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Facilitative Implicit Rules and Adolescent Emotional Regulation

Lexie Y. Pfeifer

A dissertation submitted to the faculty of  
Brigham Young University  
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

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March 2015

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## ABSTRACT

### Facilitative Implicit Rules and Adolescent Emotional Regulation

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Doctor of Philosophy

Research has linked emotional regulation to the adaptive functioning of adolescents. Further research suggests that family processes, which include implicit rules, impact children's emotional regulation. The current study examined the impact of implicit rules that are facilitative of family connectedness on development of adolescents' emotional regulation. Data came from the Flourishing Families Project (FFP), a seven-year longitudinal study measuring family processes that impact adolescent development. The sample was collected in the northwestern United States and consisted of 500 families with a target child between the ages of 10 and 14 years. Participants filled out self-report measures on implicit family rules and emotional regulation. Data was organized in a cohort sequential design and analyzed using latent variable growth curve modeling. Results indicated that there was no statistically significant growth in emotional regulation across the adolescent years. Results further indicated that initial status of facilitative rules did not have a statistically significant effect on growth in emotional regulation. Finally, growth in facilitative rules was found to have a statistically significant impact on growth in emotional regulation. Clinical implications for work with adolescents and families are discussed.

Keywords: family implicit rules, emotional regulation, adolescents

## ACKNOWLEDGMENTS

To my chair, Rick Miller, who was constant in his encouragement and supported me in the technical and emotional process of writing this dissertation and accomplishing my doctoral work. To Angela Bradford, who pushed me and coached me through understanding statistics. To all of my committee members, James Harper, Roy Bean and Joseph Olsen, for their individual contributions and support. To my family, who gave me experience and passion for this subject, as well as loved me through this process. Finally, to the many friends who saw me through moments of weakness and wanting to give up. I could not have accomplished this without you all.

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## Introduction

There is significant evidence that child and adolescent emotional regulation is predictive of mental health (Amstadter, 2008; Carthy, Horesh, Apter, Edge & Gross, 2010; Mennin, Heimberg, Turk, & Fresco, 2005), family functioning (Gottman, 1997; Gottman, Katz & Hooven, 1997; Padilla-Walker, Harper & Jensen, 2010) and school performance outcomes (Last, Hansen & Franco, 1997). More specifically, low self-regulation is related to deviant behaviors in adolescence, such as substance use, negative peer associations and risky sexual behavior (Crockett, Raffaelli & Shen, 2006). On the other hand, higher self-regulation has been shown to positively moderate the effect of deviant peers on adolescent antisocial behaviors (Gardner, Dishion & Connell, 2008).

Self-regulation begins to develop in infancy (Kochanska, Coy, & Murray, 2001; Kopp, 1982) and across childhood (King, Lengua & Monahan, 2013; Murphy, Eisenberg, Fabes, Shepard & Guthrie, 1999; Raffaelli, Crockett & Shen 2005). Increases in the ability to emotionally self-regulate are a developmental marker of early to middle childhood. Consequently, the bulk of studies focus on this period of development, with fewer studies found examining growth in self-regulation across the adolescent years (Bowers et al., 2011; Steinberg et al., 2011). The limited available studies provide inconsistent results, ranging from increases in self-regulation, to steady, and even steep, declines in self-regulation across adolescence. Moreover, these adolescent studies tapped attention and behavioral dimensions of self-regulation, but not emotional dimensions of self-regulation. Thus, based on these limitations, the trajectory of development of emotional regulation in adolescence is an area in need of examination.



Research done on antecedents of emotional regulation suggests that family processes are an important predictor of child emotional regulation. For example, marital conflict and hostility have been found to negatively influence child emotional regulation (Repetti, Taylor & Seeman, 2002). As another family process factor, increased parent-child attachment also predicts greater emotional regulation in children (Repetti et al., 2002; Wills, Gibbons, Gerrard, Murry & Brody, 2003). Parenting behaviors, such as involvement (Purdie, Carroll & Roche, 2004), warmth and less physical discipline (Colman et al., 2006; Crossley & Buckner, 2012) are other predictors of greater emotional regulation in children.

Another family process that may predict emotional regulation is a factor referred to as implicit family rules. Implicit family rules are norms for functioning in the family that are assumed and taken for granted. For example, unlike an explicit curfew, these rules are followed without conscious or mutual acknowledgement among family members. Implicit rules govern how the family interacts, how they communicate information, how they handle emotions, as well as the image they present to those outside the family (Satir, 1984). Implicit rules can be restrictive and constraining, such as “Keep family secrets”, “Blame others” or “Take the blame”. Implicit rules can also be facilitative, such as “Share your feelings”, “Trust others” or “Take accountability” (Gillett, Harper, Larson, Berrett & Hardman, 2009; Larson, Parks, Harper & Heath, 2001).

The few studies that have examined implicit family rules have looked at the impact of implicit rules on individual symptomatic behavior (Feinauer, Larsen & Harper, 2010; Gillett et al., 2009; Larson et al., 2001; Larson, Taggart-Reedy & Wilson, 2001). Restrictive implicit rules have been linked with eating disorders (Gillett et al., 2009), relational problems (Larson et al.,

2001), and alcoholism in families (Larson et al., 2001). On the other hand, facilitative implicit rules are associated with decreased symptomology in adolescents (Feinauer et al., 2010).

Due to the prevalence of destructive and costly adolescent ailments such as substance use, eating disorders and suicides, further research is needed to understand the development of emotional self-regulation in adolescence, as well as its determinants. Understanding the development of emotional regulation across adolescence can inform intervention and minimize the cost to families and society of the negative outcomes associated with poor emotional regulation. The current study particularly examined the association between implicit family rules and the trajectory of adolescent emotional regulation. Data for this study came from a longitudinal study of family processes and adolescent development. Data was organized according to cohort sequential design, following adolescents from 10 to 17 years. Youth began the study at an average age of 11 years and were tracked at annual increments.

## **Literature Review**

### **Adolescent Self-regulation**

Self-regulation is an important characteristic of the developing child, and has a number of definitions. Self-regulation has been conceptualized as a biological temperament or trait, as well as a learned and intentionally exercised skill (Gestsdottir & Lerner, 2008). Self-regulation is defined as an individual's ability to moderate the impact of his or her external context and internal state (Gestsdottir & Lerner, 2008) and is manifest in the individual's behaviors, emotional reactions, and ability to sustain focused attention (Gestsdottir & Lerner, 2008; Gottman et al., 1997). Further, it is theorized that self-regulation develops as an internalization of social norms and rules (Gestsdottir & Lerner, 2008; Kopp, 1982).

Eisenberg (2000) describes how even attention and behavioral self-regulation are integrally linked to emotional regulation. He also describes how morality is linked to the expression of self-regulation. Persons with high self-regulation (emotionally, behavioral and attentional) respond to distressing emotions with compassion and guilt that motivates change instead of personal distress and shame. These responses are related to moral teaching or learned rules about emotion. This research suggests that implicit rules are a key in the functioning of self-regulation.

**Changes in self-regulation over time.** Self-regulation manifests differently at different stages of development. Young children are just beginning to develop their cognitive capacity to make sense of their emotional experience (Heide & Solomon, 2006; Perry, Pollard, Blakely, Baker & Vigilante, 1995). Their task is to learn to generate coping strategies for responding to pure emotional experience (Cole, Dennis, Smith-Simon & Cohen, 2009). On the other hand, adolescence is a period of development characterized by increased cognitive capacities for social and moral reasoning, as well as intentional self-regulation (Gestsdottir & Lerner, 2008). Thus, adolescents' exercise of self-regulation may be more informed by their cognitive evaluations of emotion, which are connected with learned family and social norms.

Research findings suggest that self-regulation increases as children grow up. Neurobiological studies have noted an increase in inhibitory control from childhood through adolescence (Leon-Carrion, Garcia-Orza & Perez-Santamaria, 2004). Most psychological research done on developmental growth in self-regulation has focused on the late childhood and pre-adolescent years, with findings indicating general increases in self-regulation, as well as decreases in impulsivity and negative emotionality (Brody & Ge, 2001; King et al., 2013; Murphy et al., 1999; Raffaelli et al., 2005). For example, Raffaelli et al. (2005) longitudinally

followed 646 children from age 4 to 12 years. They assessed self-regulation, a latent construct including attention, behavior, and affective measures, at three time points. They found that self-regulation increased between early and middle childhood (4 to 8 years), and was stable during the pre-adolescent stage (8 to 12 years).

King et al. (2013) examined 3 years growth in effortful control and impulsivity for 214 children from ages 8 to 12 years. Effortful control was a construct consisting of mother, child and observational report of attention regulation and inhibitory control in the child. They found that effortful control increased, while impulsivity decreased across these ages. Further, youth who experienced the greatest growth in effortful control had less internalizing and externalizing problems and demonstrated greater social competence.

Finally, in a longitudinal study following children from 4 to 12 years of age, self-regulation, as reported by parents and teachers, was shown to increase over time (Murphy et al., 1999). In addition, negative emotionality decreased over time, albeit with a slight increase in negative emotionality at the last time point. This introduces the possible question of trends in self-regulation levels through adolescence.

Research on the developmental nature of self-regulation through adolescence is sparse (Bowers, et al., 2011; Brody & Ge, 2001; Steinberg, et al. 2008) and offers conflicting results. Brody and Ge (2001) studied 120 families with 12-year old children over a period of three years. Using a teacher report of self-regulation, results indicated that children's self-regulation was stable across time. Also, self-regulation was associated with higher psychological functioning, including lower depression, less hostility and higher self-esteem. Youth with greater self-regulation were also less likely to use alcohol in early adolescence (Brody & Ge,

2001). Steinberg, et al. (2008) studied impulsivity in a cross-sectional sample of 935 individuals 10 to 30 years of age. The impulsivity measure measured impulsive action, inability to delay gratification, and persistence with a task. They found a steady decrease in impulsivity across advancing age. However, because this was not a longitudinal study, this change did not occur within individuals.

On the other hand, Bowers et al. (2011) studied growth trajectories of intentional self-regulation in 1,574 adolescent youth from grade 5 through grade 11. Four varying trajectories of growth were found using growth mixture modeling. Most adolescents experienced a steady decline in intentional self-regulation. A second group experienced an increase in self-regulation around age 14 years, while the third experienced a sharp decline in self-regulation at that same age. A final group had low initial levels of self-regulation but increased to average levels later in adolescence. These findings indicate that there is individual variation in the growth trajectories of self-regulation. The current study will examine factors, particularly implicit rules that might account for this variation.

**Family processes and self-regulation.** Families are important in helping a child develop their ability to self-regulate. Parents shape the growing child's self-regulatory behaviors through modeling and conditioned responses to children's behavior. Social learning theory suggests that children learn standards by which to self-regulate based on the reactions of significant persons to their behavior (Bandura, 1991). For example, Perry (2009) describes that when parents respond to infants' distress with nurturing and soothing interactions, they help the infant learn and develop self-regulatory neural pathways. Throughout childhood, parents' reactions to their children's emotions shape child self-regulation. Parents that are supportive and accepting of their children's emotions have children with higher self-regulation. On the other hand, parents

who are negative and punishing have children with lower self-regulation (Eisenberg, Spinrad & Eggum, 2010; Gottman, 1997; Repetti et al., 2002).

The parent-child relationship is also strongly associated with child self-regulation. Parent-child attachment, characterized by nurturing interactions, is linked to greater emotional regulation in children (Repetti et al., 2002). Similarly, adolescents' report of parent-child relationship quality has been linked to greater attention and behavioral self-control (Wills et al., 2003). Strage (1998) also points to the role of close, nurturing interactions influencing self-regulation. In a study of the self-regulatory behaviors of college students, it was found that students with positive self-regulatory skills had emotionally close relationships with their parents and experienced authoritative parenting styles. On the other hand, students who experienced authoritarian (coercive and distant) parenting or enmeshed relationships demonstrated poor self-regulatory skills. Finally, King et al. (2013) found that maternal acceptance was linked with greater effortful control, whereas maternal rejection was linked with greater impulsivity.

Specific parenting behaviors have also been shown to impact child self-regulation. One study examined caregiving practices for 549 children at 4 years of age. Four years later (when the children were 8 years old), they assessed the children's affect, attention, and behavioral regulation. They found that maternal warmth and low levels of physical discipline at time 1 predicted higher child self-regulation four years later (Colman et al., 2006). Other studies have confirmed that warmth and less physical discipline contribute to self-regulation (Bowers, et al. 2011; Crossley & Buckner, 2012; King et al., 2013). Parental involvement has also been linked to greater self-regulation in children (Purdie et al., 2004). On the other hand, harsh, and inconsistent parenting behaviors are associated with lower levels of self-regulation in children (Brody & Ge, 2001; King et al., 2013).

A variety of other family contextual variables also impact child emotional regulation. Marital conflict, family violence (Repetti et al. 2002), stressful life events (King et al., 2013), as well as parental substance abuse and mental health (Crossley & Buckner, 2012), all are linked with child emotional regulation. Children in these family contexts experience prolonged, heightened emotional arousal and reactivity, and they have a difficult time recovering from this heightened emotional state. These children also demonstrate decreased awareness of emotions and maladaptive coping.

On the positive side, supportive parenting practices and parental monitoring predict increased child self-regulation (Bowers et al., 2011). Parental monitoring refers to the parents' awareness and extent of involvement with the child's friendships and activities. The finding that parental monitoring predicts child self-regulation is significant because parental monitoring, much like family implicit rules, serves to regulate a child's behavior according to family, or social, rules and norms.

There are some noted gender differences in emotional regulation. In a study assessing self-regulated decision-making and emotional restraint, adolescent girls had significantly higher levels of self-regulated decision making and restraint compared to adolescent boys (Miller & Byrnes, 2001). Although not unequivocal, several other studies have found that female children and adolescents experience higher levels of emotional regulation, compared to males (Colman et al., 2006; Crockett et al., 2006; Gardner et al., 2008; Kochanska et al., 2001).

### **Family Implicit Rules**

Early family systems theorists acknowledged the presence of implicit family rules (Minuchin, 1974; Satir, 1988). Implicit rules are unspoken, but mutually acknowledged, ways of

handling emotions and interacting with others. Minuchin (1974) suggested that rigid rules, or boundaries governing flow of information between family members and subsystems, are connected with family dysfunction. When implicit rules stifle expression of emotion, hide or limit access to family relevant information or discourage assigning and taking personal accountability, family members will develop symptomatic behaviors that play functional roles in the family system (Vetere, 2001).

Satir (1988) explained that restrictive implicit rules deny a family's humanity and keep information hidden, such as the implicit rules: "Don't be angry" or "Don't ask about your sister's out-of-wedlock pregnancy". Satir similarly noticed that restrictive implicit rules can make individuals and families feel sick (Satir, 1988, p. 10-11). On the other hand, nurturing families have rules that are "overt, human and up-to-date" (Satir, 1988, p.129). They have rules that "allow freedom to comment on everything, whether it be painful, joyous or sinful" (Satir, 1988, p.128). Feinauer et al. (2010) refer to these rules that encourage openness and acceptance in family interactions as facilitative implicit rules.

While there is a rich history of theory on family implicit rules, the empirical literature on family implicit rules is in its relative infancy (Feinauer et al., 2010; Gillett et al., 2009; Larson et al., 2001; Guerrero & Afifi, 1995; Larson et al., 2001). The available research confirms the existence of family implicit rules and is beginning to confirm theory by linking family implicit rules with a range of individual outcomes. In addition, the wider scope of family process literature also links family emotional processes with youth outcomes (Gottman et al., 1997; Lindahl, 1998; Pasalich, Dadds, Vincent, Cooper, Hawes & Brennan, 2012).



Guerrero and Afifi (1995) explored implicit rules by surveying 169 high school and college-aged youth on topic avoidance in their families. The topics assessed were relationship issues, negative life experiences, dating experiences, friendships, and sexual experiences. They found that topic avoidance occurred more often in parent-child relationships than sibling relationships, and more often in cross-sex versus same-sex family relationships. Common reasons for topic avoidance were self-protection, relationship protection, fear of unresponsiveness, and perception of social inappropriateness (Guerrera & Afifi, 1995). This research notes that these rules are strongest between parents and children. This suggests that implicit rules are communicated from parents to children and can be a barrier in guiding children through important developmental milestones.

Another group of studies have specifically examined implicit rules with the Family Implicit Rules Profile (FIRP) or the Family Rules from the Past (FRP) measures. A primary difference in these measures is that the FRP is a retrospective self-report of dysfunctional family rules, whereas the FIRP assesses current family implicit rules. Implicit rules in these measures consists of several sub-categories, ranging from facilitative expressiveness, kindness, and monitoring (Feinauer et al., 2010) to constraining rules, such as inappropriate caretaking (protecting family members) and false image.

Constraining implicit rules have been linked with a number of maladaptive outcomes. Gillett et al. (2009) compared family implicit rules in families of eating disordered versus non-eating disordered youth (average age of 19 years). They found that families with an eating disordered youth had more constraining family rules. These families reported implicit rules for less kindness, more constraining thoughts and feelings, low expressiveness and connection, inappropriate caretaking, and low monitoring. It is interesting to note that the identified patient

was more likely to report constraining rules than the parents, suggesting that the burden of implicit rules was felt more strongly by the child and became manifest in their symptomatic behavior. Parents may not be aware of the impact that family functioning has on their child's emotional state.

Larson et al. (2001) examined the validity of the FRP measure. As a measure of validity, they compared FRP scores for adult children of alcoholics and a normative community sample. Adult children of alcoholics showed significantly more dysfunctional family implicit rules than the comparison sample. Dysfunctional rules pertained to family encouragement to present a false self, inappropriate caretaking, lack of spontaneity, and restricted communication.

Finally, Larson et al. (2001) examined the impact of family implicit rules on the relationships of young adults. Comparing two groups of young adults with high or low dysfunction of implicit rules (as measured by the FRP), they found that the group with high dysfunctional rules had increased dating anxiety, slow advancement in dating stages, and decreased relationship satisfaction and commitment. Taken together, these three studies suggest a link between restrictive family implicit rules and maladaptive young adult outcomes.

Instead of focusing on restrictive rules, Feinauer et al. (2010) examined facilitative family rules of kindness, expressiveness and monitoring as predictors of adolescent symptomology in clinical and non-clinical families. They found that more facilitative rules predicted less hostility, anxiety, depression, and somatization in adolescents. They also found that non-clinical families reported more facilitative implicit rules than those who presented for treatment. Further, they found that two-parent families reported more facilitative rules than single-parent families.

### **Implicit Rules and Self-regulation**

There is reason to believe that facilitative implicit family rules may have a positive effect on the development of self-regulation of adolescents. There is evidence that parents that are supportive and accepting of their children's emotions have children with higher self-regulation (Eisenberg et al., 2010; Gottman, 1997; Repetti et al., 2002). For example, Lindahl (1998) suggested a link between family processes and self-regulation in her study of 110 families of normative, ADHD and ODD boys, which are disorders distinguished by symptoms of poor self-regulation. Parental emotionally-supportive practices were associated with normative youth.

Another study of 59 families of conduct-disordered boys (3 to 9 years of age), similarly found that emotional communication was an important moderator of conduct problems (Pasalich et al., 2012). Conversations between mothers and sons were coded for reference to positive or negative emotions. Mother-son relationships that allowed for discussion of negative emotions such as sadness and fear were associated with lower conduct problems. Consistent with the theoretical literature on implicit rules, these families' openness with all emotions positively impacted the child's symptomatic behavior. Thus, it seems reasonable to expect that implicit rules for emotional expression will manifest themselves in the emotional self-regulatory behaviors of adolescents.

The Gottman et al. (1997) construct of "meta-emotion" is similar to measures of implicit rules for emotional expression. Meta-emotion refers to thoughts and feelings about the acceptability of emotions or approaches to responding to emotions in self and others. Similar to Satir's explanation of implicit rules for emotional relating (Satir, 1984, p. 122), Gottman et al. (1997) cite anger as an example. Many families implicitly rule, "Don't be angry", and avoid, ignore, minimize, and even punish expressions of anger. This denies a basic human emotion and

restricts honest and genuine expression in family relationships. Gottman et al. (1997) measure meta-emotion by observational coding of parents' awareness of their own emotion and inviting or dismissing responses to their child's emotion. In a longitudinal study that followed 56 children for 3 years, from age 5 to 8 years. Gottman et al. (1997) explored the link between parents' meta-emotion and child self-regulation (using a physiological measure of basal vagal tone). They found a direct pathway between parents' emotional awareness and emotion coaching of their children with the child's ability to self-regulate, as well as child's school achievement, positive peer relations, and health. Thus, family processes facilitating emotional expression are associated with self-regulation.

The facilitative implicit rules explored in the current study are more comprehensive and also assess the family's reflection of their genuine selves, openness to affection and fun, as well as mutual decision-making and problem-solving. The effect of facilitative implicit rules on the development of emotional self-regulation among adolescents remains untested. The current study adds to the reviewed literature by offering a developmental view of emotional regulation among adolescents. While the preponderance of past research has focused on behavioral self-regulation, this study examined the emotional regulation. Using growth mixture modeling, we examined development of facilitative implicit rules and emotional regulation over 5 years of adolescent development to examine the developmental course of emotional regulation in adolescence, as well as the effect of facilitative implicit rules on the trajectory of emotional regulation over time.

The current study addressed the following research questions:

1. What is the nature of change in child emotional regulation during the transition through adolescence?

2. How is the initial state of family implicit rules associated with change in emotional regulation across adolescence?
3. How is change in family implicit rules associated with change in emotional regulation?

### **Methods**

Data came from the Flourishing Families Project (FFP), which is a longitudinal study measuring family processes that impact adolescent development. Families are from a metropolitan area in the northwestern United States, and were randomly selected from a national telephone survey database (Polk Directories/InfoUSA). This database claimed to contain 82 million households across the United States and had detailed information about each household, including presence and age of children. Families identified using the Polk Directory were randomly selected from targeted census tracts that mirrored the socio-economic and racial stratification of reports of local school districts. All families with a child between the ages of 10 and 14 living within target census tracts were deemed eligible to participate in the FFP. Of the 692 eligible families contacted, 423 agreed to participate, resulting in a 61% response rate. However, the Polk Directory national database was generated using telephone, magazine, and internet subscription reports; consequently, families of lower socio-economic status were under-represented. Therefore, in an attempt to more closely mirror the demographics of the local area, a limited number of families were recruited into the study through other means (e.g., referrals, fliers;  $n = 77$ , 15%). By broadening the approach, the social-economic and ethnic diversity of the sample was increased.

All families were contacted directly using a multi-stage recruitment protocol. First, a letter of introduction was sent to potentially eligible families (this step was skipped for the 15

families who responded to fliers). Second, interviewers made home visits and phone calls to confirm eligibility and willingness to participate in the study. Once eligibility and consent were established, interviewers made an appointment to come to the family's home to conduct an assessment interview that included video-taped interactions, as well as questionnaires that were completed in the home. The most frequent reasons cited by families for not wanting to participate in the study were lack of time and concerns about privacy. It is important to note that there were very little missing data. As interviewers collected each segment of the in-home interview, questionnaires were screened for missing answers and double marking. Subsequently, families were interviewed at yearly intervals for a second (2008), third (2009), fourth (2010), and fifth time (2011). The retention rate of families in the study from Wave I to Wave V was 92.6%.

### **Sample Characteristics**

Participants were 500 families with a target child between the ages of 10 and 14 years ( $M = 11.29$ ,  $SD = 1.01$ ) at wave one. Both two-parent ( $n = 337$ ) and single-parent ( $n = 163$ ) families were represented. There were 462 participants by wave five (311 two-parent and 151 single parent families), with a 92.6% retention rate at wave five. Parents' average ages were 42.85 ( $SD = 6.21$ ) years for mothers and 44.72 ( $SD = 6.01$ ) years for fathers, at the first wave of data collection. Parents were highly educated, with 60.9% of mothers and 69.7% of fathers having a bachelor's degree or higher. Families were also primarily middle- to upper-class, with 18.2% at an income of less than \$59,000; 28.5% between \$60,000-99,000; 32.1% between \$100,000-149,000; and 21.2% with incomes of over \$150,000. Sixty-four percent of the families were White, 12% were African American, 19% were self-identified as multi-ethnic, and less than 1% was Hispanic and Asian Americans. Families had an average of 2.3 children ( $SD = 1.28$ ) at wave 5.

## Measures

**Emotional regulation.** Emotional regulation was measured using a sub-set of items from Novak and Clayton (2001) measure of self-regulation. Confirmatory factor analysis of Novak and Clayton's (2001) measure demonstrated a three-factor structure (cognitive, behavior and emotion), with loadings ranging from .87 to .92. These three factors represent the three domains (attention, behavior and emotion) represented in the literature on self-regulation, inferring acceptable content validity. For this study, the mean of five items representing the emotional regulation domain were used. Mothers rated their child on a Likert-type scale, with response options ranging from 1 (*never true*) to 4 (*always true*). High scores indicated higher child self-regulation.

Items included "My child has difficulty controlling his/her temper", "My child gets so frustrated he/she feels ready to explode", "My child gets upset easily", "Often my child is afraid he/she will lose control over his/her feelings", and "My child slams doors when he/she is mad". Items were reverse-coded so that high scores indicated higher child self-regulation. Cronbach's alphas for the scale at all five time points ranged between .86 and .89.

**Facilitative rules.** Implicit rules that facilitate family connectedness were measured by a shortened and modified version of the Family Implicit Rules Profile (Gillett et al., 2009). This modified FIRP has been shown to be a valid measure of rules (Feinauer et al., 2010; Gillett et al., 2009). Particularly, the FIRP distinguished families with eating disorders (Gillett, et al., 2009). The latent construct used in this study was a subscale from the modified FIRP. Specifically, mothers rated 7 items relating to rules for connectedness, emotional expression and shared problem solving on a Likert-type scale, with response options ranging from 1 (*never*) to 5 (*most of the time*). A latent variable was constructed using the mean of the items. High scores

indicated more family implicit rules were more facilitative of family connectedness. Cronbach's alphas for the scale for all five time points ranged between .70 and .83.

Items asked how often family members , “Share your feelings and encourage others to share their feelings.”, “Show physical affection to family members”, “Play and have fun together”, “Make decisions together as a family”, “Share happenings of your day with family members”, “Allow other family members to help solve your problems”, and “Admit it when you are wrong”. These facilitative rules promoted connectedness and encouraged expressiveness and shared problem solving in families.

**Control variables.** Control variables included socioeconomic status, ethnicity, family composition (two-parent versus single-parent home), and gender of child. Socioeconomic status was a latent construct measured by mother's education, father's education and family income. Parents' education were categorical variables with an ordinal structure, where 1 indicated "less than high school" and 7 indicated "advanced degree (JD, Ph.D., etc.)" and were treated as continuous. Family income was the natural log of the family's reported yearly gross income. In addition to demographic controls, other parenting variables found to be associated with child self-regulation were controlled for in order to distinguish the impact of facilitative family rules from other parenting variables that could be confounded with family rules. The parenting variables identified in the literature and controlled for in this study were parental warmth, physical discipline, and punishment.

The parenting dimensions were taken from the Parenting Styles and Dimensions Questionnaire-Short Version (PSDQ, Robinson, Mandleco, Olsen & Hard, 2001). The original measure was designed with good validity, corresponding with the well-acknowledge parenting



styles (Authoritative, authoritarian, permissive). Responses were taken from wave 2 (the first wave in which these variables were assessed). Mean of five items measured parental warmth and supportiveness. Parents rated how often they engaged in warm, supportive behaviors such as responding to child's feelings and needs, encouraging child to talk about his troubles, giving comfort and praise. Response options ranged from 1 (*never*) to 5 (*always*). High scores indicated higher warmth and support. Cronbach's Alpha for this scale was .73.

Another four items measured use of physical discipline. Using the same Likert-scale described above, parent rated how often they use physical discipline, spank child, grab child or slap child when they are disobedient. Cronbach's Alpha for this scale was .78. Four items composed the measure of punishment. Parents answered how often they state, "Because I said so, or I am your parent and I want you to," in response to children's non-compliance. Other items included questions about how often privileges are taken away, threats are used or child is put away alone with "little if any explanation". Cronbach's Alpha for this scale was .72. High scores indicated higher use of physical discipline and punishment, respectively.

### **Analysis**

Analysis was conducted using *MPlus Version 6.1* software (Múthen & Múthen, 2010). Confirmatory factor analysis confirmed psychometric appropriateness of both the family implicit rules scale and child self-regulation constructs. Both measured latent constructs invariantly over time, meeting the assumption of growth curve modeling of measurement invariance (Duncan et al., 2006).

Cohort sequential design was used to organize the data, analyzing growth by the age of the child, rather than wave (Muthen, 2000; Duncan et al., 2006). During the first wave,

adolescents ranged in age from 10 to 13 years. As there was significant developmental variation across these ages, we chose to create a dataset in which answers for children at 10 years were grouped together, 11 years and so on, with age being treated as time. This resulted in a truncated data set, where some participants did not provide data for some ages. For example, those who started the study at age 10 provided data for ages 10-15, but were not represented in the 16 and 17 year responses. Additionally, those who started the study at age 12 provided data for ages 12-17, but not ages 10 and 11 years. This controlled for age of children and enabled us to examine growth across development.

Then, latent variable growth curve modeling (Duncan et al., 2006) was used to estimate facilitative rules as a predictor of growth in emotional regulation (See Figure 1). This model analyzed the effect of initial status and change in family implicit rules on change in emotional regulation, with slopes representing rate of change over time. The purpose of this model was to test whether facilitative rules predicted child emotional regulation.

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Figure 1 about here

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## Results

### Preliminary Analysis

The mean initial level of the latent construct of emotional regulation at 10 years was 2.11 ( $SD = .69$ ) on a 4-point scale, where higher scores indicated higher emotional

regulation. The mean initial level of the latent construct for facilitative rules was 3.97 ( $SD = .58$ ) on a 5-point scale, with higher scores indicating rules more facilitative of family connectedness. See Table 1 for a list of the mean levels at each age. With regards to the control variables, the mean level of parenting warmth construct was 4.28 ( $SD = .47$ ) on a 5-point scale, where higher scores indicated more warmth. The mean levels for the discipline and punishment constructs were 1.27 ( $SD = .37$ ) and 1.65 ( $SD = .53$ ), respectively. Again, these were on a 5-point scale, with higher scores indicating higher discipline and punishment.

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Table 1 about here

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Emotional regulation and facilitative rules were strongly correlated at all ages. The parenting variables were correlated with each other. However, surprisingly, there was no significant correlation between the parenting variables and emotional regulation or facilitative rules. There was a negative association between parent education and less use of punishment ( $r = -.175, p < .001$ ). The correlation between fathers' education and punishment was also significant ( $r = -.131, p < .001$ ). The correlation between mothers' education and parental warmth was also significant ( $r = .119, p < .01$ ).

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Table 2 about here

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Unconditional growth models were examined separately for change in self-regulation and family rules across development. These both suggested significant change. There was a decrease in emotional regulation as the child grew older ( $\beta = -.326, p < .001$ ). Family rules became less facilitative across adolescence ( $\beta = -.326, p < .001$ ).

### **Hypothesis Testing**

Then, the latent growth curve model for facilitative rules and emotional regulation, controlling for socioeconomic status, ethnicity, family composition, child gender, parental warmth, physical discipline and punishment, was examined. The final model demonstrated satisfactory model fit based on the following commonly-used markers of model fit (CFI=.93; TLI=.91; RMSEA=.05) The chi-square statistic was of 3428.97 ( $p < .001, DF = 243$ ). .

In the final model (see figure 1), which included all control variables, the two slopes of family rules and emotional regulation were no longer found to be significantly different from zero (slope of emotional regulation  $\beta = .885, p = .39$ ; slope of facilitative rules  $\beta = -.434, p = .63$ ). The effect of the intercept of family rules on growth in emotional regulation was also found not to be significantly different from zero ( $\beta = -.016, p = .83$ ). The effect of the intercept of emotional regulation on growth in family rules was not estimated, as this was not pertinent to the research question. There was, however, a statistically significant covariance between the intercept and slope for emotional regulation ( $\alpha = -.017, p < .001$ ), suggesting a correlation between initial levels and growth in emotional regulation.

The effect of growth in facilitative family rules on growth in emotional regulation was found to be statistically significant ( $\beta = -.258, p < .01$ ). This result indicates that, after controlling for initial level of rules and other demographic variables, increases over time in facilitative rules

are negatively associated with increases over time in emotional regulation. Due to the non-significant growth in slope for these two variables in this final model, the practical meaningfulness of this correlation is minimal.

Results indicated that the effects for the control variables on intercept and slopes of child emotional regulation and implicit facilitative rules were not statistically significant (See Table 3). The only statistically significant effect was between socioeconomic level and initial status of child emotional regulation ( $\beta = .139, p < .05$ ).

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Table 3 about here

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### **Discussion**

This study set out to answer three questions. The first was to understand the nature of change in child emotional self-regulation during the transition through adolescence. Second, I sought to understand how the initial status of facilitative rules impacted change in emotional self-regulation through adolescence. Finally, I sought to understand how change in facilitative rules was associated with change in self-regulation.

The results suggest that there was no change in emotional regulation across adolescence. The finding that emotional regulation did not significantly change across adolescence is consistent with the literature that suggests that emotional regulation is largely developed during the childhood and pre-adolescent years (Kochanska et al., 2001; Kopp, 1982; Murphy et al.,

1999; Posner & Rothbart, 2000; Raffaelli et al., 2005). By adolescence, it seems emotional regulation may be a more stable characteristic.

Only one study has been found with different results. Rather than determining a single average trajectory for the entire sample, Bowers, et al. (2011) used techniques that tested for multiple trajectories. They found four different trajectory patterns: emotional regulation increasing across adolescence, emotional regulation increasing later in adolescence, emotional regulation steadily declining, and emotional regulation rapidly descending. These results suggest that a more nuanced examination of trajectories of regulation during adolescence may find changes; however, the goal of the current study was to examine the relationship between two growth curve trajectories in a focused way. This made the more nuanced examination of trajectories of change in emotional regulation a research question beyond the scope of the current study.

In addition to the lack of change in emotional regulation across adolescence, it is also notable that there was no significant relationship between gender and the intercept or slope of emotional regulation. This is contrary to the majority of studies which have noted that girls tend to have higher emotional regulation (Colman et al., 2006; Crockett et al., 2006; Gardner et al. 2008; Kochanska et al., 2001). It could be that differences in sample ages and measurement of emotional regulation contribute to the variation between this study's findings and existing literature.

Regarding the second research question, results indicated that there was no significant association between the initial status of facilitative rules and change in emotional regulation. With implicit family rules and processes around emotion having been found to impact child

emotional regulation (Bogels & Brechman-Toussaint, 2006; Grolnick et al., 1999; Morris, Silk, Steinberg, Myers & Robinson, 2007; Suveg, Hudson, Sood, Barmish, Tiwari & Kendall, 2008), the current study's non-significant result may seem surprising. However, when we consider the nature of implicit rules, this finding is less surprising. The theory of homeostasis (Minuchin, 1974) is an important characteristic of implicit rules. According to systems theory, family processes and implicit rules are the balance or norm of family functioning and largely go unchallenged. Also, implicit rules are unspoken and relatively unconscious unless they are made explicit by some form of intervention. When disrupted, these rules and norms tend to naturally return to their original balance. Using this reasoning, it can be implied that, by adolescence, implicit rules have already been established and had their impact on the development of the child's emotion regulation patterns.

Additionally, there were potentially confounding measurement concerns with the FIRP. The original FIRP was a 72-item measure, of which a shortened and modified version was created (Gillett et al., 2009). From this modified version, this study used a subscale. It is possible that this modified and simplified subscale does not adequately represent family implicit rules and processes and could explain the lack of significant impact on adolescent emotional regulation.

Finally, this study adds confirming evidence to the literature (Feinauer et al., 2010; Gillett et al., 2009; Gottman et al., 1997; Larson et al., 2001; Guerrero & Afifi, 1995; Larson et al., 2001) suggesting an association between family implicit rules and emotional regulation. Consistent with Feinauer et al. (2010) findings that facilitative implicit family rules predicted less hostility, anxiety, depression and somatization in adolescence, the findings of this study suggest a similar association between facilitative rules and adolescent emotional regulation.

Also, similar to other studies (Gottman et al., 1997; Suveg, et al., 2008) that suggest that inviting and coaching emotional expression is linked with increased child self-regulatory capacity, the current study suggests a link between the development of facilitative rules, that allow emotional expression and openness, and the development of emotional regulation.

However, this association between facilitative rules and emotional regulation may lack significant clinical meaning because the extent and directionality of this impact is confounded by the non-significant growth in both constructs when considered together with each other and other control variables in the final model. At least, the significant association between change in both facilitative rules and emotional regulation suggests need for further research to explore the more subtle implications of these constructs' relationship to each other.

### **Limitations and Future Directions**

One limitation of this study is that the families in the sample had high facilitative rules and high emotional regulation at the beginning of the study. Therefore, it was difficult to measure growth or change in the trajectories. The highly skewed scores also limit examination of the effect that facilitative rules impact emotional regulation. Future research may explore these constructs in a clinical population or in a population that includes lower functioning families. Would a population with less facilitative rules show a significant impact on development of emotional regulation in adolescence? Would adolescents with initially lower levels of emotional regulation experience more change and development of these capacities through adolescent years? Finally, would adolescents with initially lower levels of emotional regulation be more significantly impacted by the initial level and change in facilitative rules?



Another future direction would be to examine the impact of implicit family rules on development of emotional regulation in younger children. Because the literature shows that childhood and pre-adolescence is the most formative stage of self-regulatory capacity, it would be interesting to examine the original hypothesis that family implicit rules impact development of emotional regulation.

### **Clinical Implications**

The findings of this study help provide direction in therapeutic work with children, adolescents and families. The first consideration stemming from these findings is for families and therapists to be sensitive to the optimal time of intervention in helping address problematic emotional regulation. The findings suggest that adolescence is a less malleable time in the formation of emotional regulation, and more influence can be had in the formative years of childhood. Eisenberg et al.(2010) confirm that emotional regulation grows quickly in the early years and recommend effective early intervention programs for intervening with children's self-regulatory development, such as Promoting Alternative Thinking Strategies (PATHS), Emotion-Based Prevention Program (EBP) and Tools of the Mind.

The findings also point to the relative stability of implicit family rules. Again, it seems by adolescence these rules are well established and unchanging. This is not to say that family rules are not related to emotional regulation, but that they have already had their formative influence before the adolescent life stage. Structural family therapy is one therapy model that is based upon the notion of the impact of these rules on the psychological health of individual family members and is one recommended intervention to target family rules (Vetere, 2001).

The findings also point to an association between change in family rules and change in emotional regulation. These findings, while in need of further research and exploration, are consistent with other studies and clinical recommendations (Hannesdottir & Ollendick, 2007; Kendall, Hudson, Gosch & Flannery-Schroeder, 2008) that suggest that intervening to explore family norms around emotional expression and openness of the family could be beneficial in helping with presenting emotional regulation issues.

Hannesdottir and Ollendick (2007) recommend incorporating a parental component to cognitive behavioral therapy with children suffering with emotional dysregulation. They suggest that this component should involve coaching parents in discussion of emotional experiences and teaching parents about the importance of expressing emotions, as emotional dysregulation is linked with parents' avoidance and dismissing of emotions. They recommend this intervention occur at a young age, as this is an important period in the development of emotional regulation (Hannesdottir & Ollendick, 2007). Kendall, et al. (2008) also found that family cognitive behavioral therapy was an effective treatment with children suffering emotional dysregulation.

## **Conclusion**

This study is a first in providing a picture of trajectory of change in implicit rules facilitating connectedness and emotional regulation over adolescence. The findings indicate that there were no significant changes in either facilitative implicit rules or emotional regulation across the life stage of adolescence. However, there was a significant effect for growth in facilitative rules on growth in emotional regulation. As rules became more facilitative of connection, there was a less attenuated decline in emotional regulation. These findings suggest a complex relationship between family implicit rules and emotional regulation that would benefit from future exploration. These findings also suggest that childhood and pre-adolescence are a

more formative time for development of emotional regulation. These findings further suggest that facilitative implicit rules are related to a child's emotion-regulatory capacity throughout the course of adolescence. More research needs to be done to examine more closely the relationship between implicit rules that facilitative connection and emotional regulation, particularly in the more formative childhood years. Future research should also focus on a clinical population to examine the difference when the family implicit rules that have been established are less functional and less conducive to the healthy development of children. Future research might also consider observational methods of assessing for family implicit rules and patterns. This future research is encouraged as it has the potential to benefit and focus therapeutic work with families and at-risk children and adolescent

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Table 1. *Means of Self-regulation and Rules across Development.*

Age	Self-regulation		Facilitative Rules	
	Mean	<i>SD</i>	Mean	<i>SD</i>
10	2.11	.69	3.97	.58
11	2.15	.67	3.89	.60
12	2.06	.66	3.93	.58
13	2.05	.70	3.86	.61
14	2.01	.68	3.84	.63
15	1.92	.68	3.82	.62
16	1.96	.68	3.77	.87

Table 2. *Correlation between Predictor and Control Variables.*

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Rules 10 yrs	-												
2. Rules 11 yrs	.59 ***	-											
3. Rules 12 yrs	.63 ***	.67 ***	-										
4. Rules 13 yrs	.55 ***	.58 ***	.65 ***	-									
5. Rules 14 yrs	.50 ***	.62 ***	.61 ***	.68 ***	-								
6. Rules 15 yrs	-	-	.60 ***	.63 ***	.70 ***	-							
7. Rules 16 yrs	-	-	.54 ***	.50 ***	.55 ***	.57 ***	-						
8. SR 10 yrs	-.16 ***	-.23 ***	-.19 ***	-.19 ***	-.23 ***	-	-	-					
9. SR 11 yrs	-.11 *	-.22 ***	-.18 ***	-.16 **	-.18 ***	-	-	.67 ***	-				
10. SR 12 yrs	-.07	-.16 **	-.19 ***	-.16 ***	-.16 ***	-.22 ***	-.22 ***	.67 ***	.75 ***	-			
11. SR 13 yrs	-.06	-.15 **	-.15 ***	-.21 ***	-.13**	-.22 ***	-.22 **	.57 ***	.67 ***	.77 ***	-		
12. SR 14 yrs	-.04	-.14 **	-.14 ***	-.15 ***	-.15 ***	-.19 **	-.21 **	.56 ***	.68 ***	.74 ***	.79 ***	-	
13. SR 15 yrs	-.06	-.18 ***	-.16 ***	-.20 ***	-.22 ***	-.23 ***	-.22 ***	.52 ***	.60 ***	.66 ***	.71 ***	.74 ***	-
14. SR 16 yrs	-	-	-.19**	-.25 ***	-.20 **	-.28 ***	-.25 ***	-	-	.65 ***	.65 ***	.69 ***	.80 ***
15. Income	-.01	.00	.04	.03	-.00	.02	.01	.02	-.02	.09 *	.03	.03	.03
16. Warm	-.05	-.11 *	-.03	-.03	-.07	.06	-.01	.00	.01	.01	-.02	-.04	.01
17. Discipline	-.00	-.04	-.01	-.01	.02	.01	-.06	-.01	.02	-.03	-.04	-.02	-.07
18. Punish	.01	-.02	-.02	-.01	.00	-.05	-.01	.01	.02	-.01	-.03	.00	-.03
19. Two parent	-.07	.06	.01	.05	.02	-.04	.07	.02	.01	-.02	-.04	-.02	.01
20. White	-.04	.04	-.03	-.02	-.07	-.07	-.07	-.01	.03	-.05	-.04	-.03	.03
21. Black	-.00	-.03	.00	.00	.03	.07	.04	.03	-.05	.02	-.01	.00	-.01
22. P1 Education	-.07	.03	.01	.04	.06	.02	.11	.07	.05	.05	.03	.02	-.01
23. P2 Education	.01	.06	.07	.09	.05	.06	-.10	.10	.05	.08	.02	.02	.03
24. Boy	-.05	-.00	.03	-.00	-.02	-.02	-.07	.03	-.00	-.02	.00	-.03	.01

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

Note: Due to the cohort sequential design, children starting the study at age 10 years were not represented at age 15 and 16 years. This explains the gaps in the correlation chart above.

Table 2. *Correlation between Predictor and Control Variables.*

	14	15	16	17	18	19	20	21	22	23	24
1. Rules 10 yrs											
2. Rules 11 yrs											
3. Rules 12 yrs											
4. Rules 13 yrs											
5. Rules 14 yrs											
6. Rules 15 yrs											
7. Rules 16 yrs											
8. SR 10 yrs											
9. SR 11 yrs											
10. SR 12 yrs											
11. SR 13 yrs											
12. SR 14 yrs											
13. SR 15 yrs											
14. SR 16 yrs											
15. Income	.10	-									
16. Warm	-.21 **	-.06	-								
17. Discipline	-.06	-.04	-.11 **	-							
18. Punish	.01	-.07	-.19 ***	.37 ***	-						
a19. Two parent	-.01	.19 ***	-.14 ***	-.10 **	-.15 ***	-					
20. White	.01	.08	-.04	-.21 ***	-.17 ***	.30 ***	-				
21. Black	-.03	-.11 **	.08 *	.35 ***	.30 ***	-.37 ***	-.52 ***	-			
22. P1 Education	.12	.12 **	-.01	-.18 ***	-.25 ***	.18 ***	.19 ***	-.29 ***	-		
23. P2 Education	.04	.10 *	.04	-.13 **	-.16 ***	.09 *	.12 **	-.19 ***	.41 ***	-	
24. Boy	-.06	.04	-.02	.09 *	.00	.06	.04	-.03	.10 **	-.02	-

\*p &lt; .05, \*\*p &lt; .01, \*\*\*p &lt; .001.

Table 3. *Coefficients for Intercepts and Slopes of Self-regulation and Rules on Control Variables*

	Emotional Regulation		Facilitative Rules	
	Intercept	$\beta$	Intercept	$\beta$
SES	*.139	-.175	-.053	.093
White	-.033	-.017	-.004	-.179
Black	.051	-.001	-.029	.047
2 Parents	.047	-.047	-.058	.145
Boy	-.040	.074	-.031	.133
Warmth	-.013	-.052	-.091	-.005
Discipline	-.001	-.121	-.013	.016
Punishment	.066	-.142	-.025	.013

\*p &lt; .05

Figure 1. *Latent Growth Curve Model of Facilitative Rules and Self-regulation*

