & Sroufe, 1989). Notably, the findings were significant only for boys.

Research on the association between attachment in infancy and anxiety disorders has also been conducted by Warren et al. (1997). Results demonstrated that infants with resistant attachments were significantly more likely than infants with secure or anxious avoidant attachments to be diagnosed with anxiety disorders when the children reached the age of 17 ½. When temperamental differences were controlled, resistant attachments emerged as significant predictors of later anxiety disorders.

In summary, the findings suggest that attachment styles in infancy do play a predictive role in later psychopathology.

Adult psychopathology.

Research on childhood attachment and later psychopathology has been conducted and may be related to the risk for psychopathology or to psychological resilience in adulthood. The findings of several studies will be briefly reviewed and discussed.

In a study that compared adults with and without generalized anxiety disorder, Cassidy (1995) reported higher rates of retrospectively self-reported parental rejection among those with GAD. Similarly, Chambless, Gilis, Tran, and Steketee (1996) found that most

individuals with anxiety disorders described their parental caregivers as unloving and controlling.

Research on the association between attachment-related experiences and later depression has also been conducted. A number of retrospective studies indicate that persons with depression described their parents as having been more unsupportive and rejecting than individuals without diagnosed psychiatric disorders (e.g., Raskin, Boothe, Reatig, Schulterbrandt, & Odel, 1971). In addition, Fonagy et al. (1996) conducted a study in which participant interviews were conducted and ratings of probable experience of parenting were made by coders. The results indicate that parents of individuals with depression were rated as unloving and as moderately rejecting.

In summary, the literature supports the notion that the quality of early caregiving environments is associated with psychopathology later in life. Because of the theoretical similarities between SDT and attachment theory, it is reasonable to assume that there could also be a relationship between parental autonomy support, involvement, structure, and motivational regulatory styles as outlined by SDT, and child/adult psychopathology. To date, these relationships have been hypothesized by SDT researchers (Ryan, Deci, & Grolnick, 1995), but no research has been conducted to test these hypotheses. However, before assessing the relationship between early caregiving environments, particular motivational regulatory styles, and specific types of psychopathology (e.g., major depressive disorder, antisocial personality disorder), it may be most appropriate to ascertain if there is a relationship between autonomy support, involvement, and structure in childhood and current motivational regulatory styles and self-reported psychological distress.

Rationale for Current Investigation

Ryan, Deci, and Grolnick (1995) hypothesize that there are three critical parenting dimensions (i.e., autonomy support, involvement, and structure) that are necessary for healthy psychological development. However, to date, little if any research has been conducted to test this hypothesis. Therefore, one purpose of this investigation was to test two models. The first model tested the direct effects of young adults' perceptions of parental autonomy support and involvement on psychological distress. The second model tested the direct effects between young adults' perceptions of parental autonomy support and involvement, and the mediating effects of current motivational regulatory styles such as autonomous (i.e., intrinsic), controlled (i.e., extrinsic), and impersonal (i.e., amotivation) on psychological distress. The exclusion of structure from the model will be discussed in the methods section. The second purpose of this investigation was to understand the individual contributions of attachment variables (i.e., secure and insecure) and SDT variables (autonomy, control, and impersonal).

Hypotheses:

1. It was hypothesized that *the predictor variables of mother and father autonomy support and involvement would have a direct (negative) relationship with psychological distress (see Figure 3).*
2. It was hypothesized that *the mediating variables of autonomous, controlled, and impersonal orientations would have an indirect effect on psychological distress. That is, autonomy would have an indirect (negative) effect, controlled would have an indirect (positive) effect, and impersonal would have an indirect (positive) effect on psychological distress (See Figure 4).*

3. It was hypothesized that *a model for mediation, which included the mediating variables of autonomous, controlled, and impersonal orientations would be a better fit with the theory (see Figure 4) than a model which did not include SDT mediators (see Figure 3).*
4. In view of the large body of literature on attachment styles and psychopathology, hypothesis 4 was an exploratory hypothesis that sought to examine the individual contributions of a model *with attachment variables (i.e., secure and insecure) and SDT variables (autonomy, control, and impersonal). It was hypothesized that secure attachment would have a direct (negative) effect, insecure attachment would have a direct (positive) effect, autonomy would have a direct (negative) effect, control would have a direct (positive) effect, and impersonal would have a direct positive effect on psychological distress.*

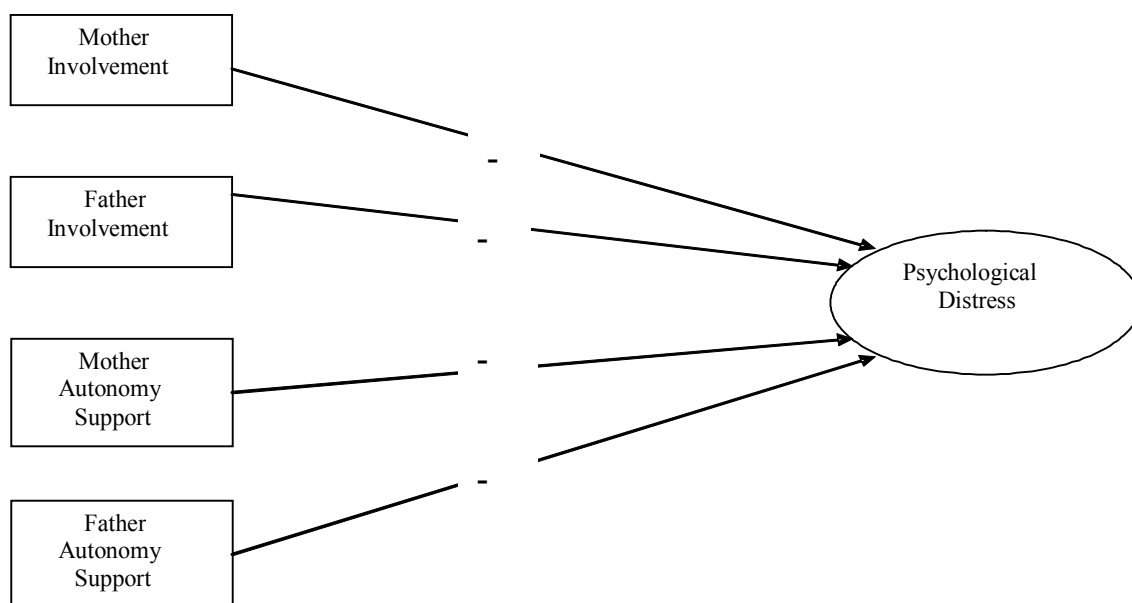


Figure 3. Hypothesized model of relations between perceived perceptions of parental autonomy support/involvement and psychological distress.

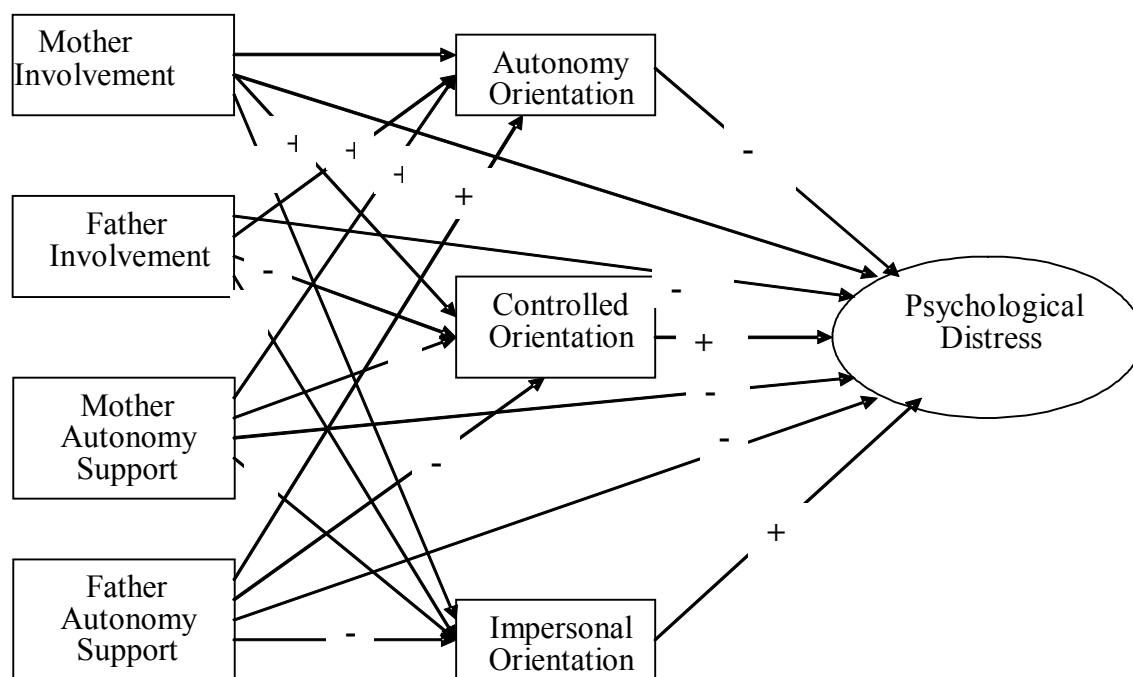


Figure 4. Hypothesized model of relations between perceived perceptions of parental autonomy support/involvement, motivational orientations, and psychological distress.

Research Methodology

Participants

Participants were 261 undergraduates attending a Midwestern state university. They ranged in age from 18 to 44 years ($M = 22.4$) with the majority (92%) aged 18-24. About 58.6% of the respondents were female; 70% were white, 16% African American, and 14% other.

Recruitment

Participants were recruited in the following ways: 1) by obtaining instructors' permission to announce the study in their undergraduate psychology courses; and 2) by obtaining permission from the director of student front counter operations at the Olds/Robb student recreation center to set up a table in the Rec IM and administer questionnaires. All

participants were entered into a raffle to potentially receive one of three shopping mall gift certificates valued at \$50.00, \$75.00, and \$125.00. Participants completed a contact information sheet that was separated from the study data and placed into a box for the later drawing. The raffle announcement indicated that winners would be selected on a specific date approximately two months after data collection had been completed. The winners of the mall gift certificates were notified via phone calls and were instructed to pick up their gift certificates at the reception desk of the Eastern Michigan University Psychology Clinic. Raffle winners were instructed to show proof of identification to clinic staff and signed receipts to document that they picked up their gift certificates. At the discretion of the course instructor, participants were also eligible to receive extra credit.

Measures

Background Information: Demographic as well as background variables were collected, which included age, race, sex, marital status, education, employment status, income, fraternity/sorority membership, commuter status, and living arrangements. See Appendix A for the Demographic/Background Questionnaire.

Perception of Parents: The Perceptions of Parents Scale (POPS) for College Students was developed by Robbins (1994) and was used to assess college students' current perceptions of their parents as autonomy supportive and involved. The POPS scale is made up of 21 items for mothers and 21 items for fathers. A total of 6 subscale scores can be calculated: mother autonomy support, involvement, and warmth, as well as father autonomy support, involvement, and warmth. The questionnaire was developed as part of a doctoral dissertation titled, " An assessment of perceptions of parental autonomy support and control: Child and

parent correlates," done by Robert J. Robbins in the Department of Psychology at the University of Rochester.

Robbins' (1994) dissertation provided initial evidence of the validity and reliability of the scale with college-age students. The POPS has adequate reliability values with Cronbach alphas ranging from .75 to .84. Confirmatory factor analysis also supported the six-factor structure.

The POPS questionnaire was selected specifically because it is the only SDT measure that taps college students' current perceptions of their parents as autonomy supportive and involved. There is one other scale developed by Grolnick, Ryan, and Deci (1991), which assesses a child's perceptions of his/her parents as autonomy supportive, involved, and warm. The proposed study requires a valid and reliable assessment of college students' perceptions of their parents as autonomy supportive and involved; the POPS is the only questionnaire available for this purpose.

For the purpose of this study, the POPS was modified to assess reports of perceived structure. The questionnaire was modified by adding six items (i.e., question numbers 22, 23, 24, 46, 47, and 48) in order to collect exploratory data on reports of perceived structure. These items were added to the end of the questionnaire to avoid psychometric confounding. Specifically, items 22-24 follow the original items and pertain to the participant's mother, and items 46-48 follow the original items that pertain to the participant's father. These items were developed and added to the questionnaire because there are no known questionnaires that tap the construct of structure as conceptualized by SDT. Ryan, Deci, and Grolnick (1995) conceptualize the construct of structure as "parents providing structure in the form of consistency, developmentally appropriate challenges, and limit setting" (Ryan, Deci, &

Grolnick, 1995) (p. 622). It is not possible in this study to assess whether one's parents provided developmentally appropriate challenges. However, it is possible to assess consistency and limit setting as conceptualized by Ryan et al. For example, one of the questions added to the questionnaire asks: "My mother has rules, expectations, and guidelines regarding my behavior in the home, at school and in the community." Finally, these items that tap the construct of structure are not included in the proposed model because there are no reliability and validity data on these items. However, the exploratory data will be collected to assess whether this variable is correlated with the other variables in the proposed model. Please see Appendix B for the POPS Questionnaire.

General Motivational Orientation: The General Causality Orientations Scale (GCOS), developed by Deci and Ryan (1985a), was used to assess the strength of three different motivational orientations within an individual. These motivational orientations, labeled autonomy (i.e., intrinsic motivational regulatory style), controlled (i.e., extrinsic motivational regulatory styles), and impersonal (i.e., amotivational regulatory style), are theorized to be enduring aspects of personality. The autonomy orientation assesses the degree to which an individual is intrinsically motivated. The controlled orientation assesses the degree to which an individual is controlled by rewards, deadlines, structures, ego-involvements, and the directives of others. The impersonal orientation assesses the degree to which an individual believes that desired outcomes are beyond his or her control.

Preliminary reports suggest that the GCOS possesses sound psychometric properties with college-age students. Deci and Ryan (1985a) developed and validated the scale. The scale has been shown to possess adequate reliability values with Cronbach alphas of about .75 and a test-retest coefficient of .74 over two months, and to correlate with a variety of

theoretically related constructs (Ryan & Connell, 1989; Vallerand, Blais, Lacouture, & Deci, 1987). Confirmatory factor analysis supports the three-factor structure (Vallerand et al., 1987).

The GCOS Questionnaire was chosen specifically because it taps an individual's general motivational orientation. There is no other scale developed by SDT researchers that measures one's general causality orientation. There are numerous scales that tap one's motivation to engage in domain-specific activities such as athletics and school work (Ryan & Connell, 1989), but no other SDT scale, other than the GCOS, taps general motivational orientation. The proposed study requires a valid and reliable assessment of an individual's general motivational orientation; the GCOS is the only questionnaire available for this purpose. See Appendix C for the GCOS Questionnaire.

Attachment Style Questionnaire: The Attachment Style Questionnaire (ASQ), developed by Feeney, Noller, and Hanrahan (1994), was used to assess the individual differences in adult attachment styles (i.e., secure and insecure) within an individual. Feeney et al. had several goals in developing this questionnaire. First, they wanted to develop a broad-based measure that could be used to clarify issues concerning the dimensions central to adult attachment and the number of styles needed to define essential individual differences. Second, they wanted to design a questionnaire that is more suitable for those with little or no experience in romantic relationships, such as college students. The ASQ was chosen specifically because it taps an individual's adult attachment style in general rather than focusing on adult attachment in romantic relationships. It is feasible that many students will have had no or little experience in romantic relationships. There are numerous scales that focus on attachment bonds within one's family of origin and subjects' perceptions of the

behavior and attitudes of romantic relationship partners. However, this study requires a valid and reliable assessment of an individual's general attachment style, and the ASQ is the most parsimonious questionnaire available. Finally, this questionnaire assesses secure and insecure attachment via five adult attachment scales (i.e., confidence, discomfort with closeness, need for approval, preoccupation with relationships, and relationships as secondary). Confidence is a factor representing secure attachment, and the other four scales represent particular aspects of insecure attachment.

Preliminary reports suggest that the ASQ possesses sound psychometric properties. Feeney, Noller, and Hanrahan (1994) developed and also validated the scale. The ASQ has five sub-scales that measure both secure and insecure attachment, with each item scored on a 6-point response scale that ranges from totally agree to totally disagree. The five scales have been shown to have adequate internal consistency, with Cronbach's alpha coefficients ranging from .76 to .84, and 10-week retest reliability coefficients ranging from .67 to .78 (Feeney et al., 1994). Thus, based on the ASQ's reliability, construct validity, and the ease of administration, the ASQ is a useful instrument for measuring adult attachment. Please see Appendix D for the ASQ.

Psychological Distress: The Brief Symptom Inventory (BSI) developed by Derogatis and Spencer (1982) was used to assess college students' self-reported psychological symptoms. The BSI contains 53 items that reflect 9 primary symptom dimensions: Somatization (SOM), Obsessive-compulsive (O-C), Interpersonal sensitivity (I-S), Depression (DEP), Anxiety (ANX), Hostility (HOS), Phobic anxiety (PHOB), Paranoid ideation (PAR), and Psychotics (PSY). There are also three summary indexes that can be calculated from the raw scores on the BSI: the General Severity Index (GSI), which is a weighted frequency score based on the

sum of the ratings the subject has assigned to each symptom; the Positive Symptom Total (PST), a frequency count of the number of symptoms the subject reported; and the Positive Symptom Distress Index (PSDI), which is a score that reflects the intensity of distress, corrected for the number of symptoms endorsed (Boulet & Boss, 1991). Each item of the BSI is rated on a 5-point scale of distress (0-4), ranging from “not at all” to “extremely.” The BSI can be used among subjects having a sixth grade education and 13 years or older. For the purposes of this study, the GSI index will be used to assess psychological symptom distress.

Reliability and validity was assessed among 1002 psychiatric outpatients, 310 psychiatric in-patients, and 719 non-patients (Boulet & Boss, 1991). The reliability of the instrument was assessed via internal consistency, test-retest, and alternative form methods. Internal consistency in the psychiatric outpatient sample ranged from .71 (psychotic dimension) to .85 (depression). Test-retest in the psychiatric outpatient sample ranged from .68 (somatization) to .91 (phobic anxiety). The correlation between corresponding dimensions of the BSI and SCL-90-R ranged from .92 (psychoticism) to .99 (hostility). The validity of the instrument was assessed via convergent and discriminate validity and factor analysis. Boulet and Boss indicate that, in general, there is a high convergence for the dimensions of the BSI with the MMPI scales. In addition, factor analysis was conducted in the psychiatric outpatient sample, and all 9 dimensions account for 44 percent of the variance in the matrix.

The BSI was chosen over other measures of self-reported psychological symptoms for several reasons. First, the BSI was chosen because it is brief and requires only 8 to 10 minutes for a participant to complete, whereas the SCL-90-R requires about 20 minutes to

complete. In addition, the BSI provides an overview of the participants' symptoms and their intensity at a specific point in time. Third, the BSI was chosen because the Global Severity Index (GSI) provides a single composite score for measuring overall psychological distress. Most important, the BSI was chosen because it has been used in more than 400 research studies (e.g., Gilbar, Or-Han, & Plivazky, 2005; Pietrzak & Petry, 2005). The BSI questionnaire may be obtained by contacting Pearson Assessments at 800-627-7271.

Human subject protections

Ethical treatment of participants was addressed in the following manner. Informed consent was obtained in a non-coercive manner from each person who volunteered to participate in the study, and the participants were given oral and written assurance that they were free to withdraw from the study at any time. The informed consent was presented and explained upon presentation of the questionnaires to the research participants and was completed before research participation began. Issues of confidentiality were explicitly addressed on the consent form, and participants were assigned a code number that identified their questionnaire response. At no time were participant names associated with responses to the questionnaires, and the questionnaires are being stored separately from the consent form. All of this information is being kept in locked file cabinets. It was emphasized that there was no pressure to participate and that participation (or lack of) would not affect the student's grade in any way. It was also emphasized that once enrolled, a participant could drop out at any point or skip any questions without penalty, and participants were encouraged to speak to the PI about issues or concerns related to study participation. Participants were advised both orally and in writing of the potential risks and benefits of participating in the study.

Participants were offered a referral for mental health care if they expressed a desire. E-mail, telephone, and mailing address information for the PI was provided. The participants were not systematically informed of the results, and the confidentiality of the participants will be protected in the dissemination process. The results are being presented in aggregate form only. No names or individually identifying information has been revealed. Participants were told that the results may be presented at research meetings and conferences, published in scientific publications, and were part of a dissertation being conducted by the principal investigator.

Data analysis

1. Hypothesis 1 *predicted that the variables of mother and father autonomy support and involvement would have a direct (negative) relationship with psychological distress*. The best-fitting model for non-mediation (Figure 3 and variations thereof) was evaluated using Amos 4.0 (Arbuckle, 1999) with maximum likelihood estimation. Modification and parameter change indices, along with consideration of theory and parsimony, were used to inform model adjustments. Multiple indicators of fit were used to assess the value of each model in explaining the correlation matrix structure. Predicted models were tested and compared using structural equation modeling (SEM) with analysis of moment structures (AMOS).

As a preliminary test of model fit, the χ^2 test statistic was inspected. The χ^2 test statistic indicates whether restrictions imposed prevent the elements of the implied covariance matrix from being equal to the elements of the covariance matrix of observed variables (Byrne, 2001). Therefore, significant χ^2 tests were considered to indicate poor model fit. Note, however, that a non-significant χ^2 does not necessarily

indicate good fit; other indices must be inspected, and modifications to the model must also be based on consideration of theory.

Model fit was improved by evaluating modification indices (MI's), which can be conceptualized as a χ^2 statistic with one degree of freedom (Joreskog & Sorbom, 1988). "Specifically, for each fixed parameter (i.e., path) specified AMOS provides MI, the value of which represents the expected drop in overall χ^2 value if the parameter were to be freely estimated in a subsequent run; all freely estimated parameters automatically have MI values equal to zero (Byrne, 2001; p. 90)." In addition, with each MI there is an expected parameter change (EPC) value (Sarlis, Satorra, & Sorbom, 1987) that is labeled as Parameter Change. This statistic represents the predicted estimated change, in either a positive or negative direction, for each fixed parameter in the model. Both of these values -- modification indices and parameter change -- provided important information regarding the evaluation of fit to any reparameterization of models tested. However, the sensitivity of the likelihood ratio test to sample size and its basis on the χ^2 distribution, which assumes that the model fits perfectly in the population (i.e. that the null hypothesis is correct), have led to problems of fit (Byrne, 2001). CMIN/DF corrects for this; therefore, the CMIN/DF was also used to compare the models. A value of 5.0 or less suggests a good model fit. In addition, other fit indices were also used to evaluate model fit, including the Normed Fit Index (NFI), the Comparative Fit Index (CFI), the Relative Fit Index (RFI), and the Root Mean Square Error of Approximation (RMSEA). A value of 1 for the NFI, CFI, and RFI indicates a perfect model fit. Values for both NFI and CFI range from zero to 1.00 and are derived from the comparison of a

hypothesized model with the independence model (i.e., path model where all paths have been deleted; Byrne, 2001). The computation for RFI value is basically the same as both the NFI and CFI, except that degrees of freedom are taken into consideration. As such, each provides a measure of complete covariation in the data, and, typically, values over 0.90 are considered to support model fit, although some researchers advise using a higher cutoff score of 0.95 (Byrne, 2001). RMSEA values below 0.05 are considered to support model fit, and RMSEA values as high as 0.08 are considered reasonable errors of approximation (Browne & Cudeck, 1993; Byrne, 2001). The RMSEA takes into account the error of approximation in the population and asks the question, “How well would the model, with unknown but optimally chosen parameter values, fit the population covariance matrix if it were available?” (Browne, & Cudeck, 1993, pp. 137-138). MacCallum et al. (1996) expanded on these cut points and noted that RMSEA values ranging from .08 to .10 indicate mediocre fit, and those greater than .10 indicate poor fit. Finally, all models were evaluated with attention to parsimony and path relationships purported by SDT and other theories of psychopathology.

2. Hypothesis 2 predicted that *the mediating variables of autonomous, controlled, and impersonal orientations would have an indirect effect on psychological distress. That is, autonomy would have an indirect (negative) effect, controlled would have an indirect (positive) effect, and impersonal would have an indirect (positive) effect on psychological distress.* The best-fitting model for mediation (Figure 4 and variations thereof), was evaluated using Amos 4.0 (Arbuckle, 1999) with maximum likelihood estimation.

3. Hypothesis 3 predicted that *a model for mediation, which included the mediating variables of autonomous, controlled, and impersonal orientations, would be a better fit with the theory (see Figure 4) than a model that did not include SDT mediators (see Figure 3)*. The best-fitting mediational and non-mediational models were compared based on consideration of the various fit indices for each model.
4. Hypothesis 4 was an exploratory hypothesis that sought to examine the individual contributions of a model *with attachment variables (i.e., secure and insecure) and SDT variables (autonomy, control, and impersonal)*. *It was hypothesized that secure attachment would have a direct (negative) effect, insecure attachment would have a direct (positive) effect, autonomy would have a direct (negative) effect, control would have a direct (positive) effect, and impersonal would have a direct (positive) effect.* The model was evaluated using AMOS 4.0 (Arbuckle, 1999).

Power analysis

The power analysis for this study was conducted at the level of individual paths. According to Kline (1998), this is sufficient to determine the probability that the results of a statistical test will lead to a rejection of the null hypothesis when it is false. Notably, there are no absolute standards in the literature regarding the relationship between sample size and path model complexity (Kline, 1998). Kline offers the following recommendations: the goal is to have the ratio of the number of cases to the number of free parameters (i.e., paths) be 10:1. Thus a path model such as the one proposed with 19 parameters should have a minimum sample size of 190 (see Figure 4).

Results

Sample Characteristics

Participants were 261 students from Eastern Michigan University, who ranged in age from 18 to 44 years ($M = 22.4$, $SD = 3.9$). The majority of the sample (90.8%) was equal to or less than 25 years of age. The ethnic distribution of the study sample was 68.2% White, 30.7% African-American, 3.1% Asian, 3.1% Hispanic, and 2.7% Native American; 2.0% described themselves as “Other.” Note that these percentages total more than 100% because 4% of participants endorsed multiple racial categories. The sample was composed of 153 women (58.6%) and 108 men (41.4%). Most participants were single (80.8%), followed by living with partner (9.2%), married (7.7%), and divorced (2.3%).

Pearson Correlations

Pearson correlation coefficients were inspected to examine the relationships between the predictor variables and the outcome of interest, psychological distress. As shown in Table 2, all of the variables were significantly correlated with one another and in the anticipated directions (all p 's $< .001$). In support of Hypothesis 1, negative relationships were observed between psychological distress and mother autonomy support, mother involvement, father autonomy support, and father involvement. Also, in support of Hypothesis 2, negative relationships were observed between psychological distress and mother and father autonomy support, mother and father involvement, and autonomy. In addition, in support of Hypothesis 2, positive relationships were observed between psychological distress and controlled and impersonal orientations.

Given these high intercorrelations, multicollinearity could be an issue in subsequent analyses due to high intercorrelations (see Table 2). Multicollinearity is present when the

predictor variables are highly correlated among themselves. Notably, a rule of thumb is that multicollinearity may be a problem if a correlation is greater than .90 or several are greater than .70 (Mertler & Vannatta, 2002). Other researchers suggest that Multicollinearity may be a problem in SEM if a correlation is greater than .80 (Ullman, 2001), or equal to or greater than .85 (Hoyle, 1995). The problem of multicollinearity was addressed in this study by collapsing the variables of mother autonomy support with mother involvement (MASI; $r^2 = .854$) and father autonomy support with father involvement (FASI; $r^2 = .799$). The four exogenous variables were not collapsed into one variable because mother autonomy support was moderately correlated with father autonomy support ($r^2 = .623$), mother autonomy support was moderately correlated with father involvement ($r^2 = .535$), mother involvement was moderately correlated with father autonomy support ($r^2 = .570$) and mother involvement was moderately correlated with father involvement ($r^2 = .537$). In subsequent sections the hypothesized models were inspected, and based on modification indices and theory, these variables were collapsed into two variables (i.e., MASI & FASI).

Table 2

Correlation matrix of hypothesized variables

	1	2	3	4	5	6	7	8	9	10	11	12
1. Mother Autonomy Support	--	.854**	.623**	.535**	.609**	-.531**	-.569**	-.530**	.274**	.287**	.556**	-.452**
2. Mother Involvement		---	.570**	.537**	.611**	-.524**	-.531**	-.489**	.363**	.315**	.502**	-.417**
3. Father Autonomy Support			---	.799**	.529**	-.463**	-.486**	-.455**	.297**	.302**	.491**	-.419**
4. Father Involvement				---	.473**	-.363**	-.423**	-.412**	.269**	.377**	.463**	-.396**
5. Autonomy					---	-.528**	-.622**	-.466**	.374**	.327**	.451**	-.368**
6. Control						---	.609**	.398**	-.193**	-.216**	-.330**	.438**
7. Impersonal							---	.593**	-.189**	-.158*	-.618**	.622**
8. Psychological Distress								---	-.139*	-.166**	-.619**	.549**
9. Mother Structure									---	.574**	.141*	-.077
10. Father Structure										---	.163**	-.098
11. Secure Attachment											---	-.694**
12. In-Secure Attachment												---

Note. Pearson correlation values are presented, * $p < .01$, ** $p < .001$.

Hypothesis 1

An initial theoretical model (i.e., Model 1) was proposed (see Figure 3) in which it was hypothesized that perceived parenting styles (i.e., parental autonomy and involvement) would directly predict psychological distress, with no involvement of SDT mediating variables (e.g., autonomy, impersonal, and control). Despite the problem of multicollinearity, the original proposed structural model was tested (i.e., Model 1). Model 1 proposed direct negative paths between mother autonomy support (MAS), father autonomy support (FAS), mother involvement (MI), and father involvement (FI) with psychological distress. Model 1 was specified as a recursive model, with parent perceptions (conceptualized as exogenous variables) predicting psychological distress (an endogenous variable). Results of this analysis suggested a poor model fit, $\chi^2 = 743.553$, $df = 6$, $p = .000$. The relative chi-square or

CMIN/DF was 123.926. As noted, CMIN/DF values less than or equal to 5.0 indicate a good fit (Byrne, 2001). The Root Mean Square Error of Approximation (RMSEA) for this model was .688. Recall that this index supports a good fit when it is equal to or less than .05. The Comparative Fit Index (CFI) was .112, the Relative Fit Index (RFI) was -.474, and the Normed Fit Index (NFI) was .116. Values for CFI, RFI, and NFI range from zero to 1.00 and values close to 1.00 indicate a very good fit, with values above .90 being considered an acceptable fit. Values below .90 indicate a need to respecify the model (Byrne). Figure 5 depicts Model 1 and the standardized coefficients given for each path.

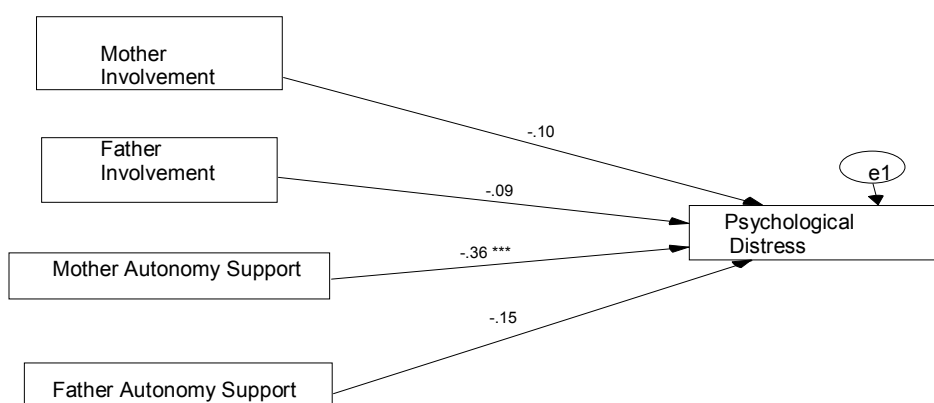


Figure 5. Model 1 Hypothesized relations between perceptions of parental autonomy support/involvement and psychological distress.

* $p < .05$, ** $p < .01$, *** $p < .001$

The second model tested was developed based on theory and modification indices provided in the first model (see Table 3). In addition, modification indices revealed some evidence of misfit in the model because of high modification indices between all of the exogenous variables (i.e., MAS, MI, FAS, and FI).

Table 3

Modification Indices for Models 1 through 5

Model(s)	Covariance(s) Paths	Regression Paths	Modification Indices	Parameter Change
Model 1	MI < - > MAS		189.720	2.272
	FI < - > FAS		166.083	2.377
	MAS < - > FAS		100.774	1.697
	MI < - > FAS		84.393	1.583
	MI < - > FI		75.016	1.559
	FI < - > MAS		74.313	1.552
		FI ← FAS	22.212	.112
		FAS ← FI	23.406	.108
		MI ← MAS	19.761	.091
		MAS ← MI	18.350	.081
		MAS ← FAS	13.477	.080
		MI ← FAS	11.287	.074
		MI ← FI	10.572	.071
		MAS ← FI	10.473	.069
		FAS ← MAS	10.496	.068
		FI ← MAS	7.740	.061
		FAS ← MI	8.163	.056
		FI ← MI	7.256	.056
Model 2	N/A	N/A		
Model 3	FAS < - > MI		3.512	.096
	FI < - > MAS		2.041	.075
Model 4	N/A	N/A		
Model 5	MASI < - > FASI		99.592	1.590
		MASI ← FASI	12.478	.074
		FASI ← MASI	9.329	.060

Therefore, based on theory and high MI values (see Table 3) and significant bivariate correlations (see Table 2) between MASI and FASI, these exogenous variables were allowed to covary. Unfortunately this model is just identified and does not provide extra degrees of freedom required to test the fit of the model. Figure 6 depicts Model 2 and the standardized coefficients given for each path.

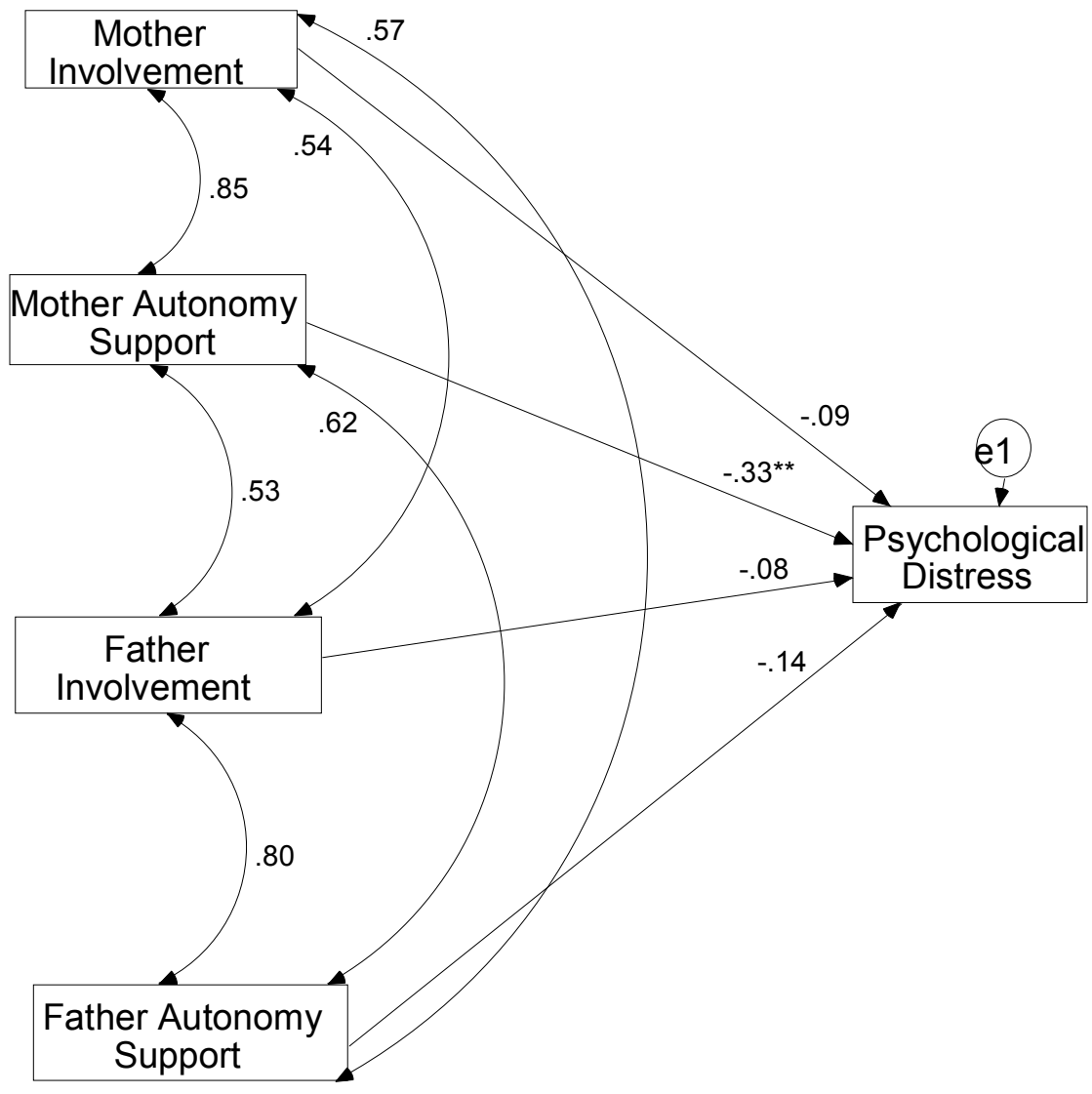


Figure 6. Model 2 hypothesized relations between perceived perceptions of parental autonomy support/involvement and psychological distress
* $p < .05$, ** $p < .01$, *** $p < .001$

Model 3 was also developed based on theory and modification indices provided from Model 1 (see Table 3). Modification indices from Model 1 revealed some evidence of misfit in the model between the exogenous variables (i.e., MAS, MI, FAS, and FI). Since Model 2

was not able to be tested because the model is just identified and does not provide the extra degrees of freedom required to test the fit of the model, Model 3 consists of all of the exogenous variables tested in Model 2, but several of the exogenous variables were not allowed to covary based on theory and on small modification indices provided in Model 1. Specifically, the link between mother involvement and father autonomy support was removed. Results of this analysis suggested a poor model fit, $\chi^2 = 121.140$, $df = 2$, $p = .000$. The CMIN/DF for this model was 60.570, RMSEA was .479, CFI was .857, RFI was .280, and NFI was .856. Figure 7 depicts Model 3 and the standardized coefficients given for each path.

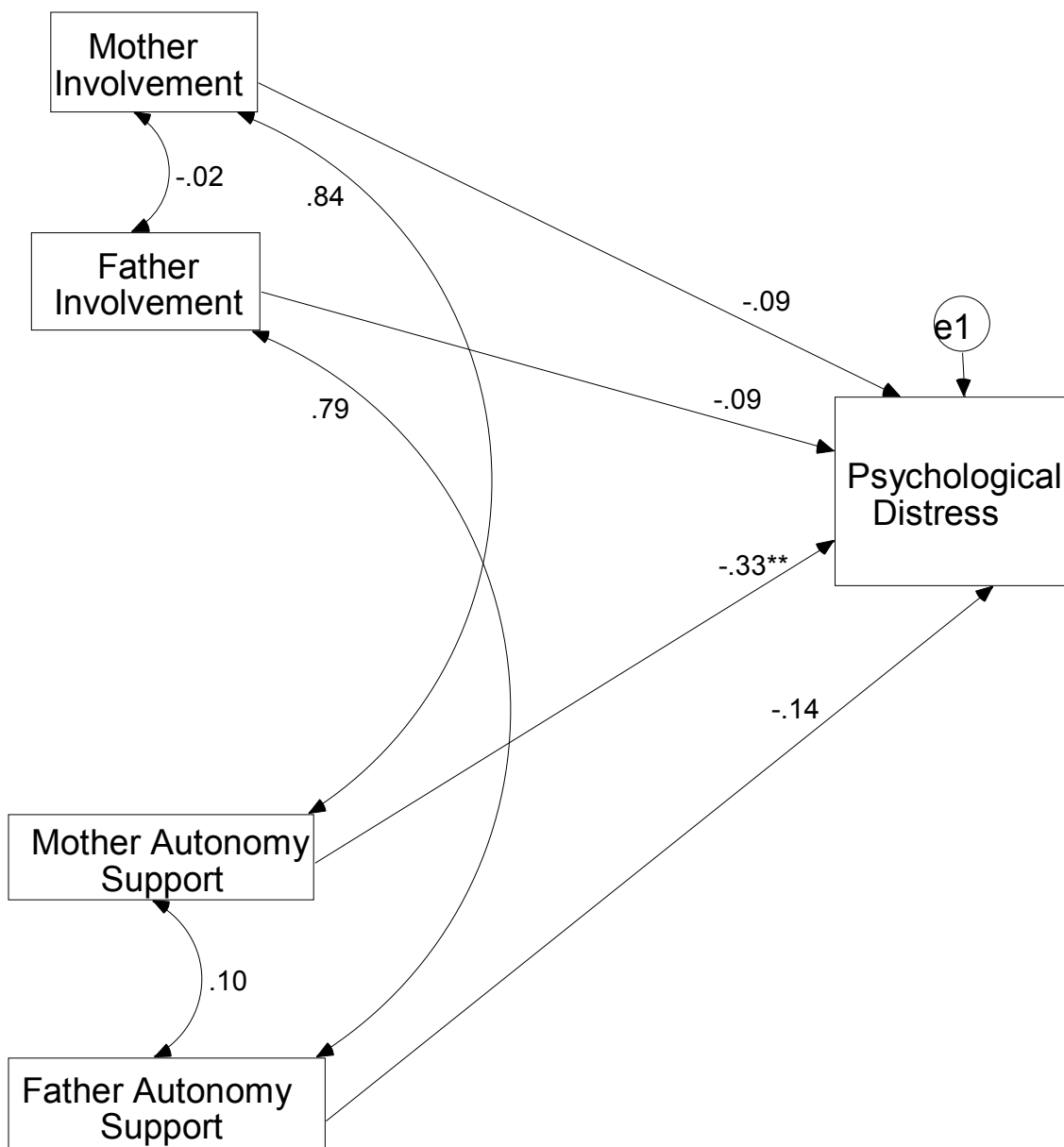


Figure 7. Model 3 hypothesized relations between perceived perceptions of parental autonomy support/involvement and psychological distress

* $p < .05$, ** $p < .01$, *** $p < .001$

The fourth model tested was also developed based on theory, modification indices provided in the first model (see Table 3), bivariate correlations (see Table 2), and the covariations between exogenous variables in Model 3. The results of Model 3 suggest that there are lower covariances between MAS and FAS and FAS & FI. Therefore, these four

exogenous variables were collapsed into two variables (i.e., MASI & FASI). In addition, these variables were allowed to covary based on the significant correlations between the variables (see Table 2). Results of the analysis of Model 4 indicate that this model is just identified and does not provide extra degrees of freedom required to test the fit of the model. Figure 8 depicts Model 4 and the standardized coefficients given for each path.

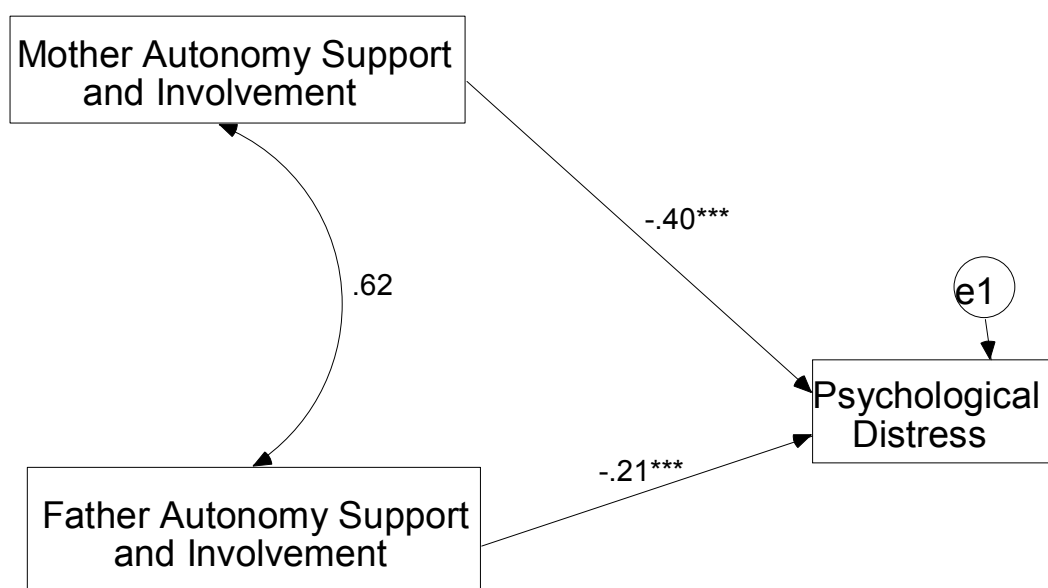


Figure 8. Model 4 hypothesized relations between perceived perceptions of parental autonomy support/involvement and psychological distress.
 $*p < .05$, $**p < .01$, $***p < .001$

Therefore, since Model 4 was not testable, the predictor variables (i.e., MASI & FASI) were not allowed to covary, which allowed the model to be tested. Results of the analysis of Model 5 suggested a poor model fit, $\chi^2 = 125.569$, $df = 1$, $p = .000$. The CMIN/DF for this model was 125.569, RMSEA was .692, CFI was .428, RFI was -.706, and NFI was .431. Figure 9 depicts Model 5 and the standardized coefficients given for each path.

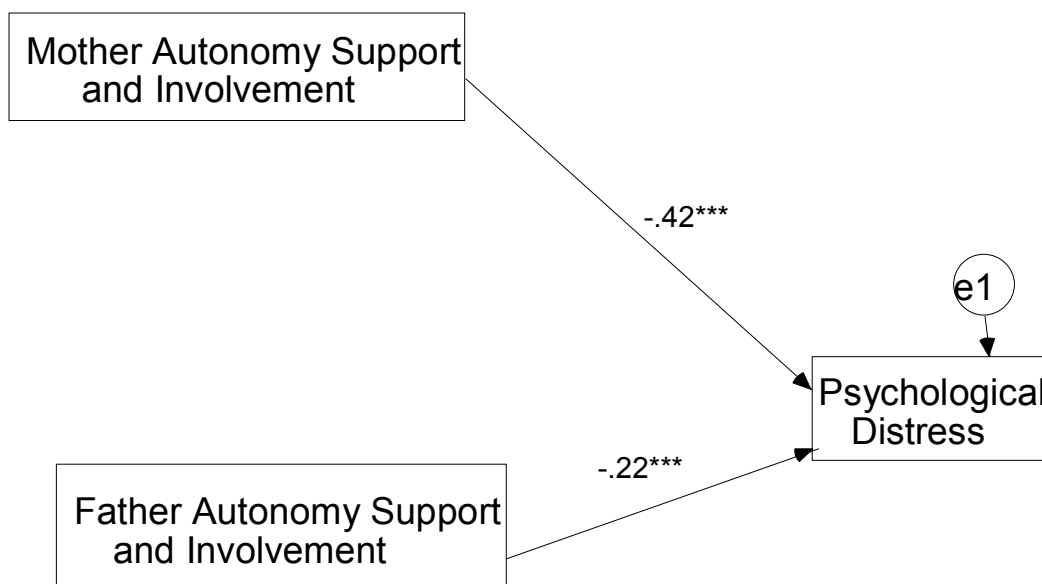


Figure 9. Model 5 hypothesized relations between perceived perceptions of parental autonomy support/involvement and psychological distress.
 $*p < .05$, $**p < .01$, $***p < .001$

In summary, hypothesis 1 predicted that a best-fitting model for non-mediation (Model 1 and variations thereof), which included the predictor variables of mother and father autonomy support and involvement would have a direct (negative) relationship with psychological distress. Although five non-mediational models were tested and guided by parsimony, theory, and modification indices, none were a good fit to the data. However, when the four predictor variables were included in the model, MAS had a direct (negative) relationship to psychological distress. When the four predictor variables were collapsed into two variables (i.e., MASI & FASI), each predictor variable did have a direct (negative) relationship with psychological distress. Therefore, based on theory, parsimony, and modification indices, the final model (i.e., Model 5) will be used in the search for a best-fitting model.

Hypothesis 2

The original mediational model proposed (see Figure 4) was not presented here because the results from the direct effects model informed us that the four predictor variables originally proposed should be collapsed into two predictor variables (i.e., MASI & FASI). Thus, to determine if motivational orientation mediates the relationship between MASI and FASI with psychological distress, several models (i.e., Model 6, Model 7, and Model 8) were tested to determine if autonomous, controlled, and impersonal orientations should be retained in subsequent models to identify a best fitting model. The purpose of Models 6, 7, and 8 are not to determine the best fitting model (and, therefore, fit indices are not presented), but to determine whether each motivational orientation when entered alone significantly predicts psychological distress. If each motivational orientation significantly predicts psychological distress, they will all be retained in the search for a best fitting model.

Model 6 was developed to determine whether autonomy significantly predicted psychological distress and should be retained in subsequent analyses and development of a best-fitting model. Results of the analysis of Model 6 indicates that an autonomous orientation significantly predicts psychological distress. Thus, the mediating variable of autonomy will be retained in the development of a best fitting model. Figure 10 depicts Model 6 and the standardized coefficients given for each path.

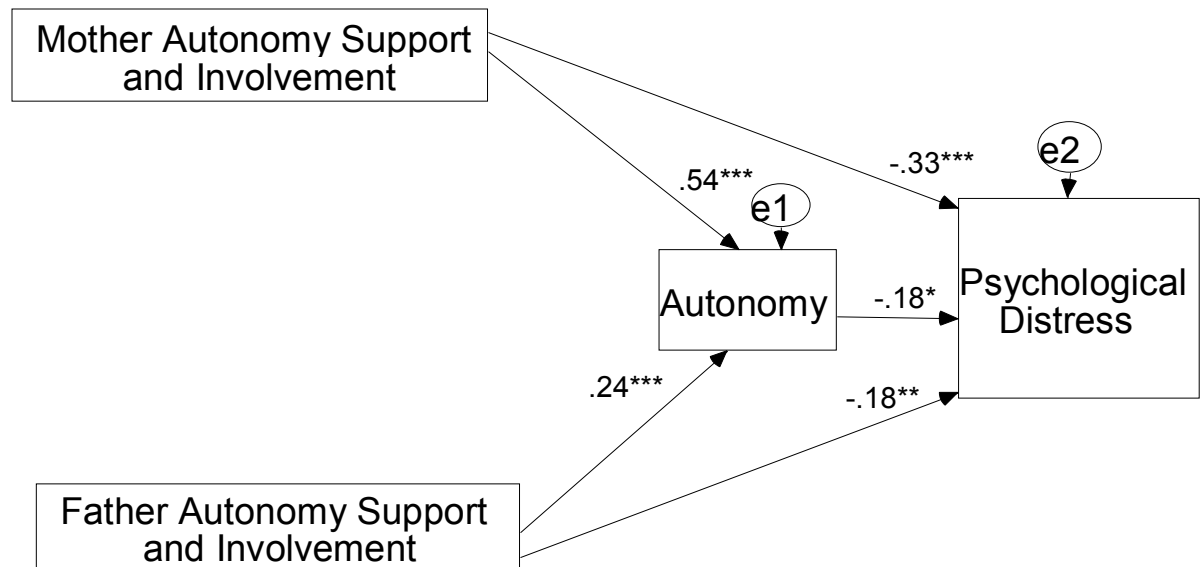


Figure 10. Model 6 of hypothesized relations between perceived perceptions of mother and father autonomy support/involvement, an autonomous orientation, and psychological distress.

* $p < .05$, ** $p < .01$, *** $p < .001$

Model 7 was developed to determine whether control significantly predicted psychological distress and should be retained in subsequent analyses and development of a best-fitting model. Results of the analysis of Model 7 indicates that a controlled orientation significantly predicts psychological distress. Thus, the mediating variable of control will be retained in the development of a best fitting model. Figure 11 depicts Model 7 and the standardized coefficients given for each path.

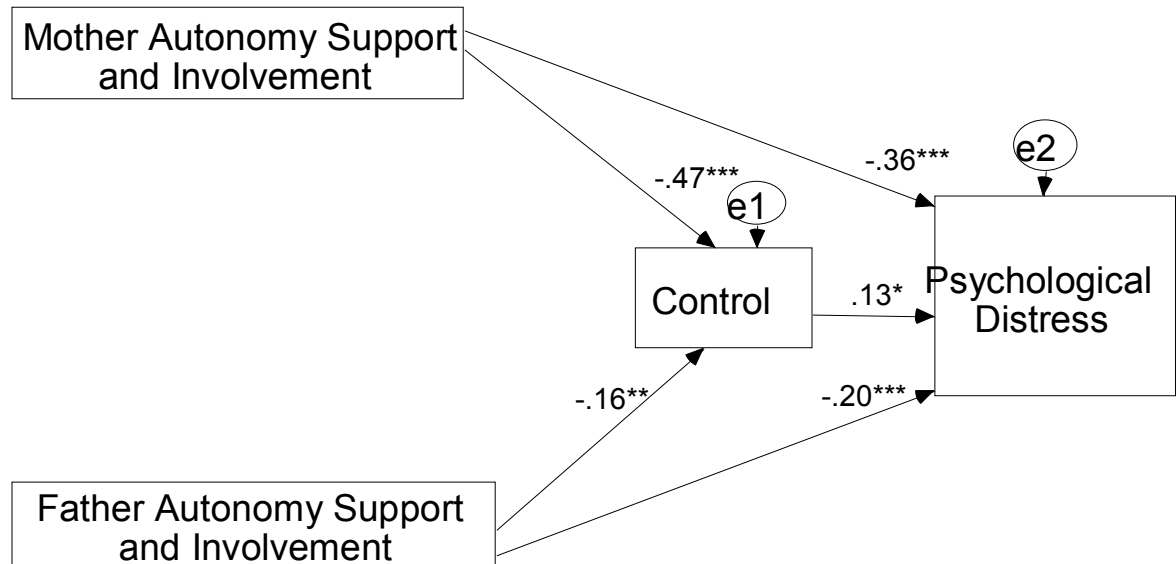


Figure 11. Model 7 of hypothesized relations between perceived perceptions of mother and father autonomy support/involvement, a controlled orientation, and psychological distress. * $p < .05$, ** $p < .01$, *** $p < .001$

Model 8 was developed to determine whether the variable of “impersonal” significantly predicted psychological distress and should be retained in subsequent analyses and development of a best-fitting model. Results of the analysis of Model 8 indicates that an impersonal orientation significantly predicts psychological distress. Thus, the mediating variable of “impersonal” will be retained in the development of a best fitting model. Figure 12 depicts Model 8 and the standardized coefficients given for each path.

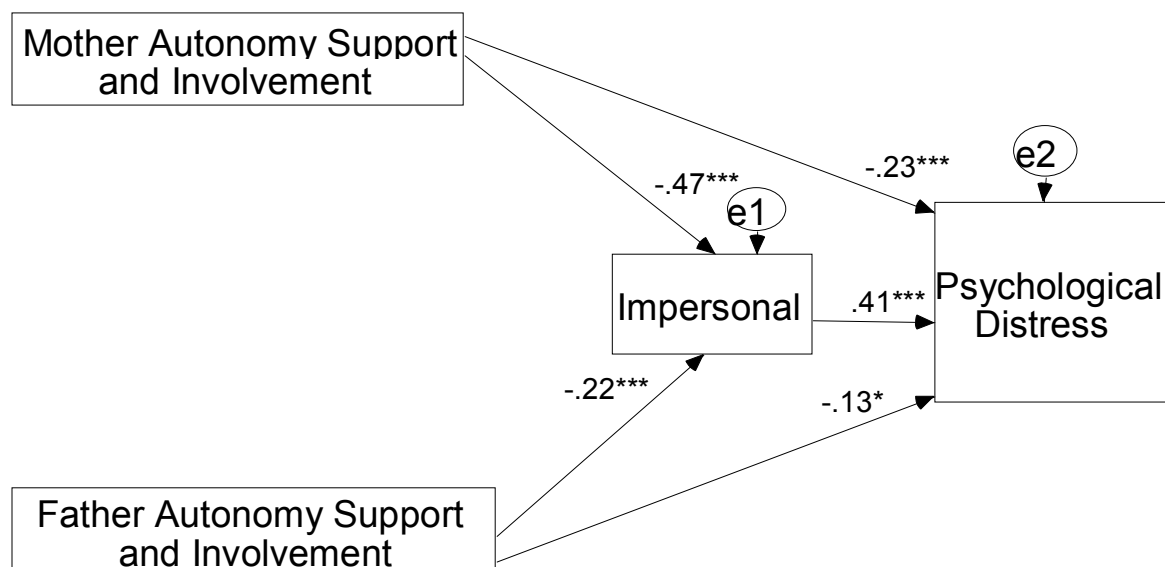


Figure 12. Model 8 of hypothesized relations between perceived perceptions of mother and father autonomy support/involvement, an impersonal orientation, and psychological distress. * $p < .05$, ** $p < .01$, *** $p < .001$

Model 9 was developed based on the results from the direct effects model, which informed us that the four predictor variables originally proposed should be collapsed into two predictor variables (i.e., MASI & FASI), and the results of the Models 6, 7, and 8, which indicate that each motivational orientation should be retained in the search for a best fitting model. In addition, MASI was allowed to covary with FASI based on high MI values between these variables (see Table 3, Model 5). Results of the analysis of Model 9 suggested a poor model fit, $\chi^2 = 94.355$, $df = 3$, $p = .000$. The CMIN/DF for this model was 31.452, the RMSEA was .342, CFI was .870, RFI was .342, and NFI was .868. Figure 13 depicts Model 9 and the standardized coefficients given for each path.

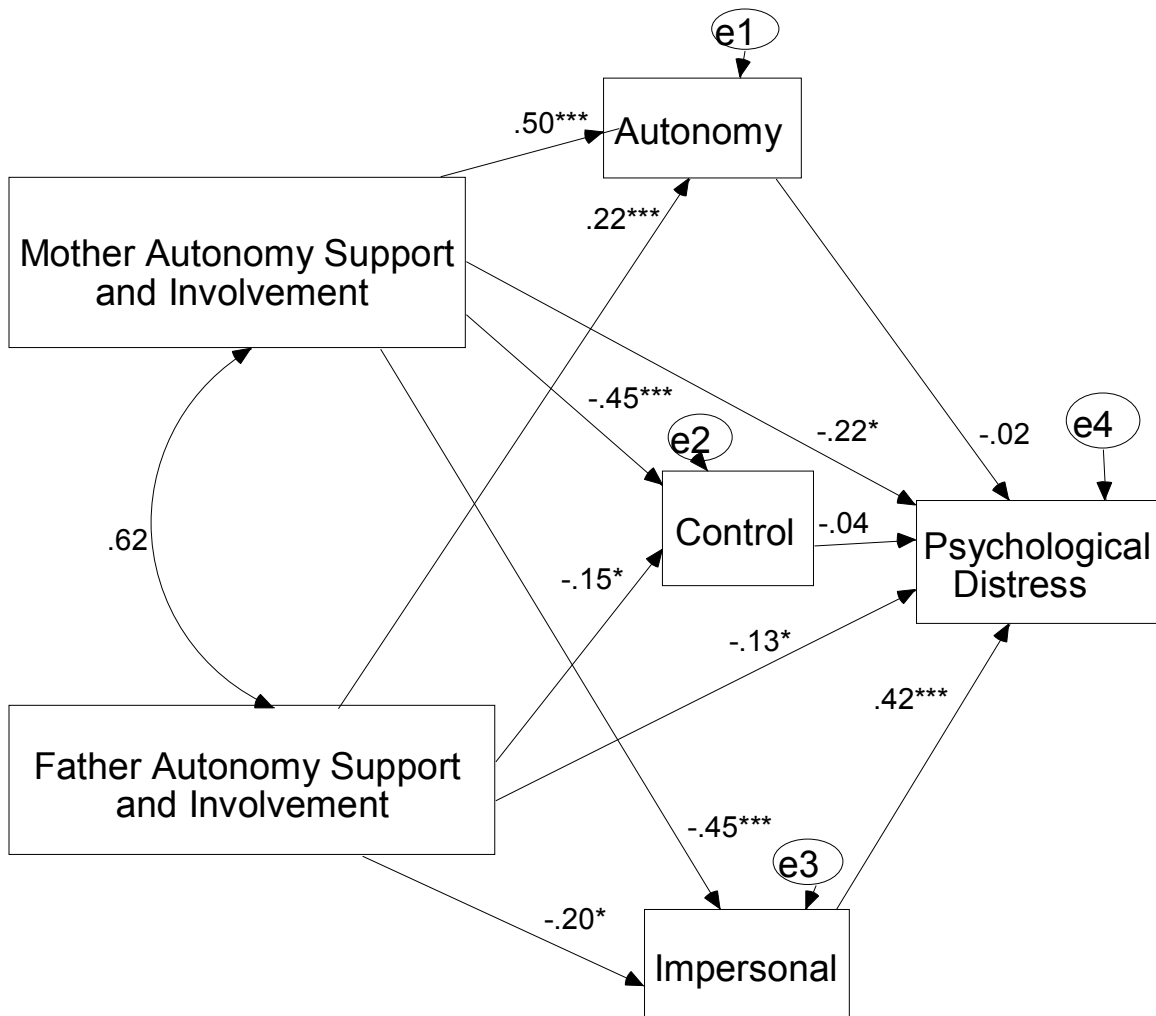


Figure 13. Model 9 hypothesized relations between perceived perceptions of mother and father autonomy support/involvement, motivational orientations, and psychological distress. * $p < .05$, ** $p < .01$, *** $p < .001$

The final best fitting model (i.e., Model 10) was developed based on modification indices provided in Model 9 (see Table 4) and the removal of non-significant paths (i.e., autonomy and control variables to psychological distress). Modification indices for Model 9 revealed some evidence of misfit in the model because of high MI values between error variables.

Table 4

Modification Indices for Model 9

Model(s)	Covariance(s) Paths	Regression Paths	Modification Indices	Parameter Change
Model 9	E1 < - > E3		38.315	-.317
	E2 < - > E3		44.989	.301
	E2 < - > E1		17.157	-.179

Model 10 yielded excellent fit indices: $\chi^2 = .557$, $df = 2$, $p = .757$. The CMIN/DF for this model was .278, RMSEA was .000, CFI was 1.00, RFI was .994, and NFI was .999. Figure 14 depicts Model 10 and the standardized coefficients given for each path.

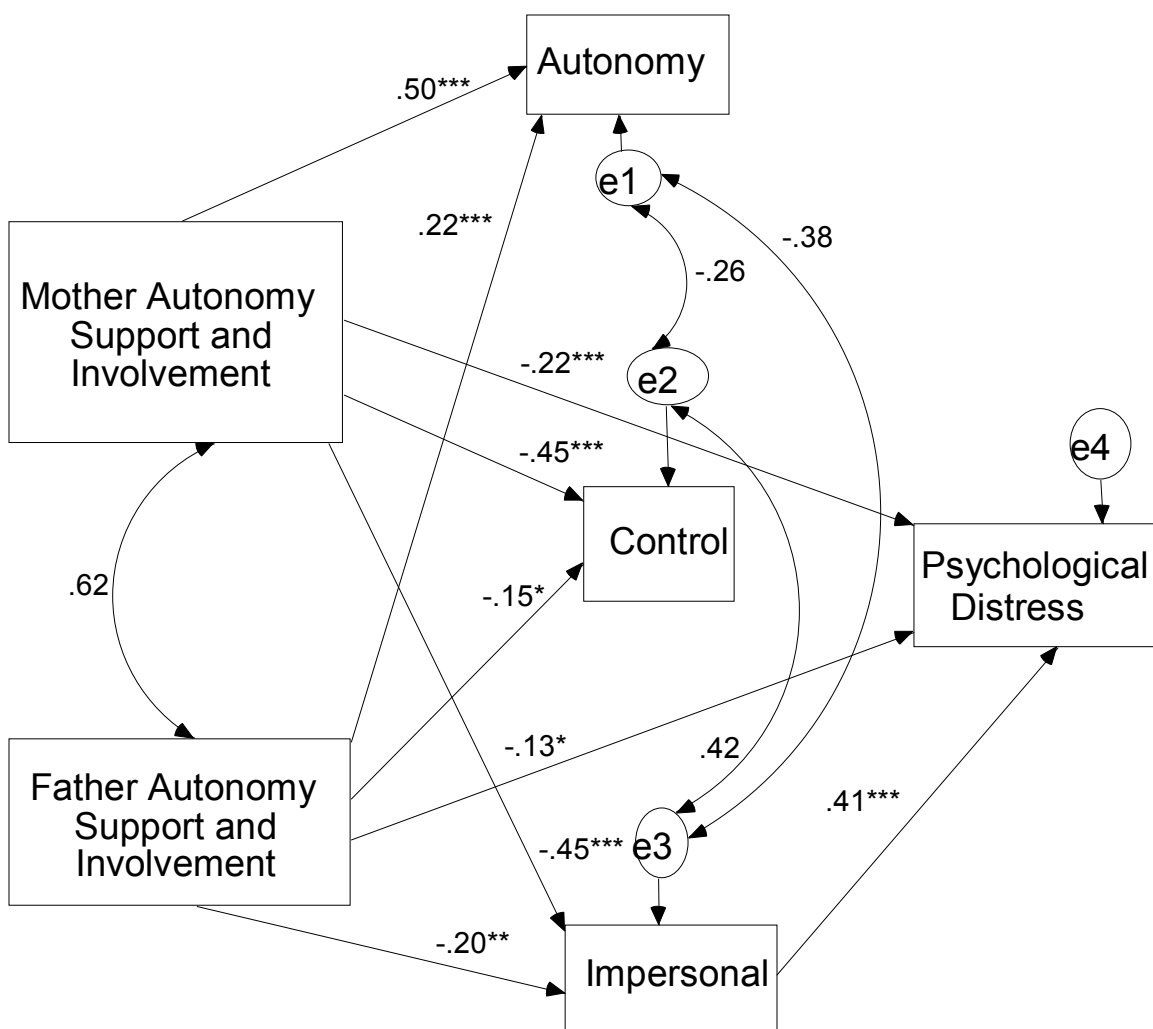


Figure 14. Model 10 hypothesized relations between perceived perceptions of mother and father autonomy support/involvement, motivational orientations, and psychological distress. * $p < .05$, ** $p < .01$, *** $p < .001$

In summary, hypothesis 2 predicted that the best-fitting model for mediation (Figure 4 and variations thereof), would be one in which the mediating variables of autonomous, controlled, and impersonal would have indirect effects on psychological distress. That is, autonomy would have an indirect (negative) effect, controlled would have an indirect (positive) effect, and impersonal would have an indirect (positive) effect on psychological distress. Each motivational orientation was entered into a model alone to see if it

significantly mediated the path to psychological distress from MASI and FASI. Models 6, 7, and 8 revealed that each motivational orientation predicted psychological distress; thus, these variables could be retained in the search for a best-fitting model, which encompassed all the variables. The first model in the search for a best fitting model, Model 9, revealed that when autonomous, controlled, and impersonal orientations were entered into the same model, only impersonal mediated the relationship to psychological distress. In addition, modification indices revealed that error terms were correlated between these variables. Therefore, the final best-fitting model, Model 10, demonstrated that MASI had a direct (negative) relationship with psychological distress and FASI had a direct (negative) relationship with psychological distress. In addition, an impersonal orientation had an indirect (positive) effect on psychological distress.

Hypothesis 3

The comparison between the final best-fitting non-mediational model (see Model 5) and the mediating model (see Model 10) was to be conducted using structural equation modeling (SEM) with analysis of moment structures (AMOS). However, there was no final best-fitting non-mediational model. Therefore, statistically speaking, without adequate DF for each model, a direct comparison with fit indices cannot be made. Thus, tentative conclusions are provided based on consideration of the various fit indices for each model. Recall that the Model 5 analysis suggested a poor model fit, $\chi^2 = 125.569$, $df = 1$, $p = .000$. The CMIN/DF for this model was 125.569, RMSEA was .692, CFI was .428, RFI was -.706, and NFI was .431. Obviously, results suggested that Model 10 provides a better fit to the data. Model 10 yielded excellent fit indices: $\chi^2 = .557$, $df = 2$, $p = .757$. The CMIN/DF for this model was .278, RMSEA was .000, CFI was 1.00, RFI was .994, and NFI was .999.

Since the probability value of Model 10 was .757, compared to the probability value of .000 for Model 5, we can assume that Model 10 fits the data better based on this test of absolute fit. Specifically, since the χ^2 probability value is greater than the .05 level, we can accept the null hypothesis that Model 13 fits the data better than Model 5. However, recall that the sensitivity of the likelihood ratio test to sample size and its basis on the χ^2 distribution, which assumes that the model fits perfectly in the population (i.e. that the null hypothesis is correct), have led to problems of fit that are well described (Byrne, 2001). However, CMIN/DF corrects for this; therefore, the CMIN/DF can be used to compare the models. The CMIN/DF for Model 5 was 125.569 compared to the CMIN/DF for Model 10, which was .278. CMIN/DF values below 5.0 suggest a good model fit (Byrne, 2001). In addition, relative fit indices (NFI, CFI, and RFI) for Model 10 are closer to 1.0, which suggests that Model 10 fits the data better than Model 5. Recall that a value of 1 for the NFI, CFI, and RFI indicates a perfect model fit. Values for both NFI and CFI range from zero to 1.00 and are derived from the comparison of a hypothesized model with the independence model (i.e., path model where all paths have been deleted; Byrne, 2001). The computation for RFI value is basically the same as both the NFI and CFI, except that degrees of freedom are taken into consideration. As such, each provides a measure of complete covariation in the data, and typically, values over 0.90 are considered to support model fit, although some researchers advise using a higher cutoff score of 0.95 (Byrne, 2001). Likewise the RMSEA for Model 10 is .000, compared to Model 5's RMSEA of .692, further supporting that Model 10 is a better fit to the data obtained. Recall that RMSEA values below 0.05 are considered to support model fit, and RMSEA values as high as 0.08 are considered reasonable errors of approximation (Browne & Cudeck, 1993; Byrne, 2001). Specifically, Model 10, with

unknown but optimally chosen parameter values, fits the population covariance matrix better than Model 5 (Browne & Cudeck, 1993).

Hypothesis 4

If you recall, hypothesis 4 was an exploratory hypothesis that sought to examine the individual contributions of a model with attachment variables (i.e., secure and insecure) and SDT variables (autonomy, control, and impersonal). It was hypothesized that secure attachment would have a direct (negative) effect, insecure attachment would have a direct (positive) effect, autonomy would have a direct (negative) effect, control would have a direct (positive) effect, and impersonal would have a direct (positive) effect on psychological distress. The model was evaluated using AMOS 4.0 (Arbuckle, 1999), and the purpose of the model was not to find a best-fitting model but to examine the direct relationships of attachment and SDT variables with psychological distress. Results suggest that secure attachment is the strongest direct (negative) predictor of psychological distress, followed by an impersonal orientation and its direct (positive) effect; insecure attachment had a direct (positive) effect, and finally autonomy had a direct (negative) effect on psychological distress. Finally, Model 11 suggests that SDT does make significant separate contributions to psychological distress when compared to attachment variables. Figure 15 depicts Model 11 and the standardized coefficients given for each path.

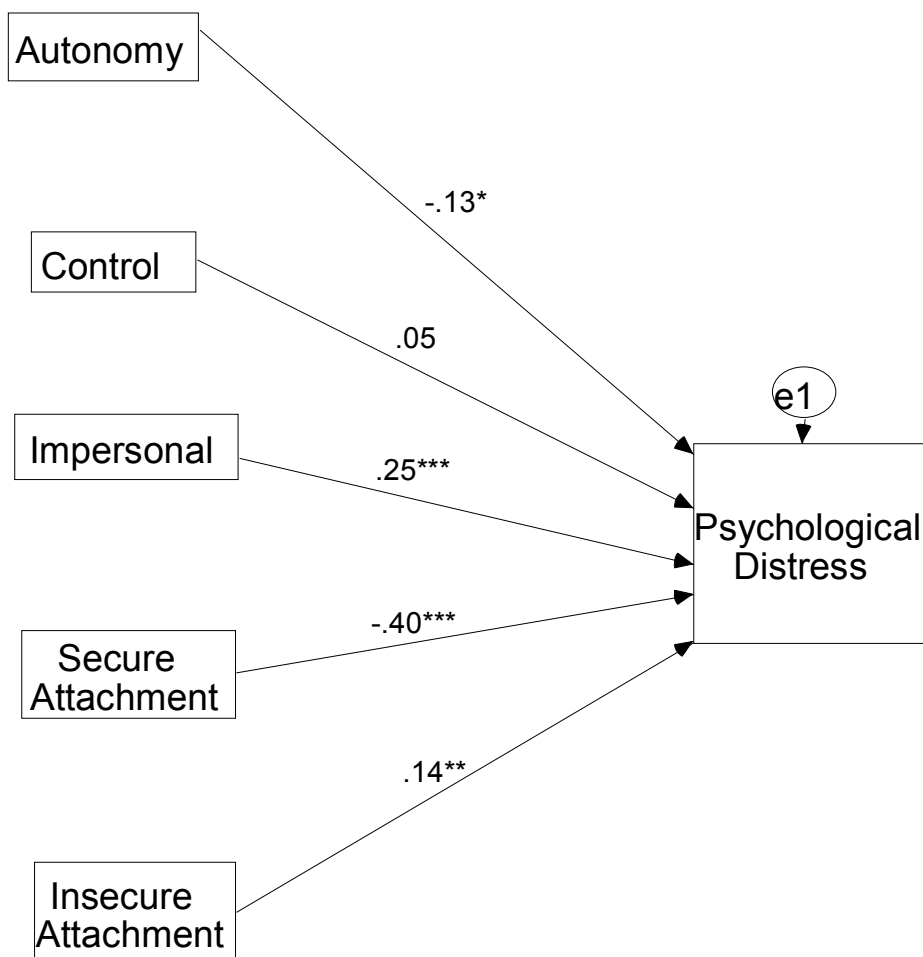


Figure 15. Model 11 hypothesized relations between attachment variables, motivational orientations, and psychological distress.

* $p < .05$, ** $p < .01$, *** $p < .001$

Discussion

The overall aim of this study was to investigate college students' perceptions of their parents' autonomy support and involvement and the ways in which those perceptions predict autonomous, controlled, and impersonal orientations and psychological distress. Recall that, according to SDT (Ryan, Deci & Grolnick, 1995), there are three parenting dimensions that facilitate children's basic psychological needs for autonomy, competence, and relatedness. These critical contextual (i.e., parenting) dimensions are autonomy support, involvement, and

structure. A considerable amount of research has substantiated that these parenting dimensions are essential components in healthy psychological development (Ainsworth et al., 1978; Deci, 1975; Stern, 1985). Ryan et al. hypothesize that if parents facilitate rather than undermine these critical parenting dimensions, then children will develop as psychologically healthy adults. In addition, SDT would also predict that based on these critical parenting dimensions, children will develop an autonomous, controlled, or impersonal orientation representing varying degrees of autonomy (i.e., self-determined behavior), which, in turn, should predict psychological distress or health.

Although these parenting dimensions and the concept of autonomy, as conceptualized by SDT researchers, appear in many theoretical writings related to the development of psychopathology, these variables have received little empirical attention from investigators outside of the SDT group (Ryan et al., 1995). Ryan et al. hypothesize that these relationships exist, but to our knowledge, the present study is the first to empirically evaluate the strength of these relationships. Specifically, the present study had four hypotheses, which were (a) that the non-mediating predictor variables of mother and father autonomy support and involvement would have a direct (negative) relationship with psychological distress; (b) that the mediating variables of autonomous, controlled, and impersonal would have an indirect effect on psychological distress; that is, autonomy would have an indirect (negative) effect, controlled would have an indirect (positive) effect, and impersonal would have an indirect (positive) effect on psychological distress; (c) that a model for mediation, which included the mediating variables of autonomous, controlled, and impersonal orientations, would be a better fit with the theory than a model which did not include SDT mediators; (d) to examine the individual contributions of a model with attachment variables (i.e., secure, insecure) and

SDT variables (autonomy, control, and impersonal). It was hypothesized that secure attachment would have a direct (negative) effect, insecure attachment would have a direct (positive) effect, autonomy would have a direct (negative) effect, control would have a direct (positive) effect, and impersonal would have a direct (positive) effect on psychological distress.

As noted, the first hypothesis of this study was that the predictor variables of mother and father autonomy support and involvement would have a direct (negative) relationship with psychological distress. This hypothesis was based on previous theoretical writings (Ryan, Deci, & Grolnick, 1995) suggesting that parents who are autonomy supportive and involved with their children will foster healthy psychological adjustment in their children. Results from the present study did not yield a good-fitting non-mediational structural model in this respect.

Specifically, the first non-mediational structural model (1), which involved the exogenous predictors of mother autonomy support (MAS), father autonomy support (FAS), mother involvement (MI), and father involvement (FI), was not a good fit because of high intercorrelations among these variables (see Table 2). An additional model (2) that included correlations between all of the exogenous variables was evaluated, but that model was just identified and did not provide extra degrees of freedom required to test the model fit. Likewise, a third model (3), in which MAS, FAS, MI, and FI were all correlated with one another, was also not a good fit to the data.

Despite the fact that no overall structural model of direct effects alone fits the data, mother autonomy support did, in fact, predict psychological distress. In particular, when examining the individual contributions of MAS, FAS, MI, and FI, only MAS had a direct

(negative) effect on psychological distress, which is consistent with prior research on autonomy supportive environments and psychopathology (Hoover & Insel, 1984; Rasmussen & Tsuang, 1986; Shapiro, 1981; Sperry, 2003). Surprisingly, FAS, MI, and FI did not have a direct effect on psychological distress. However, this finding is partially consistent with prior research on parental involvement and psychological well-being (Grolnick & Ryan, 1989). Grolnick and Ryan found that parental involvement was uncorrelated with children's self-regulation and competence; however, MAS showed strong relations with children's self-regulation.

Likewise, Calkins (1997) and Calkins and Johnson (1998) found that mothers' use of autonomy support was associated with children's use of constructive coping in emotion-inducing situations. Conversely, children of mothers who used negative control during free play spent more time orienting to a stimulus that was preferred but forbidden. These children used less self-distraction and were less physiologically regulated during a waiting situation compared to those children of mothers who used less negative control.

Grolnick, Kurowski, McMenemy, Rivkin, and Bridges (1998) also investigated the strategies mothers employ to assist their children in regulating distress. Grolnick et al. found that mothers who took responsibility for regulating their child's distress actually undermined their child's self-regulatory capacities.

In summary, to date, the research conducted with SDT suggests that mothers who are autonomy supportive play an important role in the development of psychology healthy children, which is consistent with the findings of this research project. However, to date, most studies have neglected the role of the father.

Conversely, several researchers have also provided evidence about the effects of both mothers and fathers who are autonomy supportive and involved with their children. For example, Grolnick, Ryan, and Deci (1991) developed and tested a model on how the effects of the parental environment on children's outcomes is mediated by the children's motivations and perceptions. The results suggested that children who perceived their parents as less involved as well as less autonomy supportive also reported less perceived competence and poorer self-regulation. Elmen, Mounst, and Steinberg (1989) found similar results.

In addition, Weiss and Grolnick (1991) examined the relationship between parental autonomy support and involvement and adolescents' internalizing and externalizing symptoms. Parents who were perceived to be both highly involved and autonomy supportive had adolescents who reported very low levels of either internalizing or externalizing symptoms. Most notably, there were significant interactions between perceived parental autonomy support and involvement on internalizing and externalizing symptoms, which suggests that the combination of low autonomy support and high involvement resulted in a high level of symptoms.

In summary, the findings in the SDT literature are equivocal with the findings of this research project, which suggests that additional research is needed to differentiate the relative contribution of mothers' versus fathers' autonomy support and involvement in the development of psychologically healthy children. The literature indicates that most studies look at the contributions of either mothers or parents, but none compare mothers' versus fathers' autonomy support in relationship to the development of psychological health or distress.

To address the complicating issue of high intercorrelations amongst variables (i.e., multicollinearity), several variables were collapsed. As previously stated, a rule of thumb is that multicollinearity may be a problem if a correlation is greater than .90 or several are greater than .70 (Mertler & Vannatta, 2002). Other researchers suggest that multicollinearity may be a problem, particularly in SEM, if a correlation is greater than .80 (Ullman, 2001) or equal to or greater than .85 (Hoyle, 1995).

Specifically, multicollinearity was addressed in this study by collapsing the variables of mother autonomy support with mother involvement ($r^2 = .854$) and father autonomy support with father involvement (FASI; $r^2 = .799$). The four exogenous variables were not collapsed into one variable because the remaining variables were moderately correlated.

The first model (4) that included collapsed variables (i.e., MASI and FASI) was allowed to covary and was just identified, indicating that the model did not provide extra degrees of freedom required to test the fit of the model. Therefore, in the next model (5) evaluated, MASI and FASI were not allowed to covary and, unfortunately, the model did not fit the data. However, despite the lack of a model fit to the data, it was found that both MASI and FASI had a direct (negative) effect on psychological distress.

These results are consistent with previous reports in the literature. Some research conducted on parenting employs a variable essentially equivalent to being non-autonomy supportive, such as Baldwin (1955), who discussed an autocratic style of parenting; Becker (1964), who spoke of restrictive parenting; and Schafer (1959), who described controlling parenting. All of these terms apply to parents who place importance on compliance instead of an autonomous regulatory style. Research has found that children of parents who are high on

these characteristics are obedient, low in social interaction and dominated by peers (Baldwin, 1955), and dysphoric and disaffiliated (Baumrind, 1967).

Likewise, previous research supports the theoretical relationship, as outlined by SDT, between parental autonomy support and involvement. Furthermore, the literature supports that these variables are related to psychological well-being (Achenbach & Edelbrock, 1987; Weis & Grolnick, 1991). For example, Grolnick and Ryan (1989) interviewed mothers and fathers of elementary school students to determine how they interact with their children regarding doing homework and chores. In addition, the children self-reported their regulatory styles and their understanding of their own control over school outcomes. Results suggested that parental control predicted children's poor adjustment and low achievement in the classroom.

In summary, despite the inability to identify an adequately fitting structural model of parental autonomy support and involvement in direct relation to psychological distress, results of the present study suggest that both MASI and FASI negatively predict psychological distress. It is clear that further research is necessary to develop a better understanding and/or structural model of how parental autonomy support and involvement may contribute to psychological distress. However, to permit further examination of the mediating effects of autonomous, controlled, and impersonal orientations, the final direct effects model (i.e., Model 5) was retained for later comparison with the best fitting mediational model.

A second hypothesis of this study was that the mediating variables of autonomous, controlled, and impersonal orientations would have an indirect effect on psychological distress. Once again, this hypothesis was based on theoretical writings (Ryan, Deci, &

Grolnick, 1995), suggesting that parents who are autonomy supportive and involved with their children will facilitate an autonomous regulatory style and healthy psychological adjustment in their children. Conversely, parents who are controlling and/or impersonal and not involved and/or over-involved with their children will undermine healthy psychological development.

To determine if an autonomous, controlled, or impersonal orientation significantly predicted psychological distress and, therefore, could be retained in the search for a best-fitting model, several models (6, 7, and 8) were examined. The collapsed variables (i.e., MASI & FASI) were retained in these analyses because of the issue of multicollinearity. It was found that each of these orientations, when entered into a model alone, significantly predicted psychological distress. Therefore, these orientations were retained in the search for a best-fitting model.

The first model examined in the search for a best fitting model (9) was developed to test the mediating effects of an autonomous, controlled, or impersonal orientation. This model was not a good fit to the data. However, it was found that MASI and FASI had direct (positive) effects on an autonomous orientation, whereas MASI and FASI had direct (negative) effects on controlled and impersonal orientations. Furthermore, MASI and FASI had direct (negative) effects on psychological distress. Finally, model testing revealed that MASI and FASI had direct (negative) effects on an impersonal orientation, which in turn had an indirect (positive) effect on psychological distress. Surprisingly, an autonomous or controlled orientation did not mediate the relationship to psychological distress as hypothesized and theoretically proposed. It is possible that the lack of support for path

models examining motivational orientations was due to inadequacies with how this construct is assessed, and this possibility will be discussed in the limitations section.

Based on the results of Model 9, a subsequent model (i.e., Model 10) was evaluated, which excluded the non-significant paths from autonomous and controlled orientations to psychological distress. In addition, based on modification indices, error variances were allowed to correlate between autonomous, controlled, and impersonal orientations. Allowing error variances to correlate implies that measurement error (i.e., random measurement error and error uniqueness) associated with an autonomous and controlled orientation is correlated with that associated with an impersonal orientation. These modest changes resulted in a model that was a good fit to the data with the same significant direct and indirect paths noted above for the previous model (9).

The results of the second aim of this study are partially consistent with theory (Ryan, Deci, & Grolnick, 1995) and prior research. First, the relationship between parental autonomy support and involvement and autonomous, controlled, and impersonal orientations are consistent with theory and previous research. The final best-fitting model (i.e., Model 10) supports the proposed theoretical relationships by Ryan, Deci, and Grolnick (1995).

In addition, previous research is consistent with my findings, thereby providing additional support for the observed relationships between parental autonomy support and involvement with autonomous, controlled, and impersonal orientations (Ryan & Lynch, 1989). For example, using a sample of teenagers and their mothers, Kasser, Ryan, Zax, and Sameeroff (1995) evaluated the developmental antecedents of extrinsic versus intrinsic aspirations of wealth. The adolescents' self-reported perceptions of the degree to which their mothers were autonomy supportive were collected, as well as the mothers' self-reports on

this same variable. These researchers found that when mothers were low on autonomy support, based on adolescents' self-reports, those adolescents placed significantly higher importance on the extrinsic aspiration for wealth. In summary, this suggests that parenting environments that thwart children's need satisfaction may facilitate the development of extrinsic aspirations.

Second, the relationships observed between parental autonomy support and involvement, autonomous, controlled, and impersonal orientations and psychological distress are partially consistent with theory and research. According to SDT, it was expected that autonomous, controlled, and impersonal orientations would mediate the relationship from parental autonomy support and involvement and predict psychological distress. Surprisingly, autonomous and controlled orientations did not mediate the relationship between PASI and psychological distress as hypothesized and theoretically proposed. However, although not statistically significant, the direction of the relationship from an autonomous orientation to psychological distress was negative, which is in line with the theoretical conceptualization of the relationship to psychological distress. Likewise, although not statistically significant, the direction of the relationship from a controlled orientation to psychological distress was negative. However, this relationship is contrary to theory. Theoretically, the relationship from a controlled orientation to psychological distress should have been positive. However, an impersonal orientation did mediate the relationship from MASI and FASI to psychological distress. Therefore, the results of the data partially agree with their theoretical propositions.

This is a relatively new area of research, and to this researchers' knowledge, there is no research linking parental autonomy support and involvement with motivational mediators and psychological distress. However, there is research that links degrees of autonomy (i.e.,

motivational orientations) and general well-being. For example, Blais, Sabourin, Boucher, and Vallerand (1990) assessed adults' self-reported perceptions for maintaining their primary relationship. Their results suggested that non-self-determination (i.e., amotivation, external, and introjected regulatory styles) all correlated significantly and negatively with general marital satisfaction and dyadic adjustment. Conversely, the regulatory styles of identification, integration, and intrinsic, which constitute greater autonomy, all correlated positively with general marital satisfaction and dyadic adjustment.

In summary, a structural model of parental autonomy support and involvement and motivational orientations in relation to psychological distress was found that adequately fit the data. These findings suggest that when parents are not autonomy supportive and involved, which is necessary for forming attachments that support the development of self-regulation in all of its forms (i.e., intrinsic, internalization, integrated emotional regulation), then an impersonal orientation (i.e., non-autonomous behavior and/or relative lack of action) develops, which is the driving force behind psychological distress. In other words, in the case of an impersonal orientation, the perceived locus of causality for behavior lies outside the self. Likewise, with a controlled orientation, the perceived locus of causality for behavior lies outside the self, so there are also compromised volitional processes, but, in the present study, no significant direct relationships were found between control and psychological distress. As such, results imply that when there is intentional behavior, whether autonomous (i.e., individual engages in an activity for its inherent satisfaction) or controlled (i.e., individual engages in an activity to attain some separable outcome), there is no direct relationship to psychopathology. Therefore, the main contributor to psychological distress

appears to be non-autonomous behavior (i.e., amotivation) characterized by hopelessness and/or feelings of incompetence.

This form of disturbed autonomy (i.e., amotivation), according to Ryan, Deci, and Grolnick (1995), begins with individuals' introjecting the demands of authority figures and basing their self-worth on living up to those demands. They suggest that over time; individuals feel unloved, hopeless, and incompetent as a result of their interactions with significant others in their social world. Therefore, it is reasonable to assume that there could be a number of pathologies characterized by hopelessness and/or feelings of incompetence (i.e., amotivation) such as depression and schizoid personality disorder.

Research on depression and its etiology has pointed toward the loss of relatedness, love, or attachment (Beck, 1983; Blatt & Homann, 1992; Nietzel & Harris, 1990), which involves the issue of autonomy. Depression involves a type of disturbed autonomy in which one experiences lethargy, feelings of hopelessness and worthlessness, and fatigue, possibly resulting from the belief that one is a failure. According to Ryan, Deci, and Grolnick (1995), in a self-critical form of depression, rigid standards or ideals are introjected, along with the belief that failing to attain rigid standards or ideals means that one is unlovable and unworthy. Thus, the relative absence of feeling that one is competent to attain internalized goals results in a sense of amotivation (Deci & Ryan, 1985b) or personal helplessness (Abramson, Seligman, & Teasdale, 1978).

In addition, it is reasonable to assume that schizoid personality disorder could also involve a type of disturbed autonomy, which is characterized by a number of symptoms such as not enjoying close relationships, taking no pleasure in activities, lacking close friends, and choosing solitary activities. Research on schizoid personality disorder and its etiology has

also pointed towards a disturbance of autonomy (Berg, Packer, Nunno, 1993; Laing, 1990). For example, Laing (1990) postulates that individuals with schizoid personality disorder experience a split between themselves and others who are viewed as being potentially dangerous to one's autonomy. This is just one of several theories regarding schizoid personality disorder, but their commonality is that a disturbance of autonomy is a critical component.

Also, based on these findings, it is reasonable to assume that the relationship between psychological distress and SDT variables (i.e., autonomous, controlled, and impersonal) is really a dichotomy or a different combination of regulatory styles. That is, there may be a different autonomy continuum, instead of the one proposed by Deci & Ryan (1985b; see Figure 5), which was intended to descriptively organize types of behavior regulation with respect to the concept of self-determination (Deci & Ryan, 1991). Recall that Deci and Ryan (1985b) delineated different regulatory styles (i.e., intrinsic, integrated, identified, introjected, external, and non-regulation), which are subtypes of motivation, and they represent the relative autonomy of one's regulation (i.e., autonomous, controlled, and impersonal) for a behavior or class of behaviors. However, based on these findings, it is possible that there are essentially two variables (i.e., motivated and amotivated) instead of a continuum of variables (i.e., externally, intrinsically, and amotivated) with specific regulatory styles. One variable might represent a relative lack of action or non-regulation (i.e., impersonal), and another variable would represent relative action or intrinsic (i.e., autonomous), integrated, identified, introjected, and external (i.e., controlled) regulatory styles. This dichotomy would be similar to the majority of motivational theories that contrast motivation with amotivation but treat motivation as a unitary concept (e.g., Bandura, 1989;

Seligman, 1991). In summary, one would be motivated or not motivated to partake in particular activities or behaviors. For example, according to Rotter (1966), one would expect to find intentional behavior in cases of internal locus of control (i.e., extrinsic and intrinsic motivation) and a lack of intentionality (i.e., amotivation) in cases of an external locus of control.

Likewise, the autonomy continuum might be composed of discrete regulatory styles. For example, one might be the impersonal style, characterized by a relative lack of action or non-regulation (i.e., amotivation). A second might be characterized by relative action when one is intrinsically or somewhat intrinsically motivated (i.e., intrinsic, integrated, and identified regulatory styles). Finally, a third might represent relative action when one is externally motivated (i.e., external and introjected).

Therefore, it is possible that the lack of significant findings in path models examining motivational orientations and parents' autonomy support and involvement were due to inadequacies in measurement or with how this theory is conceptualized (i.e., the autonomy continuum). Although not the focus of this research project, future projects should examine the validity of SDT theoretical constructs (i.e., the autonomy continuum). In addition, future research should utilize multiple methods and modes of assessment when assessing constructs, such as motivational orientations, which is discussed in the limitations section.

Finally, it is clear that further research is necessary to develop a better understanding and/or structural model of how parental autonomy support and involvement may predict psychological distress, and how autonomous, controlled, or impersonal orientations may or may not mediate these relationships to psychological distress.

The third aim of this study was to examine whether the final mediational structural model (i.e., Model 10) fit the data better than the final non-mediational structural model (i.e., Model 5). In the first hypothesis, no non-mediating structural model was found that adequately fit the data. Therefore, it is reasonable to assume that the mediational structural model fits the data better than the non-mediational model. The mediational model (i.e., Model 10) demonstrated that MASI and FASI had direct (negative) effects on psychological distress, and an impersonal orientation had an indirect (positive) effect on psychological distress. This suggests that there are mediators -- specifically having an impersonal regulatory style -- that add to our knowledge regarding the relationship to psychological distress, which partially supports Ryan, Deci, and Grolnick's (1995) theoretical proposition. However, indirect relationships with psychological distress were not found with an autonomous and controlled orientation, which suggests that additional research is needed to disentangle these relationships. Once again, a relative lack of action seems to be the significant predictor of psychological distress, whereas intentional behavior whether guided by autonomous or controlled orientations does not predict psychological distress. As previously suggested, future projects should examine the validity of SDT theoretical constructs (i.e., the autonomy continuum). In addition, future research should utilize multiple methods and modes of assessment when assessing constructs, such as motivational orientations, which is discussed in the limitations section.

The fourth aim of the present study was to examine a structural model of attachment variables (i.e., secure and insecure attachment) and SDT variables (i.e., autonomy, control, and impersonal regulatory styles) in relation to psychological distress to determine which variables contributed the most in the prediction of psychological distress. It was originally

proposed that stepwise regression analyses would be conducted. However, to minimize the impact of multicollinearity, a structural model (i.e., Model 11) was developed (see Figure 15), which included attachment and SDT variables. Secure attachment was the strongest significant predictor with a direct (positive) effect on psychological distress, followed by an impersonal orientation with a direct (negative) effect on psychological distress, insecure attachment with a direct (negative) effect on psychological distress, and, finally, an autonomous orientation with a direct (positive) effect on psychological distress. Surprisingly, a controlled orientation was not a significant predictor of psychological distress. However, the results were in the anticipated (positive) direction.

These results are consistent with previous reports in the attachment literature and partially consistent with the SDT literature. The literature on attachment styles strongly attests to the importance of secure attachments for psychological well-being and interpersonal functioning. Studies have shown that individuals who are securely attached displayed less emotional distress and negative affect (Simpson, 1990). With respect to interpersonal functioning, the literature demonstrates that people who report more secure attachments have relationships characterized by more positive affect (Simpson, 1990) and more willingness to seek support when needed (Butzel & Ryan, 1997; Florian, Mikulincer, & Bucholtz, 1995). In addition, a number of retrospective studies on attachment styles indicate that persons with depression describe their parents as having been more unsupportive and rejecting (i.e., insecure attachment) than individuals without diagnosed psychiatric disorders (e.g., Raskin, Boothe, Reatig, Schulterbrandt, & Odel, 1971).

Likewise, the literature on SDT indicates that an autonomous, controlled, or impersonal orientation affects one's psychological well-being. A number of studies on self-

regulation have been conducted in a number of domains such as health care (Ryan, Plant, & O'Malley, 1995), aging (Kasser & Ryan, 1999), education (Grolnick, Ryan, & Deci, 1991), and relationships (Deci & Vansteenkiste, 2004). Across these multiple domains, findings have indicated consistently that the less autonomous one's motivations, the less positive one's adjustment and well-being.

In summary, results of the present study demonstrate that both attachment variables and SDT variables make independent contributions to our understanding of their relationships with psychological distress.

Taken together, results suggest that SDT may have important implications for understanding the development of psychological distress. To my knowledge, the present study is the first to provide partial support for Ryan, Deci, and Grolnick's (1995) hypothesis that when parents facilitate, rather than undermine, the critical parenting dimensions of autonomy support and involvement, then children will develop as psychologically healthy adults. Specifically, support was provided for Ryan, Deci, and Grolnick's (1995) hypothesis that based on these critical parenting dimensions, children will develop differential motivational orientations (i.e., autonomy, controlled, impersonal) that represent varying degrees of autonomy (i.e., self-determined behavior). However, the data suggest that only an impersonal orientation predicts psychological distress. Based on these findings, additional research will be needed to replicate these findings and/or disentangle the relationships of motivational orientations to psychological distress.

Additional relationships, besides parental contributions, and the examination of negative and/or positive life events on psychological distress may help researchers disentangle the relationship between motivational orientations to psychological distress. For

example, it is reasonable to assume that one's current relationships may be a contributing factor between motivational orientations and psychological distress. Therefore, research should be conducted to ascertain if one's current relationships (i.e., significant others, friends) and the support they confer might have direct effects on one's current motivational orientation and reported psychological distress.

In addition, future research should examine the effect of positive and/or negative life events in relationship to motivational orientations and psychological distress. Attachment researchers have found that one's attachments may change over time based on significant negative and/or positive life events (Lewis et al., 1997; Waters et al., 2000). Therefore, it is possible that one's motivational orientation may change over time based on significant negative and/or positive life events, which may have accounted for our failure to detect direct effects of autonomy and control on psychological distress.

Ryan, Deci, and Grolnick (1995) suggest that autonomy supportive and involved parents facilitate healthy psychological development, and the results of this study partially support their hypothesis. Additional research on parent training programs to help parents communicate and provide autonomy support and involvement to their children might indicate that such efforts could confer some protection from psychological distress for these children. Although an autonomous and controlled orientation was not found to have a direct path to psychological distress, an impersonal orientation was found to be strongly related to psychological distress. Having an impersonal orientation represents the least autonomous form of regulating one's behavior (e.g., feeling as if one has no control and/or is incompetent); a controlled orientation represents regulating one's behavior based on external rewards (e.g., ego involvement, external rewards and punishments). Conversely, having an

autonomous orientation represents the most autonomous form of regulating one's behavior (e.g., interest, enjoyment, inherent satisfaction). Therefore, based on the Self-determination continuum, it is reasonable to assume that autonomy supportive environments could serve as a protective factor from psychological distress, if the least autonomous orientation resulted in participants' self-reported psychological distress.

However, in order to disentangle these relationships, additional research should be conducted to ascertain if parent training programs designed to facilitate parental autonomy support and involvement might protect children from later psychological distress and/or psychopathology. Research has shown that parents who are autonomy supportive and involved do facilitate psychological well-being (Sheldon et al., 2004; Williams, Cox, Hedberg, Deci, 2000), but longitudinal data and information from such types of clinical trials will be needed to further substantiate Ryan, Deci, and Grolnick's (1995) contention.

The efficacy as well as effectiveness of SDT-guided interventions is not yet empirically supported, but it is reasonable to hypothesize that SDT may be able to contribute to the treatment of psychologically distressed populations by facilitating a less impersonal orientation. The General Causality Orientation Scale (GCOS) is a brief and easily administered measure that could be utilized when clients present for treatment to ascertain if their general causality orientation is more autonomous (i.e., self-determined), controlled, or impersonal. If clients are found to have an impersonal orientation, then psychological intervention techniques utilizing Deci and Ryan's SDT (1985b) as a guide could be implemented. This could be accomplished by a clinician promoting increased feelings of the client's competence (interacting effectively with one's environment), autonomy (feeling free to choose one's own behavior), and relatedness (feeling meaningfully connected to others)

towards goal attainment. Several SDT researchers have discussed in theory how SDT principles can be applied in the context of an empirically supported treatment program to promote client motivation as well as treatment compliance (Joiner, Sheldon, Williams, & Pettit, 2003). However, the efficacy and effectiveness of SDT guided interventions is yet to be researched.

Recently, a limited but encouraging body of research has emerged in support of this hypothesis. Simoneau and Bergeron (2003) found that treatment that incorporates SDT concepts may have efficacy. In particular, results suggested that perceived competence and autonomy--as well as clinical attention to the progression toward goal attainment--predict increased motivation for treatment.

Likewise, Foote et al. (1999) evaluated the impact of addressing SDT constructs within a General Motivational Intervention (GMI) for chemical dependency. The GMI program involved a brief 4-session group motivational treatment that encompassed social norms education, relapse prevention, challenging cognitive expectations, and generation of behavioral goals. Foote et al. found that strategies designed to promote autonomy, competence, and relatedness, which increased motivation for treatment, resulted in participants' perceiving the GMI environment, as well as the group leader, as significantly more autonomy supportive than usual treatment. Unfortunately, Foote et al. did not collect data on the implications of using components of SDT on treatment outcome. Therefore, future studies should examine the utility of using SDT components on treatment outcome.

In addition, Bellg (2003) developed the health behavior internalization model (HBIM), which utilizes a combination of SDT, motivational interviewing, and transtheoretical model interventions. Motivational interviewing is a client-centered counseling style for eliciting

behavior change by helping clients to explore and resolve ambivalence, whereas the Transtheoretical Model (Prochaska, DiClemente, & Norcross, 1992) is an integrative model of behavior change where interventions are matched to the clients stage of change. Bellg conducted a case study of a 266-pound, 39-year-old woman diagnosed with heart failure. After participating in a program that incorporated the aforementioned interventions, the client maintained a stable weight of 224 pounds for almost two years; her heart condition was still present but under control at the three-year follow-up. In sum, this study indicates that the HBIM model may have utility in the maintenance of behavior change and internalization/self-regulation of new, healthy behaviors. However, this is one case study, and additional research is needed to disentangle the contribution of the components of SDT to promote client motivation to change beyond those elements already captured in the TTM/MI strategies.

An empirically supported treatment that does at least indirectly incorporate SDT components is motivational interviewing (MI), developed by Miller and Rollnick (2002). Miller and Rollnick define motivational interviewing as a directive method that is client-centered and focused on enhancing intrinsic motivation to change by exploring and resolving ambivalence. Motivational interviewing focuses on collaboration (a partnership between therapist and patient that honors the client's expertise and perspectives), which is comparable to SDT's relatedness (feeling meaningfully connected to others). In addition, MI focuses on supporting self-efficacy (the individual's belief in the possibility of change as an important motivator), which is somewhat comparable to SDT's competence (interacting effectively with one's environment as a motivator). That is, both MI and SDT are in agreement that an individual must believe in the possibility of change and in his/her ability to carry out the

necessary steps for change to occur in order to interact effectively with his/her environment. Finally, both MI and SDT promote autonomy (feeling free to choose one's own behavior).

However, SDT is different from MI with respect to how autonomy translates into motivation for change. SDT asserts that motivation for change occurs by the therapist being autonomy supportive, promoting their competence, and developing a therapeutic alliance with the client through relatedness. Conversely, according to MI, motivation for change occurs by the therapist emphasizing the client's personal choice, including but not limited to such means as educating clients, listening with empathy, affirming the client, and by breaking down the client's resistance. In summary, the similarities and difference between these theories indicate that the components of SDT may serve as an effective tool to enhance client motivation for change.

Taken together, the literature suggests that Deci and Ryan's SDT (1985b) may be an effective clinical intervention tool. As the results of this study have demonstrated, non-autonomy supportive environments or having an impersonal orientation are detrimental to one's psychological health. Therefore, additional research needs to be conducted on the efficacy and effectiveness of SDT components as an intervention tool, and in promoting a client's motivation to change.

Despite the intriguing implications of the present findings, it is important to acknowledge several study limitations. First, the complicating issue of multicollinearity calls into question the validity of the results and the validity of the POPS questionnaire.

Multicollinearity is when two or more predictor (i.e., independent) variables in a sample are highly related to each other. When using path analysis, this can lead to incorrect estimates of their individual effects on the outcome (i.e., dependent) variable (Asher, 1983).

That is, high correlations among predictor variables can result in larger standard errors of the estimated regression coefficients. According to Asher, this means that if we were to select another sample from the same population and re-estimate the equation, the new estimates might be different. Multicollinearity makes it difficult to make causal inferences because the path estimates can differ from one sample to another. Therefore, to address the problem of multicollinearity, the predictor variables of mother autonomy support and mother involvement were collapsed into one variable, and father autonomy support and father involvement were collapsed into a second variable.

In addition, the high correlations between MAS with MI and FAS with FI calls into question the validity of the POPS questionnaire. Although not the focus of this research project, researchers outside of the SDT research lab are encouraged to examine the factor structure of the POPS questionnaire. To this researcher's knowledge, to date, only SDT researchers (e.g., Grolnick, Ryan, & Deci, 1991; Robbins, 1994) have developed and used the POPS.

Second, it is possible that the lack of significant findings in path models examining motivational orientations and parents' autonomy support and involvement were due to inadequacies with how these constructs are assessed. It may be particularly difficult to assess and quantify an individual's sense of his/her motivational orientation and perceptions of his/her parents as autonomy supportive and involved. However, the Cronbach's alpha values for the three subscales of the General Causality Orientation questionnaire (GCOS), as well as the two subscales of the Perception of Parents Scale (POPS), were quite strong. This suggests each subscale, within these questionnaires, assesses a single well-defined construct.

In addition, the lack of significant findings in path models examining motivational orientations and parents' autonomy support and involvement may be due to how this theory is conceptualized (i.e., the autonomy continuum). As previously discussed, the autonomy continuum might be a different autonomy continuum instead of the one proposed by Deci and Ryan (1985b; see Figure 5), a dichotomy, or composed of discrete regulatory styles.

Another potential reason for the lack of significance might be that the current study utilized one brief self-report measure to obtain data pertaining to motivational orientations. Using multiple methods and modes of assessment is ideal when assessing constructs, such as motivational orientations. For example, additional measures that assess one's motivational orientation may be used in conjunction with the GCOS. Interviews may also serve as a valuable complement to self-report measures.

A third limitation of the present study is that its cross-sectional design does not truly permit casual inference. Thus, the results are consistent with but do not confirm the hypotheses that when parents are autonomy supportive and involved, their children will be less likely to suffer from psychological distress. Also, the results are consistent with but do not confirm the hypothesis that if parents are autonomy supportive and involved with their children they will be less likely to be impersonally motivated and less likely to suffer from psychological distress. Therefore, this study should be considered an initial inquiry into multiple pathways for parental autonomy support and involvement, motivational orientations, and psychological distress in a path model. This study utilized a single point of data collection and has no data pertaining to levels of perceptions of parental autonomy support and involvement over time, motivational orientations over time, and psychological distress over time.

Developmental researchers have examined childhood attachment variables and later psychopathology, and the literature suggests that there is a relationship between attachment styles in childhood and the risk for psychopathology or psychological resilience in adulthood. For example, Chambless et al. (1996) found that most individuals with anxiety disorders described their parental caregivers as unloving and controlling. Researchers with longitudinal data who are able to examine SDT constructs are encouraged to see whether the structural models obtained in this study remain consistent with findings from repeated measures data. In addition, developmental researchers may wish to examine whether such relationships have a particular critical point during childhood or adolescence.

A fourth limitation is that this study relied on the subjective perceptions of college students as to their parents' autonomy support and involvement. Obviously, such perceptions may be prone to distortions. For example, students' perceptions of their parents may be subject to change based on their current mood (Fiedler, Nickel, Muehlfriedel, & Unkelbach, 2001). However, since mood data was not collected, inferences about the impact of this potentially confounding variable cannot be made. In addition, a student's perceptions of parental autonomy support and involvement could be distorted by the student's current and/or past psychological distress and/or psychopathology.

For example, research has shown that people who are currently depressed recall their parents as rejecting, punitive, and guilt-promoting; conversely, people who were depressed describe their parents much as those who have never suffered depression (Lewinshon & Rosenbaum, 1987). In addition, research has shown that adolescents' self-report of parental warmth will give little clue to how the same adolescents will rate their parents six weeks later (Bornstein, 1991). Therefore, in future research, longitudinal data on psychological

variables (i.e., mood) and their impact on SDT constructs should be collected in order to understand the impact of SDT constructs on psychological distress and/or psychopathology.

A fifth limitation relates to the possibility that the observed relationships may be, at least in part, a function of method variance. Although college students' perceptions of their parents are important antecedents of their behavior, it would be preferable in future tests of the models to use multiple sources of evaluations (i.e., multiple reporters and behavioral observations) to avoid the common problem of shared method variance. However, self-report questionnaires are common practice for examining college students' perceptions of parents and are considered to be valid (Calhoun et al., 2000; Frier, Bell, & Ellickson, 1991).

Sixth, this research project involved participants from one campus in the Midwest, characterized by an undergraduate population in 2005 of 19,000, 70% white, 16% African American, and 14% other. The majority of students, 85%, are Michigan residents, with only 4% belonging to a fraternity or sorority, and 70% of students are employed part-time. In addition, the student body is believed to be largely from blue-collar families, which may account for the relevance of MAS versus FAS. Family income for EMU freshmen, in 2004, showed 60 percent reporting family income at \$75,000 or less. It is important to replicate this research with participants of different ages, cultures, and incomes. At present, findings are limited both in terms of the age range covered and the cultural and socioeconomic contexts considered.

In addition, 92% of the participants were in the age range of 18-24, which is the age of a typical college student. However, 4% of the participants were in the age range of 25-30 and another 4% were in the age range of 31 to 44. Therefore, it may be the case that the 8% of participants outside of the normal college age may have distorted perceptions of their

parents' autonomy support and involvement. However, when these participants were excluded in the search for a best-fitting non-mediational and mediational model, the directionality of relationships and significance of paths did not change. In other words, if the participants outside of normal college age were excluded, the same models (i.e., Models 5, 10) would have been retained.

Despite some limitations, the present study makes a unique and meaningful contribution toward an understanding of the relationship between parental autonomy support and involvement and motivational orientations and psychological distress. Results of the present study are partially consistent with proposed theoretical relationships (Ryan, Deci, and Grolnick, 1995) between parental autonomy support and involvement, motivational orientations, and psychological distress. The present study, to this researcher's knowledge, is the first to assess these purported theoretical relationships.

Consistent with SDT, results revealed that parents who are perceived by their adult children to be autonomy supportive and involved may yield adults who regulate their behavior by utilizing the autonomous orientation. Conversely, parents who are perceived by their adult children to be less autonomy supportive and involved results in adults who regulate their behavior by utilizing a controlled and/or an impersonal orientation. In addition, parents who are perceived to be less autonomy supportive and involved by their adult children results in more self-reported psychological distress. Finally, an impersonal orientation mediated the relationship from parental autonomy support and involvement to psychological distress. These results suggest that college students who possess an impersonal orientation or who had parents whom they did not perceive to be autonomy supportive and involved may be more vulnerable to psychological distress.

Based on these findings, future studies, specifically longitudinal ones, should examine the relationships of SDT constructs and psychological distress and/or psychopathology over time. In addition, future studies examining the effect of negative and positive life events as well as current relationships on one's current motivational orientation and psychological distress are also needed. Understanding how motivational orientation and other related factors may contribute to psychological distress may provide an opportunity for SDT-guided interventions to be developed to assist individuals to adhere to treatment and increase motivation for treatment. It is clear that this research is necessary to fully understand the contributions of components of SDT to psychological distress and/or psychopathology and as an intervention tool.

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APPENDICES

APPENDIX A: Demographic/Background Questionnaire

APPENDIX B: Perceptions of Parents Questionnaire

APPENDIX C: General Causality Orientations Questionnaire

APPENDIX D: Adult Attachment Questionnaire

Appendix A
Demographic/Background Questionnaire

Your age: _____ years

Your sex: Male Female

If male, are you a member of a fraternity? No Yes

If female, are you a member of a sorority? No Yes

Are you a commuter? No Yes

If YES, how far from EMU do you live? _____ miles

Some people identify themselves as belonging to one or more racial or ethnic groups. Please check the box(es) below which correspond to group(s) you belong to:

White or Caucasian

Black or African-American

Hispanic or Latino

American Native

Alaskan Native

Asian

Pacific Islander

Do you consider yourself to be of any other race or ethnic group?

If so, what is it? _____

Number of years of college completed: _____ years (at EMU or elsewhere)

Did you complete any college coursework prior to coming to EMU (including during high school)?

No Yes

Marital status: (Check One Answer)

Married

Single

Divorced

Remarried

Widowed

Separated

Living with partner

Same Sex _____ Opposite Sex _____

Usual employment pattern: (Check One Answer)

Full Time (>35 hrs/wk)

Part Time (Regular hours)

Part Time (Irregular hours)

Unemployed, full time student

Unemployed, part time student

Retired/Disability

Military Service

Do you: (Check One Answer)

- live in a dorm?
 Or commute?
 live within walking distance of classes?

Annual household income of family of origin: (Check One Answer)

- \geq \$150,000
 \$100,000-\$149,000
 \$75,000-\$99,000
 \$50,000-\$74,000
 \$25,000-\$49,000
 \$10,000-\$24,000
 \leq \$9,000
 Don't know, or prefer not to say

How would you describe the **economic situation** of your family as you were growing up?
 (Check One Answer)

- We had barely enough to get by _____
 We had enough to get by, but no more _____
 We were solidly middle class _____
 We had plenty of "extras" _____
 We had plenty of "luxuries" _____
 Don't know/unsure/prefer not to say _____

Some of the following questions ask about how much you drink. A "drink" means any of the following:

A 12-ounce can or bottle of beer

A 4-ounce glass of wine

A 12-ounce bottle or can of wine cooler

A shot of liquor straight or in a mixed drink

On **how many occasions** have you had alcoholic beverages to drink?

- a) in your lifetime? _____
 b) during the last 12 months? _____
 c) during the last 30 days? _____

In the **past 30 days**, when you drank alcohol, how many drinks per occasion did you usually have? (Choose one answer.)

1 drinks ___, 2 drinks ___, 3 drinks ___, 4 drinks ___, 5 drinks ___,

6 drinks ___, 7 drinks ___, 8 drinks ___, 9 or more drinks _____

MALES:

Think back over the **LAST Thirty Days**.

How many times have you had **5** or more drinks in a row? (A "drink" is a 4 oz. glass of wine, a 12-oz. bottle of beer, a wine cooler, a shot glass of liquor, or a mixed drink.) _____
times

FEMALES:

Think back over the **LAST Thirty Days**.

How many times have you had **4** or more drinks in a row? (A "drink" is a 4 oz. glass of wine, a 12-oz. bottle of beer, a wine cooler, a shot glass of liquor, or a mixed drink.) _____
times

Appendix B

Perceptions of Parents Questionnaire

Directions: Please answer the following questions about your mother and your father. If you do not have any contact with one of your parents (for example, your father), but there is another adult of the same gender living with your house (for example, a stepfather) then please answer the questions about that other adult.

If you have no contact with one of your parents, and there is not another adult of that same gender with whom you live, then leave the questions about that parent blank.

Please use the following scale: From 1 = not at all true; to 4 = somewhat true; to 7 = very true.

First, questions about your mother.	Not at all true			Somewhat true			Very True
1) My mother seems to know how I feel about things.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
2) My mother tries to tell me how to run my life.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
3) My mother finds time to talk with me.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
4) My mother accepts me and likes me as I am.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
5) My mother, whenever possible, allows me to choose what to do.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
6) My mother doesn't seem to think of me often.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
7) My mother clearly conveys her love for me.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
8) My mother listens to my opinion or perspective when I've got a problem.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
9) My mother spends a lot of time with me.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
10) My mother makes me feel very special.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
11) My mother allows me to decide things for myself.	[1]	[2]	[3]	[4]	[5]	[6]	[7]

Questions about your mother continued	Not at all true			Somewhat true			Very True
12) My mother often seems too busy to attend to me.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
13) My mother is often disapproving and unaccepting of me	[1]	[2]	[3]	[4]	[5]	[6]	[7]
14) My mother insists upon doing things her way.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
15) My mother is not very involved with my concerns.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
16) My mother is typically happy to see me.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
17) My mother is usually willing to consider things from my point of view.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
18) My mother puts time and energy into helping me.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
19) My mother helps me to choose my own direction.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
20) My mother seems to be disappointed in me a lot.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
21) My mother isn't very sensitive to many of my needs.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
22) My mother has rules, expectations, and guidelines regarding my behavior in the home, at school and in the community.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
23) If I do not follow my mothers rules, expectations, and guidelines then I have consequences for my behavior	[1]	[2]	[3]	[4]	[5]	[6]	[7]
24) My mother is consistent with the rules expectations, and guidelines that are set for me in the home, school and community.	[1]	[2]	[3]	[4]	[5]	[6]	[7]

Now answer questions about your FATHER							
25) My father seems to know how I feel about things.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
26) My father tries to tell me how to run my life	[1]	[2]	[3]	[4]	[5]	[6]	[7]
27) My father finds time to talk with me.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
28) My father accepts me and likes me as I was.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
29) My father, whenever possible, allows me to choose what to do.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
30) My father doesn't seem to think of me often.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
31) My father clearly conveys his love for me.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
32) My father listens to my opinion or perspective when I've got a problem.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
33) My father spends a lot of time with me.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
34) My father makes me feel very special.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
35) My father allows me to decide things for myself.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
36) My father often seems too busy to attend to me.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
37) My father is often disapproving and unaccepting of me	[1]	[2]	[3]	[4]	[5]	[6]	[7]
38) My father insists upon doing things his way.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
39) My father is not very involved with my concerns.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
40) My father is typically happy to see me.	[1]	[2]	[3]	[4]	[5]	[6]	[7]

Questions about your father continued	Not at all true			Somewhat true			Very True
41) My father is usually willing to consider things from my point of view.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
42) My father puts time and energy into helping me.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
43) My father helps me to choose my own direction.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
44) My father seems to be disappointed in me a lot.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
45) My father isn't very sensitive to many of my needs.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
46) My father has rules, expectations and guidelines regarding my behavior in the home, at school and in the community.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
47) If I do not follow my father's rules, expectations, and guidelines then I have consequences for my behavior.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
48) My father is consistent with the rules, expectations, and guidelines that are set for me in the home, school, and community.	[1]	[2]	[3]	[4]	[5]	[6]	[7]

Appendix C

General Causality Orientations Questionnaire

These items pertain to a series of hypothetical sketches. Each sketch describes an incident and lists three ways of responding to it. Please read each sketch, imagine yourself in that situation, and then consider each of the possible responses. Think of each response option in terms of how likely it is that you would respond that way. (We all respond in a variety of ways to situations, and probably most or all responses are at least slightly likely for you.) If it is very unlikely that you would respond the way described in a given response, you should circle answer 1 or 2. If it is moderately likely, you would select a number in the mid range, and if it is very likely that you would respond as described, you would circle answer 6 or 7.

1. You have been offered a new position in a company where you have worked for some time. The first question that is likely to come to mind is:

- a) What if I can't live up to the new responsibility?
 1 2 3 4 5 6 7
 very unlikely moderately likely very likely
- b) Will I make more at this position?
 1 2 3 4 5 6 7
 very unlikely moderately likely very likely
- c) I wonder if the new work will be interesting.
 1 2 3 4 5 6 7
 very unlikely moderately likely very likely

2. You have a school-age daughter. On parents' night the teacher tells you that your daughter is doing poorly and doesn't seem involved in the work. You are likely to:

- a) Talk it over with your daughter to understand further what the problem is.
 1 2 3 4 5 6 7
 very unlikely moderately likely very likely
- b) Scold her and hope she does better.
 1 2 3 4 5 6 7
 very unlikely moderately likely very likely
- c) Make sure she does the assignments, because she should be working harder.
 1 2 3 4 5 6 7
 very unlikely moderately likely very likely

3. You had a job interview several weeks ago. In the mail you received a form letter which states that the position has been filled. It is likely that you might think:

- a) It's not what you know, but who you know.
- | | | | | | | |
|---------------|---|---|-------------------|---|---|-------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| very unlikely | | | moderately likely | | | very likely |
- b) I'm probably not good enough for the job.
- | | | | | | | |
|---------------|---|---|-------------------|---|---|-------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| very unlikely | | | moderately likely | | | very likely |
- c) Somehow they didn't see my qualifications as matching their needs.
- | | | | | | | |
|---------------|---|---|-------------------|---|---|-------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| very unlikely | | | moderately likely | | | very likely |

4. You are a plant supervisor and have been charged with the task of allotting coffee breaks to three workers who cannot all break at once. You would likely handle this by:

- a) Telling the three workers the situation and having them work with you on the schedule.
- | | | | | | | |
|---------------|---|---|-------------------|---|---|-------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| very unlikely | | | moderately likely | | | very likely |
- b) Simply assigning times that each can break to avoid any problems.
- | | | | | | | |
|---------------|---|---|-------------------|---|---|-------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| very unlikely | | | moderately likely | | | very likely |
- c) Find out from someone in authority what to do or do what was done in the past.
- | | | | | | | |
|---------------|---|---|-------------------|---|---|-------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| very unlikely | | | moderately likely | | | very likely |

5. A close (same-sex) friend of yours has been moody lately, and a couple of times has become very angry with you over "nothing." You might:

- a) Share your observations with him/her and try to find out what is going on for him/her.
- | | | | | | | |
|---------------|---|---|-------------------|---|---|-------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| very unlikely | | | moderately likely | | | very likely |
- b) Ignore it because there's not much you can do about it anyway.
- | | | | | | | |
|---------------|---|---|-------------------|---|---|-------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| very unlikely | | | moderately likely | | | very likely |

8. You are asked to plan a picnic for yourself and your fellow employees. Your style for approaching this project could most likely be characterized as:

- a) Take charge: that is, you would make most of the major decisions yourself.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

- b) Follow precedent: you're not really up to the task so you'd do it the way it's been done before.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

- c) Seek participation: get inputs from others who want to make them before you make the final plans.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

9. Recently a position opened up at your place of work that could have meant a promotion for you. However, a person you work with was offered the job rather than you. In evaluating the situation, you're likely to think:

- a) You didn't really expect the job; you frequently get passed over.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

- b) The other person probably "did the right things" politically to get the job.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

- c) You would probably take a look at factors in your own performance that led you to be passed over.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

10. You are embarking on a new career. The most important consideration is likely to be:

- a) Whether you can do the work without getting in over your head.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) How interested you are in that kind of work.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Whether there are good possibilities for advancement.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

11. A woman who works for you has generally done an adequate job. However, for the past two weeks her work has not been up to par and she appears to be less actively interested in her work. Your reaction is likely to be:

a) Tell her that her work is below what is expected and that she should start working harder.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Ask her about the problem and let her know you are available to help work it out.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) It's hard to know what to do to get her straightened out.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

12. Your company has promoted you to a position in a city far from your present location. As you think about the move you would probably:

a) Feel interested in the new challenge and a little nervous at the same time.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Feel excited about the higher status and salary that is involved.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Feel stressed and anxious about the upcoming changes.

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

Appendix D

Attachment Style Questionnaire

Directions: Show how much you agree with each of the following items by rating them on this scale: From 1 = totally disagree; 2 = strongly disagree; 3 = slightly disagree; 4 = slightly agree; 5 = strongly agree; or 6 = totally agree.

	Totally Disagree	Strongly Disagree	Slightly Disagree	Slightly Agree	Strongly Agree	Totally Agree
1) Overall, I am a worthwhile person.	[1]	[2]	[3]	[4]	[5]	[6]
2) I am easier to get to know than most people.	[1]	[2]	[3]	[4]	[5]	[6]
3) I feel confident that other people will be there for me when I need them.	[1]	[2]	[3]	[4]	[5]	[6]
4) I prefer to depend on myself rather than other people.	[1]	[2]	[3]	[4]	[5]	[6]
5) I prefer to keep to myself.	[1]	[2]	[3]	[4]	[5]	[6]
6) To ask for help is to admit that you're a failure.	[1]	[2]	[3]	[4]	[5]	[6]
7) People's worth should be judged by what they achieve.	[1]	[2]	[3]	[4]	[5]	[6]
8) Achieving things is more important than building relationships.	[1]	[2]	[3]	[4]	[5]	[6]
9) Doing your best is more important than getting on with others.	[1]	[2]	[3]	[4]	[5]	[6]
10) If you've got a job to do, you should do it no matter who gets hurt.	[1]	[2]	[3]	[4]	[5]	[6]
11) It's important to me that others like me.	[1]	[2]	[3]	[4]	[5]	[6]
12) It's important to me to avoid doing things that others won't like.	[1]	[2]	[3]	[4]	[5]	[6]

	Totally Disagree	Strongly Disagree	Slightly Disagree	Slightly Agree	Strongly Agree	Totally Agree
13) I find it hard to make a decision unless I know what other people think.	[1]	[2]	[3]	[4]	[5]	[6]
14) My relationships with others are generally superficial.	[1]	[2]	[3]	[4]	[5]	[6]
15) Sometimes I think I am no good at all.	[1]	[2]	[3]	[4]	[5]	[6]
16) I find it hard to trust other people.	[1]	[2]	[3]	[4]	[5]	[6]
17) I find it difficult to depend on others.	[1]	[2]	[3]	[4]	[5]	[6]
18) I find that others are reluctant to get as close as I would like.	[1]	[2]	[3]	[4]	[5]	[6]
19) I find it relatively easy to get close to other people.	[1]	[2]	[3]	[4]	[5]	[6]
20) I find it easy to trust others.	[1]	[2]	[3]	[4]	[5]	[6]
21) I feel comfortable depending on other people.	[1]	[2]	[3]	[4]	[5]	[6]
22) I worry that others won't care about me as much as I care about them.	[1]	[2]	[3]	[4]	[5]	[6]
23) I worry about people getting too close.	[1]	[2]	[3]	[4]	[5]	[6]
24) I worry that I won't measure up to other people.	[1]	[2]	[3]	[4]	[5]	[6]
25) I have mixed feelings about being close to others.	[1]	[2]	[3]	[4]	[5]	[6]
26) While I want to get close to others, I feel uneasy about it.	[1]	[2]	[3]	[4]	[5]	[6]
27) I wonder why people would want to be involved with me.	[1]	[2]	[3]	[4]	[5]	[6]

	Totally Disagree	Strongly Disagree	Slightly Disagree	Slightly Agree	Strongly Agree	Totally Agree
28) Its very important to me to have a close relationship.	[1]	[2]	[3]	[4]	[5]	[6]
29) I worry a lot about my relationships.	[1]	[2]	[3]	[4]	[5]	[6]
30) I wonder how I would cope without someone to love me.	[1]	[2]	[3]	[4]	[5]	[6]
31) I feel confident about relating to others.	[1]	[2]	[3]	[4]	[5]	[6]
32) I often feel left out or alone.	[1]	[2]	[3]	[4]	[5]	[6]
33) I often worry that I do not really fit in with other people.	[1]	[2]	[3]	[4]	[5]	[6]
34) Other people have their own problems, so I don't bother them with mine.	[1]	[2]	[3]	[4]	[5]	[6]
35) When I talk over my problems with others, I generally feel ashamed or foolish.	[1]	[2]	[3]	[4]	[5]	[6]
36) I am too busy with other activities to put much time into relationships.	[1]	[2]	[3]	[4]	[5]	[6]
37) If something is bothering me, others are generally aware and concerned.	[1]	[2]	[3]	[4]	[5]	[6]
38) I am confident that other people will like and respect me.	[1]	[2]	[3]	[4]	[5]	[6]
39) I get frustrated when others are not available when I need them.	[1]	[2]	[3]	[4]	[5]	[6]
40) Other people often disappoint me.	[1]	[2]	[3]	[4]	[5]	[6]

