INTERPERSONAL EMOTION REGULATION IN EMERGING ADULTS

by

Diana Michelle Lisi

B.A. (Spec. Hons.), York University, 2007

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Examination Committee

The undersigned certify that they have read, and recommend to the College of Graduate Studies for acceptance, a thesis entitled:

INTERPERSONAL EMOTION REGULATION IN EMERGING ADULTS submitted by DIANA MICHELLE LISI in partial fulfillment of the requirements of the degree of MASTER OF ARTS.

DR. SUSAN HOLTZMAN, PSYCHOLOGY Supervisor, Professor

DR. MAYA LIBBEN, PSYCHOLOGY Supervisory Committee Member, Professor

DR. ZACHARY WALSH, PSYCHOLOGY Supervisory Committee Member, Professor

DR. JOHN TYLER BINFET, EDUCATION University Examiner, Professor

External Examiner, Professor

July 25, 2016

Abstract

Introduction: The critical role of emotion regulation (ER) for emotional and social wellbeing has now been well-established. Recently, there have been calls in the literature for a better understanding of the interpersonal context of ER. This study used an intensive longitudinal design to (i) describe the frequency with which interpersonal ER strategies are used; (ii) assess the association of interpersonal ER strategies with positive and negative emotions, and (iii) assess the roles of friends and parents in ER efforts.

Methods: A sample of 139 emerging adults was recruited. Participants recorded their emotions, use of 12 interpersonal ER strategies, and use of respective support sources three times a day over the course of a week using their mobile device. The moderating roles of neuroticism and extraversion were also examined. Multilevel modeling was used to assess the within- and between-person variability in positive and negative emotions.

Results: Positive strategies, and specifically those that communicated acceptance of the individual, were not only used most frequently, but were also associated with higher and lower levels of positive and negative emotions, respectively. When source of support was considered, acceptance strategies were associated with positive and negative emotions when used by friends *as well as* parents. Positive engagement strategies (i.e., those that involve attempts to engage in the individual's situation or emotion) were associated with emotions when used by *friends*, but there was no significant association when parents used these same strategies. Neuroticism was found to moderate the relationship between acceptance and negative emotions.

Conclusions: This study is one of the first of its kind to explore interpersonal ER on a dayto-day basis and provides insights into the strategies being used to manage emotions, as well as the respective roles of friends and parents. Future intensive longitudinal research is warranted that considers lagged effects and additional within- and between-person factors associated with positive and negative emotions in order to further understand the dynamic process of ER as it unfolds in social relationships.

Preface

This study was approved by the Behavioural Research Ethics Board at the University of British Columbia's Okanagan campus (H15-01604). Diana Lisi was responsible for the conceptualization and design of the study, completing and overseeing data collection, as well as data analysis, and writing of the final thesis. Preliminary results from this study were presented at the 2016 Biennial Conference of the International Association for Relationships Research: Lisi, D., & Holtzman, S. (2016, July). The nature and impact of interpersonal emotion regulation strategies among young adults: An intensive longitudinal study. Poster presented at the 2016 International Association for Relationship Research Conference, Toronto, ON.

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Dedication

This project is dedicated to my family and my friends, who have never ceased to be there for me, regardless of distance. I have been grateful for having you in my life every day of this journey, and every letter, text message, or phone call has only kept me motivated and moving forward. You are proof of the importance of social support and in many ways, my inspiration for this research.

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Chapter 1: Introduction

Emotion regulation (ER) refers to the management of an individual's emotions in terms of *which* emotion is experienced, *when* the emotion is experienced, and *how* the emotion is experienced or expressed (Gross, 1998). There is strong evidence to suggest that children who are better able to regulate their emotions have better peer relations (Calkins, Gill, Johnson, & Smith, 1999; Mischel et al., 2011) and greater academic success (Eisenberg, Valiente & Eggum, 2010). As adolescents and young adults, those who are better able to regulate have a lower risk of developing mental health problems, including mood disorders (Campbell-Sills & Barlow, 2007), eating disorders (Harrison, Sullivan, Tchanturia, & Treasure, 2010), and alcohol- and substance-related disorders (Dvorak et al., 2014).

Emotion generation has been widely conceptualized as a modal process whereby a particular sequence (situation-attention-appraisal-response) unfolds over time. Specifically, following a particularly relevant situation, whether experienced internally or externally, an individual attends to that situation, and then assesses or appraises it in terms of its meaning. The evaluation of the situation elicits or generates the behavioural or physiological response that constitutes the experience of emotion (Gross, 2007). Emotion regulation takes place when the individual manages their emotions based on their goals (Gross, Sheppes, & Urry, 2011).

To date, much of the ER research has focused on the specific strategies that individuals use to manage the occurrence, intensity, or duration of emotions. The most popular framework for conceptualizing ER is Gross' Process Model (Gross, 1998). Utilizing the modal model of emotion generation, Gross' Process Model suggests that there are opportunities for ER at each stage of emotion generation, yielding a total of five sets of ER

processes, grouped by their temporal occurrence. Antecedent-focused processes occur prior to the emotional response and include: situation selection, situation modification, attentional deployment, and cognitive change. Situation selection refers to acting in such a way that one influences the likelihood of being in an emotionally favourable or unfavourable situation (e.g., avoiding a grumpy neighbour). Situation modification refers to altering a situation in such a way that its emotional impact is more or less favourable (e.g., filing away a rejection letter instead of leaving it out). Attentional deployment refers to ways in which one directs their attention in order to influence their emotional response (e.g., distraction). Cognitive change is when one alters his or her appraisal of an internal or external situation in order to influence the emotional response (e.g., changing how one thinks about a situation). In contrast, response-focused processes occur only once the emotional response is generated and includes response modulation as a regulatory process. Response modulation refers to influencing the physiological, behavioural, or experiential aspects of the response once the emotion itself has been experienced (e.g., using alcohol, drugs, or exercise to cope with the experience of an emotion).

There has been an increasing amount of research on attempting to tie regulation strategies with affect or emotion, mostly using Gross' Process Model as the framework (e.g., Brans, Koval, Verduyn, Lim, & Kuppens, 2013; Webb, Miles, & Sheeran, 2012). For instance, a comprehensive meta-analysis by Webb and colleagues (2012) identified over 300 experimental comparisons of ER strategies and their emotional outcomes. Response modulation strategies (e.g., suppression) were found to have a small effect on emotional outcomes, while cognitive change strategies (e.g., reappraisal) had a small to medium effect. Whereas cognitive reappraisal of the emotional stimulus was found to be one of the most

effective strategies in regulating emotion, results for suppression were not as clear. Suppressing the experience or thoughts of the emotion was not an effective strategy, but suppressing the emotional expression was. From this review it is also clear that the vast majority of ER research has focused on emotional suppression and cognitive reappraisal as ER strategies. Surprisingly, little research to date has focused on other possible ways individuals may regulate their emotions.

Recognizing the importance of examining a wider variety of ER strategies, Heiy and Cheavens (2014) assessed positive and negative emotions at multiple time points throughout the day over 10 days in an undergraduate student sample. Participants were asked to indicate the extent to which they used 40 different strategies for regulating positive and negative emotions. Results indicated that, on average, participants relied on a repertoire of about 15 different strategies each for positive and negative emotions. Interestingly, the most frequently *researched* ER strategies, cognitive reappraisal and suppression, were not among the most frequently *used*. Thus, the existing ER literature appears to have overly focused on suppression and reappraisal even though individuals are using a much more diverse set of strategies on a daily basis. Furthermore, these other strategies may have a stronger impact on day-to-day emotions (Aldao & Nolen-Hoeksema, 2013; Folkman & Lazarus, 1980; Webb et al., 2012). For example, social support seeking was among the most commonly used ER strategies and appeared to be especially impactful on negative emotions (Heiy & Cheavens, 2014). Yet, the interpersonal aspect of ER has received little attention in the literature.

1.1 The Social Context of Emotion Regulation

Seeking social contact in the face of a distressing experience or situation has been considered a basic human motivation. Classic experiments support this "stress and affiliation effect," where, for example, the exposure of an individual to a highly stressful condition (i.e., shocks) is associated with their preference to be with others rather than be alone (Schachter, 1959). According to the "tend and befriend theory," the tendency to seek support during times of stress may be especially prominent among females (Taylor et al., 2000). Beginning in infancy, the impact of close relationships on the ability to regulate emotions has been well documented. Infants must learn to regulate their emotions utilizing their attachment to their caregiver as the secure base to which they can explore the world (Bowlby, 1973; 1982). In fact, much of the research on the social context of ER has focused on the child-caregiver relationship, using an attachment framework to understand how caregivers assist in regulating their children's distressing emotions. In a similar vein, ER is a social process that extends over the course of an individual's development, with young people beginning to turn to additional figures for support and coping.

Interpersonal ER processes are those in which individuals use resources from their social environment to help regulate their emotions (Gross & Thompson, 2007). A number of these processes, such as social sharing and support seeking, have been identified and extensively explored in adult populations. The social sharing of emotions, or the decision to discuss an emotional experience with another person, has been posited to have several functions, including the provision of help or support and comfort or consolation (Rimé, 2007), leading to perceived emotional relief (Zech & Rimé, 2005), and the experience of

more positive emotions (Rimé, 2009). Seeking out support and sharing emotions may serve to elicit different types of support from one's social network, including emotional, instrumental, informational, companionship, and validation support (Wills & Shinar, 2000). Although each of these functional aspects of social support can be valuable under certain circumstances or from certain individuals, emotional and validation support seem to be most consistently associated with enhanced mood and overall well-being (Helgeson, 2003).

However, while each of the aforementioned social regulation processes imply that there are a number of different ways in which relationships can influence a person's emotional well-being (through the act of sharing of an emotional experience or receiving support, for example), they have mostly been examined independently, as distinct processes. Researchers have only begun to address the interpersonal context of ER more closely. This literature is still in its infancy, and research must disentangle how the dyadic and dynamic nature of interpersonal relationships influences the ER process.

An important step in understanding interpersonal ER is carefully examining how individuals use others in the ER process. Zaki & Williams (2013) suggest that processes such as social support and social sharing, for instance, are only "pieces" of interpersonal emotion regulation, and that these processes are seldom thought of in a unitary model. They have thus recently proposed a framework of interpersonal ER that integrates these processes. Their model of interpersonal strategies differentiates between *intrinsic* and *extrinsic* regulation (i.e., is the self or the other person the target of regulation?) and *response-dependent* and *response-independent* mechanisms (i.e., the processes that support regulation). Intrinsic interpersonal regulation begins with an individual experiencing an emotion and establishing a goal to change it. If the individual seeks out another person to help reach this goal, and his or

her emotion is regulated as a result of that person's assistance, they have used an intrinsic, response-dependent process. If the individual was able to regulate without the assistance of the other person, their process was response-independent (the individual labels, assesses, and processes their emotional experience themselves). In contrast, extrinsic regulation refers to a process the *other* person experiences (Zaki & Williams, 2013). In other words, once Person B is sought out to assist in Person A's ER, Person B establishes his or her own sets of goals for regulating Person A's emotions, and this process can also be response-dependent or independent.

This proposed framework for interpersonal ER suggests many areas of opportunity for a better understanding of the iterative and communicative nature of how emotions are regulated socially. However, before research can begin exploring the goals and processes of the other person in a dyad, a more fine-grained understanding of the ER process is necessary in the individual actually experiencing the emotion. Investigating *when* and *how* the individual uses interpersonal regulation on a daily basis may be a good first step.

1.2 Interpersonal Emotion Regulation Strategies

Most research to date has focused on affect regulation as an intrapersonal process. For example, in an attempt to understand the strategies individuals use to regulate their own affect, Parkinson and Totterdell (1999) reviewed over 160 different strategies. They distinguished between cognitive/behavioural and engagement/distraction strategies. Their research provides one of the earliest frameworks for conceptualizing how people regulate their own affect, however these classifications were only considered in instances where the

goal was affect *improvement*. Furthermore, they only considered *intra*personal strategies; those that involved the social context were otherwise overlooked.

Building upon this research, Niven, Totterdell, and Holman (2009) sought to conceptually classify categories of strategies for *inter*personal affect regulation used for both improving *and* worsening one's affect. Their theoretical framework suggested three distinct categories for interpersonal affect regulation strategies: affect-improving vs. affectworsening, cognitive vs. behavioural, and engagement vs. distraction. They identified a comprehensive list of 378 different strategies reported in various areas of literature (e.g., social support, and caregiving). Participants grouped these strategies by their similarities and differences using a card sort method. Hierarchical cluster analysis tested whether these groupings were consistent with the authors' theoretical framework. Their hypotheses were partially supported, with results suggesting that strategies fall within two main categories: (1) those that either improve or worsen affect, and (2) those that engage an individual in the situation or affective state versus those strategies that are more relationship-focused. Further distinctions were made within each of these two categories, forming four main clusters that represent the more specific means of interpersonal affect regulation. (See Table 1 for the breakdown of interpersonal strategy categories and Figure 1 for the organization of strategy prototypes).

	Affect-Improving	Affect-Worsening
	Positive Engagement	Negative Engagement
Engagement	(E.g., Listening, giving advice)	(E.g., Complaining,
		challenging)
Relationshin_Oriented	Acceptance	Rejection
Kelationship-Orienteu	(E.g., Attention, humour)	(E.g., Rejecting, putting down)

Table 1. Interpersonal Affect Regulation Strategies

Note. Adapted from "A Classification of Controlled Interpersonal Affect Regulation Strategies", K. Niven, P. Totterdell, & D. Holman, 2009, *Emotion, 9*(4), pg. 507.



Figure 1. Hierarchical Structure of Affect-Improving and Affect-Worsening Strategies

Note. Adapted from "A Classification of Controlled Interpersonal Affect Regulation Strategies," K. Niven, P. Totterdell, & D. Holman, 2009, *Emotion*, 9(4), pg. 504.

Affect-improving and affect-worsening strategies are those that relate to the *motives* for affect regulation (i.e., does the individual wish to improve or worsen another's affective experience?; Niven, Totterdell, & Holman, 2009). Affect-improving strategies include positive engagement (e.g., listening) and acceptance (e.g., humour) strategies, and affectworsening strategies include negative engagement (e.g., complaining) and rejection (e.g., putting one down) strategies. In contrast to those that are motive-related, engagement and relationship-focused strategies are related to the more specific *means* with which affect regulation is achieved. Engagement strategies are thought to be comparable to instrumental or informational support, such that they focus specifically on the task or situation, whereas relationship-focused strategies focus on the social tie between individuals, similar to more relational forms of support (Niven, Totterdell & Holman, 2009). The coping literature has referred to relationship-focused strategies as those which are intended to manage, regulate, or preserve relationships during periods of stress (Coyne & Smith, 1991; Byrd O'Brien & DeLongis, 1996). Furthermore, they can typically provide either positive (e.g., support or empathy) or negative (e.g., criticism or confrontation) engagement as a means to regulating affect (DeLongis & O'Brien, 1990).

Given how critical social relationships are in distress regulation, more research is necessary that examines these interpersonal strategies further. Niven and colleagues (2009) provide a general conceptualization of interpersonal regulation categories, however little is known about how these interpersonal strategies are used within specific populations, and how this may play out on a day-to-day basis. As there is evidence for age differences in intraindividual strategy use to regulate emotions (Blanchard-Fields & Coats, 2008; Blanchard-Fields, Stein, & Watson, 2004; Brummer, Stopa, & Bucks, 2014; Nolen-

Hoeksema & Aldao, 2011; Zimmerman & Iwanski, 2014), an investigation into the social relationships of emerging adults may provide insight into the factors involved in interpersonal ER that are unique to this group, such as the frequency and effectiveness of strategy use, and the influence of particular sources of support.

1.3 Interpersonal Emotion Regulation in Emerging Adults

Researchers agree that difficulties with ER during childhood can have lasting implications on social, emotional, and academic domains across the lifespan. However, the extent to which close relationships may continue to help or hinder ER during later developmental phases remains poorly understood. As recent literature calls for a better understanding of the social and emotional lives of emerging adults (Rawana, Flett, McPhie, Nguyen, & Norwood, 2014), research should focus on the interplay between ER and social relationships between another critical developmental stage, emerging adulthood (ages 18-25; Arnett, 2007a). This is an important gap in the literature because emerging adulthood is also known to be a critical period of social and emotional development during which young men and women are establishing emotional maturity (Aldwin, 2007) and forming new intimate relationships (Feeney, 2004; Furman & Buhrmester, 1992). Further, the transition to university is a period for young adults that is known to be highly stressful and a period of increased risk for dropout (Bray, Braxton, & Sullivan, 1999), mental health problems (MacLeod & Brownlie, 2014), and feelings of loneliness (Rokach, 2000).

1.4 Source of Support

As social support is known to buffer against stress (Cohen & Wills, 1985) and depressive symptoms during the transition to college or university (Friedlander, Reid, Shupak, & Cribbie, 2007), it is imperative to understand the ways in which social supports are being used, and particularly for emerging adults. This is important because, in contrast to the childhood years, peers play more of a central role in emotional development (Arnett, 2007a; Mann-Feder, Eades, Sobel, & DeStefano, 2014) and make important contributions to emotional and social well-being (Strayhorn, 2012). In fact, there is strong evidence to suggest that social support from peers can have an even more substantial impact on psychosocial well-being compared to family during young adulthood (Allen, Ciambrone, & Welch, 2000).

Although research on the interpersonal context of ER is sparse, there is evidence to suggest that the source of social support is important. Martini (2011) investigated whether the target audience influenced different types of ER strategies used by undergraduates experiencing anger or disappointment. Results indicated that individuals were more likely to express their negative feelings to sources they were closer with (e.g., mother, friend), while controlling their emotions when the source was someone they were more distant with (e.g., acquaintance, boss).

However, as extant research suggests that individuals rely on specific sources for emotional support (Ryan, La Guardia, Solky-Butzel, Chirkov, & Kim, 2005) and tend to utilize specific sources in their social networks for their ER needs (Cheung, Gardner, & Anderson, 2015), limited attention has been paid to exploring how the use of interpersonal strategies may vary across individuals' relationships. Preliminary research has suggested that strategies aimed at improving others' mood are more likely to be used in relationships with a

romantic partner, a friend, or a relative, but not in relationships with work colleagues (Niven, Macdonald, & Holman, 2012). However, a more comprehensive examination of an individual's close relationships with respect to interpersonal ER is lacking. For instance, few studies have examined the comparative roles of friend and family support, and results have been equivocal.

The transition to university for young adults has been considered a type of "strange situation" itself (Kenny, 1987), with some evidence suggesting that support from family is increasingly important during this time (Larose & Boivin, 1998). However, as emerging adults face an increasing amount of autonomy, and as social networks begin to expand over time, so too does their influence on adjustment, which may suggest that peer attachment is more influential (Laible, Carlo, & Raffaelli, 2000). Thus, while evidence shows that individuals use their close relationships and generally turn to specific support sources for ER, a clearer understanding is needed of who is being sought out, the specific ways supports are helping, and whether or not they are effective in regulating another's emotions.

1.5 Methodological Limitations

Despite a vast literature on ER, studies have largely focused on two strategies: suppression and cognitive reappraisal. Further, the traditional approach to studying ER has focused primarily on negatively-valenced emotions (e.g., Martini, 2011; Zimmerman & Iwanski, 2014), without sufficient attention on positive emotions, or the role of ER strategies in their management. Recent research examining frequency and impact of a number of ER strategies has suggested that suppression and reappraisal have relatively low frequency of use when compared with a larger, more comprehensive group of possible ER strategies.

However, the predominant focus of strategy effectiveness in ER research has been on these two strategies, with minimal attention paid to other, more frequently used strategies (Heiy & Cheavens, 2014). It is in the best interest of future research in ER to examine a more realistic repertoire of strategies used in the regulation of *both* positive and negative emotions (Quoidbach, Berry, Hansenne, & Mikilajczak, 2010), and specifically with respect to interpersonal ER strategies.

Not only is more research needed on a wider range of ER strategies, including those that individual's use interpersonally, but this research should also be more ecologically valid. Social relationships are dynamic, and social support is a process (Hobfoll, 2009), therefore attempting to measure their influence on ER using cross-sectional designs, for instance, is likely not conducive to results representative of an individual's day-to-day experiences (Reis, 2001). An increasingly popular method of understanding intra- and interpersonal ER in daily life is through the use of intensive longitudinal designs (commonly referred to as daily diary studies or experience sampling methodologies). Given that emotions are brief (Ekman, 1984) and can thus easily fluctuate over the course of a day, these intensive longitudinal designs are optimal in measuring the dynamic process of emotions and ER. These methods appreciate the richness and complexity of everyday experience, allowing for a more accurate and in-depth exploration of everyday life, and can also diminish response bias (e.g., retrospection bias; Reis, Gable, & Maniaci, 2014). These methods ultimately translate outside of the 'research experiment' context to a more ecologically valid and accurate representation of the processes that occur for individuals in the real world.

Just as life events can influence emotion experience and ER, so too can a host of individual difference factors brought to these experiences (Larsen, 2000), such as personality.

Neuroticism, or the "tendency to experience psychological distress" (Costa & McCrae, 1992), has mostly been associated with unpleasant or negative emotions, moods, or affective states (e.g., McCrae & Costa, 1986). In terms of coping, those high in neuroticism have been considered ineffective copers (DeLongis & Holtzman, 2005), as they not only experience more interpersonal conflicts (Bolger & Zuckerman, 1995), but also report using more maladaptive coping strategies (DeLongis & Holtzman, 2005; Lee-Baggley et al., 2004). Extraversion, on the other hand, refers to "sociability, activity, and the tendency to experience positive emotions such as joy and pleasure" (Costa & McCrae, 1992), and has consistently been linked to positive emotions (e.g., Larsen & Ketelaar, 1991; Ng & Diener, 2009; Tellegen, 1985). Individuals high in extraversion have been considered more effective copers in that they not only select a *variety* of coping strategies, but generally benefit more from adaptive coping strategies than those lower in extraversion (DeLongis & Holtzman, 2005; Lee-Baggley et al., 2004). Factoring in the influence of these characteristics could help to explain some individual differences in daily emotions and the effectiveness of interpersonal ER.

Chapter 2: The Current Study

The current study attempted to address several gaps in the literature on ER and social relationships. First, recent calls in the literature have focused on the need for a clearer understanding of the role of *inter*personal ER (Hofmann, 2014; Dixon-Gordon, Bernecker & Christensen, 2015). Second, research has predominantly focused on the ER of negative emotions and has only recently begun addressing ER in the context of positive emotions. Finally, though there is some evidence to suggest that different relationships evoke the use of certain strategies, the respective roles of parents and peers in the ER of emerging adults is equivocal.

Using an intensive longitudinal design, the present study assessed emerging adults' positive and negative emotions, interpersonal ER strategies, and sources of support at three time points over the course of the day for seven consecutive days. The present study had three major aims. The first aim was to describe the extent to which emerging adults (i) use various interpersonal ER strategies to regulate positive and negative emotions, and (ii) obtain support from friends versus parents as they attempt to regulate both positive and negative emotions. The second aim was to determine the association between interpersonal ER strategies and daily positive and negative emotions. The third aim was to determine the association between daily emotions and interpersonal ER strategies used by different support sources (e.g., friend, parent). Additionally, due to the lack of research in this area, the roles of neuroticism and extraversion were explored as potential predictors of daily positive and negative emotions and interpersonal ER strategy effectiveness.

2.1 Research Aims & Hypotheses

2.1.1 Research Aim 1

The first aim of this study was descriptive in nature, and was comprised of two parts. The first part was to describe the extent to which emerging adults use various interpersonal ER strategies to regulate the positive and negative emotions they experience on a daily basis.

Hypothesis 1a. It was expected that overall, positive strategies would be used more than negative strategies. Using the Niven and colleagues (2009) study as a guide, it was also expected that strategies involving acceptance (i.e., validation) of the individual would be the most frequently used positive efforts to regulate emotions, whereas strategies involving rejection with the individual would be used the least.

The second part of this aim was to describe the extent to which emerging adults obtain support from friends versus parents as they attempt to regulate both positive and negative emotions.

Hypotheses 1b. Based on existing research findings (e.g., Hays & Oxley, 1986;
Levitt, Weber, & Guacci, 1993; Martini, 2011; Rimé, 2009), it was expected that on average, friends would use both positive and negative interpersonal ER strategies more than parents. Similarly, as friends may be more uncomfortable with intimacy or dealing with negative emotions (Barbee, Gulley, & Cunningham, 1990), it is also hypothesized that friends would use more acceptance strategies, such as humour. In contrast, as some research shows that parents provide more frequent emotional support when compared to peers (Hombrados-Mendieta,

Gomez-Jacinto, Dominguez-Fuentes, Garcia-Leiva, & Castro-Travé, 2012), it was expected that parents would use more positive engagement strategies than friends.

2.1.2 Research Aim 2

The second major aim of the study was to determine the association between interpersonal ER strategies and daily positive and negative emotions.

Hypothesis 2a. Based on findings from previous work (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Fichman, Koestner, Zuroff, & Gordon, 1999; Heiy & Cheavens, 2014), it was expected that positive interpersonal ER strategies would be associated with higher levels of positive emotions and lower levels of negative emotions. Specifically, positive engagement (e.g., listening, advice) and acceptance (e.g., valuing, humour) strategies were both expected to be associated with higher levels of positive emotions and lower levels of negative

Hypothesis 2b. Negative strategies would be associated with lower levels of positive and higher levels of negative emotions. Specifically, negative engagement (e.g., complaining, explaining hurt) and rejection (e.g., ignoring, criticism) strategies were both hypothesized to be associated with higher levels of negative emotions and lower levels of positive emotions.

2.1.3 Research Aim 3

The third aim of the study was to determine whether the relationship between interpersonal ER strategies and emotions was influenced by support source (e.g., friend, parent). Given the lack of research in this area, this aim was mainly exploratory.

- *Hypothesis 3a.* Positive engagement strategies (e.g., listening, giving advice) were expected to be associated with higher levels of positive emotion and lower levels of negative emotions when elicited by parents; and
- Hypothesis 3b. Some support has shown that friendships using humour and those high on measures of companionship are associated with an increase in positive mood (Bippus, 2000) and a decrease in negative affect (DeSousa & Cerqueira-Santos, 2012), respectively. As such, acceptance strategies (e.g., valuing, humour) were expected to be associated with higher levels of positive emotions and lower levels of negative emotions when used by friends.

2.1.4 Exploratory Aim

The role of personality was also explored. Positive associations were expected between extraversion and positive emotions, and neuroticism and negative emotions, as suggested by past research (e.g., Larsen & Ketelaar, 1989; 1991). Negative associations between extraversion and negative emotions, and neuroticism and positive emotions were exploratory, given past research's equivocal findings (e.g., Larsen & Ketalaar, 1989; 1991).

Chapter 3: Methods

3.1 Participants

To be eligible for inclusion in the study, participants were required to (a) be between the ages of 18 and 21, (b) be enrolled in an undergraduate program at the University of British Columbia's Okanagan campus, (c) have regular access to a mobile (or compatible) device, and (d) be fluent in English. Participants were excluded if they had ever received a diagnosis of borderline personality disorder, bipolar disorder, or schizophrenia.

Recruitment was conducted using the undergraduate participant pool (psychology students only) and through flyers distributed around campus. Participants were also recruited by classroom visits, and an information booth set up in popular areas around campus. Individuals enrolled in eligible psychology courses were given a choice of either receiving partial course credit (up to 2.5 SONA credits) or being entered into a draw for a \$100 Amazon gift card. To receive the full 2.5 credits, participants must have completed 75% of the daily assessments. Those who completed less than 75% were given credit on a prorated basis. Participants not enrolled in an eligible psychology course were automatically entered into the gift card draw.

3.2 Procedure

Part One. Participants were assessed for eligibility upon arriving to the research lab. A trained research assistant reviewed the informed consent with eligible participants, including a review of the study's purpose, potential risks and benefits, and withdrawal procedures. Participants then completed a set of questionnaires assessing basic demographic

information, as well as relevant contextual variables (e.g., personality). On average, baseline questionnaires were answered in approximately 17 minutes. Following completion of the baseline questionnaires, participants were asked to download a free mobile phone application to their device, which was necessary for participation in the second part of the study. Research assistants ensured the mobile application was tested on each device, and that participants were comfortable using the application. Any questions regarding the smartphone application, notifications, or study requirements were addressed before the participant left the lab.

Part Two. In the second part of the study, participants used a smartphone application to complete brief daily assessments of their emotions and ER strategy use. Daily assessments were collected three times a day (at 11 a.m., 3:30 p.m., and 8 p.m.) for seven days, beginning the day after the on-site component. Participants received a notification from the mobile application when it was time to participate and were instructed to complete the questionnaire immediately, or as soon as possible in situations where they were unable to do so (e.g., in class, driving) to get an accurate assessment of their current emotional state. Participants were given a two-hour window to complete the questionnaires before the survey became inactive. On average, participants responded to the daily questionnaires 24 minutes after receiving the notification (M = 24:45, SD = 31:42). The majority of the daily assessments (85%) were completed in three minutes or less.

Daily assessments evaluated current levels of positive and negative emotion and which interpersonal ER strategies were used since the last assessment. For each strategy endorsed, participants were asked to specify which support source was involved in using that strategy. All daily assessments were identical, with the exception of the end of day

assessment, which inquired about the extent of their independent efforts to manage their emotions over the course of the entire day. For the purposes of this study, only interpersonal ER strategies were considered.

This study was approved by the Behavioural Research Ethics Board at the University of British Columbia's Okanagan campus (BREB #: H1501604) and all participants provided informed consent.

3.3 Apparatus

Daily assessments were collected using the mobile application, *MetricWire* (<u>www.metricwire.com</u>), which was free for participants to download. *MetricWire* facilitates experience-sampling research by allowing users the opportunity to participate using their smartphone. Participants receive notifications on their compatible iOS or Android mobile device via the *MetricWire* application, independent of an Internet connection. All responses were time-stamped upon submission.

3.4 Measures

3.4.1 Baseline Measures

Demographics. A number of relevant contextual variables (e.g., age, ethnicity, extent of social network for social support, living arrangements) were assessed.

Personality. The Big Five Inventory (BFI; John, Donahue, & Kentle, 1991; John, Naumann, & Soto, 2008) is a quick and reliable measure of an individual's five personality domains: neuroticism, extraversion, openness to experience, conscientiousness, and
agreeableness. The BFI consists of 44 items, and takes up to 5 minutes to complete. Items are rated on a 5-point Likert scale with responses ranging from *Strongly Disagree* [1] to *Strongly Agree* [5]. Once negatively-keyed items were reverse-scored, subscale means were computed for each of the five personality domains. However, only the neuroticism and extraversion scores were used for the purposes of this study as these were deemed to be most relevant for ER based on past research (e.g., Larsen & Ketelaar, 1991; Ng & Diener, 2009; Tellegen, 1985). Higher scores reflect a higher level of that personality domain, with possible subscale means ranging from 1 to 5.

3.4.2 Daily Assessment Measures

Emotions. Emotional intensity was assessed for seven positive and seven negative emotions at each of the daily assessments. Positive emotions included: joy, excitement, pride, love, amusement, interest, and surprise. Negative emotions included: anger, anxiety/fear, embarrassment/shame, guilt, disgust, sadness, and loneliness. This list of emotions was adapted from a daily diary study recently published in *Emotion* (Heiy & Cheavens, 2014). Emotions were presented alphabetically, and alternating in positive and negative valence.

Each emotion was rated on a four-point Likert scale assessing the degree to which the emotion was being experienced at the current moment [*Not at all* (0), *A little* [1], *Somewhat* [2], or *A lot* (3)]. A total score was calculated separately for the seven positive emotions and seven negative emotions, with possible total scores ranging from 0 to 21. If more than two of the seven intensity ratings were missing, a total score was not computed. Internal consistency for the emotion subscales was good, with respective Cronbach's alpha values of .83 and .77 for positive and negative emotions (see Table 2).

Table 2. Descriptive Statistics for Emotion Intensity

					Inte	ernal Consister	ncy
		Possible			Morning	Afternoon	Evening
	n	Range	Mean	SD	α	α	α
Total Positive Emotion Intensity	2418	0-21	6.50	4.42	.82	.81	.85
Amused	2415	0-3	.87	.90			
Excited	2410	0-3	.98	.95			
Interested	2410	0-3	.98	.85			
Joyful	2412	0-3	1.21	.99			
Loved	2415	0-3	1.44	1.04			
Proud	2414	0-3	.67	.85			
Surprised	2414	0-3	.35	.66			
Total Negative Emotion Intensity	2418	0-21	2.97	3.26	.77	.74	.79
Angry	2414	0-3	.33	.67			
Anxious	2412	0-3	.86	.94			
Disgusted	2415	0-3	.20	.54			
Embarrassed	2413	0-3	.21	.54			
Guilty	2416	0-3	.34	.71			
Lonely	2413	0-3	.55	.81			
Sad	2411	0-3	.49	.77			

Note: Range for specific emotions represents a four-point Likert scale where 0 = not at all, 1 = a bit, 2 = a medium amount, and 3 = a lot. Internal consistency measured between all positive and negative emotions.

Interpersonal ER Strategies. Interpersonal ER strategies were assessed using a modified version of the Emotion Regulation of Others and Self (EROS)'s extrinsic scale (Niven, Totterdell, Stride, & Holman, 2011). The extrinsic scale consists of nine items measuring how often prototypical interpersonal strategies were used. Strategies were primarily conceptualized as being either affect-improving or affect-worsening based on the support source's motivations. Three additional items not included in the EROS' final extrinsic scale ("complained about my behaviour," "made it clear they don't care about how I feel," and "ignored me"; Niven, Totterdell, & Holman, 2009) were included in the present study to cover a wider range of possible strategies and to counterbalance the larger number of affect-improving strategies. Affect-improving and affect-worsening categories were further clustered into four groups. Affect-improving strategies were broken down into positive engagement strategies (e.g., "gave me advice," "listened to my problems") and acceptance strategies (e.g., "made me laugh," "spent time with me"). Affect-worsening strategies were broken down into negative engagement (e.g., "explained how I hurt them or someone else," "complained about my behaviour") and rejection (e.g., "told me about my shortcomings," "made it clear they don't care about my feelings") strategies. Because this study did not assess the motives of strategy use, affect-improving strategies are referred to as "positive" strategies, and affect-worsening as "negative" from this point forward. Thus, six positive and six negative strategies formed the checklist of potential interpersonal ER strategies. Participants were asked to indicate which of the 12 strategies, if any, had been used since the last assessment. Strategies were presented in a checklist format (i.e., yes or no), in random order. Positive and negative strategies were totalled separately, with total number of possible strategies used ranging from 0 to 6 at each time point.

Support Source. For each strategy endorsed, participants were asked to specify who was involved in that strategy's use ("parent," "friend," "boyfriend/girlfriend," or "other"). Total scores for each support source were computed, which reflected the total number of strategies that support source was involved in at that particular time point. For the purposes of this study, only those strategies used with friends and parents are presented.

All items included in the daily assessments are outlined in Appendix A.

3.5 Statistical Analysis

Research Aim 1 was addressed by exploring the frequency and descriptive statistics of positive and negative strategies, and strategy use by support source. Statistical comparisons were conducted to assess whether there were differences in the frequency with which friends versus parents were involved in participants' ER. As scores were not normally distributed, six Wilcoxon signed-rank tests were run (one for the total positive and total negative strategy scores and one for each of the four strategy subscales).

To address Research Aims 2 and 3, data were analyzed using multilevel modeling (MLM), which allowed for the identification of within- and between-person factors associated with daily levels of positive and negative emotions. MLM is appropriate when data are nested in a hierarchical fashion (in this case, daily assessments [level 1] nested within participant [level 2]; e.g., Hox, 2010; Nezlek, 2008; Raudenbush & Bryk, 2002; Snijders & Bosker, 2012). Level 1 data estimated within-person variability, and Level 2 data estimated between-person variability; one inherent benefit of MLM is that it assesses both sources of variability simultaneously. A concurrent (i.e., within time point) analysis of the factors associated with positive and negative emotions was conducted. With up to 21 time

points for each individual, the focus of this study was in determining a more reliable and precise estimate of the *within* time point association between interpersonal ER strategies, source of support, and emotions.

Level 1 (within-person) predictors of positive and negative emotions included positive and negative interpersonal ER strategies, assessed by two global measures (total number of positive strategies used and total number of negative strategies used) and four subscale measures (positive engagement, acceptance, negative engagement, and rejection), and the number of strategies that were used with the help of friends and parents (again, scored using two global measures and four subscale measures). Gender was examined as a potential Level 2 (between-person) covariate of positive and negative emotion as past research has shown differences between males' and females' daily emotions (e.g., Nolen-Hoeksema & Aldao, 2011) and use of ER strategies. Personality, specifically, neuroticism and extraversion, which have consistently been associated with ER, were also explored as potential Level 2 covariates to account for any between-person variation. In the event a Level 2 covariate was a significant improvement to the model, possible cross-level interactions were explored. Similar to simple interactions seen in ANOVA, cross-level interactions indicate that the relationship between the predictor and outcome depends on a third variable, however specific to MLM, this interaction crosses levels of a hierarchy. In other words, the between-person or higher-level variables moderate (i.e., enhance or diminish) the size of the within-person or lower-level slopes (Heck, Thomas, & Tabata, 2014). In this case, that means asking the question of whether or not the relationship between interpersonal strategies and positive and negative emotions is dependent on personality.

3.5.1 Within-and-Between Analysis (WABA)

Prior to modeling predictors in MLM, within-and-between analyses (Dansereau Alutto, & Yammarino, 1984) were used to determine which Level 1 variables should be considered in the model as predictors, as well as at what stage they should be entered (Hofmann, 2004; O'Connor, 2004). WABA assesses whether individuals nested in groups (or in this case, time points nested in individuals) should be conceptualized as "wholes" (i.e., that there is more between-person variation), "parts" (i.e., that there is more within-person variation), or "*equivocal*" (i.e., that there is equal within- and between-group variation; Dansereau et al., 1984). WABA involves three steps. The first step (WABA I) addresses whether the variance in each of the variables of interest (e.g., positive and negative emotions, positive and negative interpersonal strategies, and strategies by support source) as individual variables was attributable to within-person factors, between-person factors, or both. The second step of WABA (WABA II) examines the associations between *pairs* of variables (e.g., total positive interpersonal strategies and total positive emotional intensity), and determines the extent to which their covariance is within-person or between-person. Finally, WABA III tests the within- and between-person components relative to one another, providing an overall explanation of whether the variation and covariation lies within- or between-persons. Significant amounts of variability either within or between people warranted inclusion in MLM analyses.

As the current study assessed within-person differences across time points, all Level 1 variables were group (person)-mean centred (i.e., in order to compare a person's scores at each time point to their own overall average). Level 2 variables were grand-mean centred, where the individual's scores were compared to the overall sample to assess the differences

between people. If WABA revealed between-person variation in Level 1 variables, they were aggregated for entry into the model at Level 2.

3.5.2 Multilevel Modeling (MLM)

The first step when building multilevel models is to evaluate the variability of the dependent variable that exists without any predictors in the model. This model acts as a "baseline" that not only provides a starting point by which successive comparisons of models (with predictors of interest) can be made, but also allows for the computation of the intraclass correlation (ICC), an indicator of whether there is enough of an influence of the nesting variable (i.e., between-person variability) to warrant multilevel analyses to begin with. In the event of a substantial amount of between-person variability, multilevel models are built, a single predictor at a time, and assessed for improvement by inspecting model fit statistics, such as -2 Log Likelihood (-2LL). Though ICC values and WABA provide similar information conceptually, they may lead to conflicting values depending on a number of factors, including sample size. An advantage of using WABA is that it considers both statistical and practical significance, and since WABA is generally a more stringent procedure (Castro, 2002; Klein & Kozlowski, 2011), it was used as the default indicator of variability that informed the model building process.

The second step in model building was to include Level 1 predictors into the model as fixed, that is, treating the influence of the predictor as consistent for all individuals. WABA analyses guided the order in which Level 1 predictors were entered into the model. If a Level 1 predictor was not significantly associated with the outcome variable, it was omitted. If the presence of the fixed predictor improved model fit, it was then allowed to vary randomly,

and the model was again assessed for improvement. Random parameters indicate that the influence of the predictor is allowed to vary across participants, an assumption that often paints a more precise picture of individual differences. If the model with random parameters was not a significant improvement, the predictor was retained as fixed.

The third step modeled between-person variability by adding Level 2 predictors. Level 2 covariates of interest were added to the model based on their bivariate correlations with the outcome variable, with stronger correlations being entered first. As with entering Level 1 covariates, each Level 2 predictor was added to the model one at a time in order to specify a best-fitting model. Predictors that improved the model were subsequently tested for cross-level interactions with Level 1 variables; those that did not improve model fit were not retained in subsequent model iterations.

A total of 7 multilevel models were built in the present study. All multilevel models were run using the MIXED models procedure in IBM SPSS version 23.0. Cross-level interactions were plotted using the R statistical computing software version 3.1.1, as guided by Preacher, Curran, and Bauer (2006). Model building specifications for the present study are reported in Appendix B.

Simple bootstrapping (using 1000 samples) was used as a resampling method, as a more robust technique that provides more precise parameter estimates (van der Leeden, Meijer, & Busin, 2008). If the model failed to converge, bootstrapping with 2000 samples was used, as increasing the number of iterations has been suggested as one potential remedy (Garson, 2013; Heck, Thomas, & Tabata, 2014). Maximum likelihood (ML) was used as the estimation method for all models, which allows for direct comparisons between models through a likelihood ratio test of deviance (e.g., -2LL), a welcome alternative over the Wald

test, which can lead to Type II errors (Garson, 2013). The likelihood ratio test uses a χ^2 value, where the degrees of freedom are equal to the difference in the number of parameters estimated between two models. A significant χ^2 value indicates that the parameters specified in the model have improved the overall fit, and that the predictor should be retained.

As a further gauge of model fit, a pseudo R^2 was used as a rough estimate of the proportion of variance explained. However, this well-known statistic commonly used in ordinary regression analyses is not as straightforward in MLM. Because there exists more than one level of variability in the data, the proportion of variance explained in the model must be parsed apart (Hox, 2010). A simple way to do this has been proposed by Raudenbush and Bryk (2002), and involves calculating the proportions of total residual variance at Level 1 and Level 2 that exists as predictors are entered into the model. However, as the question of how much variance is explained by the model is a complicated issue that excludes consideration of variance components, for example, the computation of these formulae and the interpretation of these values can become complex and undesirable (Hox, 2010; Snijders & Bosker, 2012). Thus, though total proportions of Level 1 and Level 2 variance explained are reported in the present study (with incremental values presented in model building tables on a predictor by predictor basis), they merely provide a rough estimate of the variance explained in random effects models, and should thus be interpreted with caution.

An unstructured covariance-correlation matrix (UNR) was used for random effects models. This allowed for an estimate of the variance of the random intercept and random slope individually, as well as an estimate of their covariation. This covariance type is used when the covariance structure is unknown (Garson, 2013). As the unstructured covariance type tests for two additional parameters, for example, the random effect of positive strategy

use (i.e., the random slope) and the covariance between positive strategy use and the random intercept, the *p* value for the χ^2 test was halved in these instances to assess the significance of the random effect for positive strategies alone (Hayes, 2006; Snijders & Bosker, 2012).

Chapter 4: Results

4.1 **Response Rates**

One hundred and forty-six participants completed Part One of the study. Six participants withdrew from the study after Part One, and one participant was removed from analyses due to study ineligibility. After accounting for the attrition of seven participants over the entirety of the data collection period, a total of 139 participants comprised the final sample. There were a total of 2,919 possible participation opportunities (21 time points per person), of which 2,418 (82.84%) responses were received. The majority of participants (n = 114) completed at least 75% of all possible time points. Response rates did not differ significantly based on time of day, and ranged between 82% and 84% for morning, afternoon, and evening responses.

4.2 Sample Characteristics

The mean age of participants in the sample was 19.41 years (SD = 1.12), of which the majority (78.4%) identified as female. The sample was largely Caucasian (64.7%), and though the majority of participants were born in Canada (78.4%), 59.7% reported moving by themselves to the Okanagan for school (as opposed to 28.8% whose families are from the Okanagan). The sample was primarily comprised of current psychology and human kinetics majors (30.2% and 17.3%, respectively), though participants in a wide range of programs made up the sample. Table 3 presents additional sample characteristics.

When asked to identify preferred support sources, approximately 94% ranked friends in their top three support sources, and approximately 91% ranked parents within their top three preferred sources. Forty percent of participants ranked parents as their most preferred support source, whereas 28% ranked friends first (see Table 4).

Descriptive statistics for key study variables (i.e., emotion intensity and strategy use) are provided in Tables 2 and 5.

	п	%
Gender Identity		
Male	30	21.6
Female	109	78.4
Relationship Status		
Single/Never Married	88	63.3
In a relationship	51	36.7
< 1 year	22	43.1
1-3 years	21	41.2
> 3 years	8	15.7
Race/Ethnicity		
White/Caucasian	90	64.7
Asian	20	14.4
Other	29	20.9
Birth Place		
Canada	109	78.4
United States	4	2.9
International	26	18.7
Location of Immediate Family		
Okanagan	55	39.6
British Columbia	39	28.1
Canada – Other	29	20.9
United States	3	2.2
International	13	9.4

Table 3. Final Sample Characteristics

N = 139

Table 4	Sunnort	Proforonco	Rankings	
	Support	rejerence	Runnings	

		Ran	king	
-	1	2	3	Not ranked
Preferred Social Support Source				
Friend(s)	39 (28.1%)	45 (32.4%)	32 (23%)	23 (16.5%)
Parent(s)	56 (40.3%)	41 (29.5%)	30 (21.6%)	12 (8.6%)
Romantic partner, if applicable	25 (18%)	16 (11.5%)	10 (7.2%)	88 (63.3%)
Classmates/acquaintances	0	5 (3.6%)	18 (12.9%	116 (83.5%)
A religious figure or group	3 (2.2%)	2 (1.4%)	1 (0.7%)	133 (95.7%)
Sibling(s), if applicable	6 (4.3%)	26 (18.7%)	24 (17.3%)	83 (59.7%)
Extended family members	1 (0.7%)	1 (0.7%)	11 (7.9%)	126 (90.6%)
No one/keep to self	9 (6.5%)	3 (2.2%)	11 (7.9%)	116 (83.5%)
Other	0	0	2 (1.4%)	137 (98.6%)
11 100				

N = 139

 Table 5. Descriptive Statistics for Interpersonal ER Strategies and Wilcoxon Signed Ranks Test for Parent – Friend Strategy

 Differences

	,	Time Points Used		
	Friends or			
	Parents (%)	Friends (%)	Parents (%)	Ζ
Positive Strategies	1383 (58.0)	1182 (49.5)	329 (13.8)	-22.479***
Positive Engagement Strategies	593 (24.9)	496 (20.8)	153 (6.4)	-13.544***
Listen to your problems	350 (14.7)	293 (12.3)	92 (3.9)	
Point out your positive characteristics	215 (9.0)	185 (7.8)	42 (1.8)	
Give you advice	287 (12.0)	227 (9.5)	82 (3.4)	
Acceptance Strategies	1229 (51.5)	1060 (44.4)	247 (10.4)	-22.175***
Spend time with you	867 (36.3)	737 (30.9)	164 (6.9)	
Do something nice with you	533 (22.3)	460 (19.3)	89 (3.7)	
Make you laugh	818 (34.3)	721 (30.2)	141 (5.9)	
Negative Strategies	172 (7.2)	133 (5.6)	43 (1.8)	-5.483***
Negative Engagement Strategies	57 (2.4)	37 (1.6)	22 (0.9)	-1.471
Explain how you hurt them or someone else	19 (0.8)	14 (0.6)	9 (0.4)	
Complain about your behaviour	48 (2.0)	28 (1.2)	22 (0.9)	
Rejection Strategies	140 (5.9)	109 (4.6)	33 (1.4)	-5.401***
Make it clear they don't care about how you feel	20 (0.8)	12 (0.5)	9 (0.4)	
Tell you about your shortcomings	32 (1.3)	29 (1.2)	19 (0.8)	
Ignore you	52 (2.2)	39 (1.6)	14 (0.6)	
Act annoyed around you	67 (2.8)	47 (2.0)	21 (0.9)	
None of the above	621 (26)	-	-	

Note. Percentage of strategies used is based on possible time points with available strategy data (n = 2386). Time points used = number of times at least one specific strategy was endorsed. Multiple strategies may have been used at one time point. Strategies may have been used with multiple support sources.

****p* < .001

4.3 Research Aim 1: Describing Daily Interpersonal ER Strategies and Support Source

The first aim was to describe the extent to which emerging adults use various interpersonal ER strategies to regulate positive and negative emotions on a daily basis.

Hypothesis 1a: Positive strategies, and acceptance strategies in particular, were expected to be used most frequently, while negative strategies, and rejection strategies specifically, were expected to be used least frequently.

The mean number of positive strategies used at each time point was 1.29 (SD = 1.49), range 0-6), whereas the mean number of negative strategies used was 0.10 (SD = 0.43), range 0-6). The results of a related-samples Wilcoxon signed rank test supported this difference, Z = -30.79, p < .001, confirming that positive strategies were used significantly more often. Frequencies for each individual strategy are provided in Table 5.

Consistent with hypotheses, acceptance strategies ("*spent time with me*," "*did something nice with me*," or "*made me laugh*") were the most common across time points, with at least one being used in 51.5% of all study time points, followed by positive engagement strategies ("*listened to my problems*," "*pointed out my positive characteristics*," or "*gave me advice*"), which were reported in 24.9% of all time points. Of the six individual positive strategies, "*spent time with me*" (36.3% of time points) and "*made me laugh*" (34.3% of time points), were the most common.

Negative strategies, in contrast, were infrequently used altogether. Rejection ("*made it clear they don't care about how I feel,*" "*told me about my shortcomings,*" "*ignored me,*" or "*acted annoyed around me*") was reported in 5.9% of time points, whereas negative

engagement strategies ("*explained how I hurt them or someone else*" or "*complained about my behaviour*") were reported in only 2.4% of time points. This is contrary to study hypotheses that expected rejection strategies to be least common among participants, and this difference was significant, Z = -6.89, p < .001. Across all time points, the most frequently used negative strategies were "*acted annoyed around me*" and "*ignored me*" (2.8% and 2.2% of all time points, respectively).

The first aim also sought to describe the extent to which emerging adults obtain support from friends versus parents as they attempt to regulate their emotions.

Hypothesis 1b: It was expected that (i) more interpersonal ER strategies (positive and negative) would be used with friends as opposed to parents, (ii) friends would use more acceptance strategies, and (iii) parents would use more positive engagement strategies.

As hypothesized, more positive interpersonal strategies were used with friends than with parents (49.5% versus 13.8%) on average, and this difference was significant, Z = -22.48, p < .001. Similar results were found for negative interpersonal strategies (5.6% versus 1.8%), Z = -5.48, p < .001. Frequencies for specific strategy use among friends and parents were examined, and each of the 12 strategies measured were used more with friends than with parents. Strategy subscales were also examined, and revealed a significant difference between type of strategy (i.e., subscale) and support source, with friends using significantly more, negating the hypothesis that parents would use more positive engagement strategies. The only non-significant difference between friend and parent strategies was with negative engagement strategies, but this result was likely due to the infrequent use of these strategies altogether. All Wilcoxon signed rank test results are presented in Table 5.

4.4 Research Aim 2: The Association between Interpersonal ER Strategies and Emotions

The second aim was to determine the association between interpersonal ER strategies and daily positive and negative emotions. This aim examined interpersonal strategies at both the global positive and negative strategy level and at their subscale level (e.g., positive engagement, acceptance, negative engagement, rejection).

WABA Results. The results of the WABA I analyses, which tested whether the variance of each of the outcome and Level 1 predictor variables was primarily due to between- or within-person factors, are presented in Table 6. Results showed that there was a significant amount of within-person variation in levels of positive and negative emotions (63% and 62%, respectively). At the global interpersonal strategy level, the variability in positive interpersonal strategy use (67%) and negative interpersonal strategy use (91%) was also primarily within-person. Given the very low incidence of negative interpersonal strategies (reported on only 7.2% of all time points, and even fewer endorsement on strategy subscales), these variables were not included in the subsequent WABA and MLM analyses. All other Level 1 predictors demonstrated sufficient within-person variance and were reported with sufficient frequency (at least 10% of all time points) to warrant consideration as a Level 1 predictor. The use of positive engagement strategies by parents was an exception, but it was still included in subsequent analyses to assess the comparative roles of those positive engagement strategies used by friends and parents. Similar to the global level, significant amounts of within-person variability were identified at the subscale level. As with the global interpersonal scales, infrequent prevalence of negative strategies (i.e., negative

engagement and rejection strategies) also precluded their inclusion in further WABA and MLM analyses.

		Proportion c	of Variance	Predominant
	-	Between-Person	Within-Person	Source of
	Cases	η^2	η^2	Variability
Total Intensity of Positive Emotions	2418	.37	.63	Within
Total Intensity of Negative Emotions	2418	.39	.62	Within
Total Positive Strategies Used	2386	.33	.67	Within
Positive Engagement Strategies	2386	.22	.78	Within
Acceptance Strategies	2386	.31	.69	Within
Total Negative Strategies Used	2386	.09	.91	Within
Negative Engagement Strategies	2386	.09	.91	Within
Rejection Strategies	2386	.09	.91	Within
Friends - Positive Strategies	2386	.33	.67	Within
Positive Engagement Strategies	2386	.23	.77	Within
Acceptance Strategies	2386	.30	.70	Within
Friends - Negative Strategies	2386	.11	.90	Within
Negative Engagement Strategies	2386	.09	.91	Within
Rejection Strategies	2386	.11	.89	Within
Parents - Positive Strategies	2386	.27	.73	Within
Positive Engagement Strategies	2386	.15	.85	Within
Acceptance Strategies	2386	.30	.70	Within
Parents - Negative Strategies	2386	.09	.91	Within
Negative Engagement Strategies	2386	.11	.89	Within
Rejection Strategies	2386	.08	.93	Within

 Table 6. WABA I Results: Proportion of Variance Between and Within Persons, by variable

In WABA II, which tested whether each of the associations between the outcome and predictor variables were due to between- or within-person variation, results indicated a significant within-person association between positive interpersonal strategies and both positive and negative emotions as well as significant between-person associations with positive emotions. At the subscale level, results suggested that positive engagement strategies indicated a significant amount of within-person and between-person covariation with positive emotions. A trend was found for the covariation between positive engagement strategies and negative emotions (p = .07). Significant covariation between positive emotions and acceptance strategies were found both between- and within-person, but only a significant within-person association was found between acceptance strategies and negative emotions. Models were thus built using positive engagement and acceptance strategies as the Level 1 predictors, entered in order, based on the strength of their within-person covariation with positive emotions.

WABA III tested whether the total correlation between a predictor and the outcome variable were due to between- or within-person factors. Results indicated that the overall correlation between total positive strategies and both positive and negative emotions consisted primarily of within-person components. When examining the components at the subscale level, positive engagement strategies were primarily comprised of between-person components, and acceptance strategies of within-person components; these results were consistent for both positive and negative emotions. Table 7 summarizes all WABA II and III results.

	WABA II: C	Correlations	WABA III: WABA Components		
	Between	Within	Raw/Total Correlation	Between	Within
DV: Positive Emotions					
Total Positive Strategies	.30***	.25***	.27	.11	.16
Positive Engagement	.29***	.10***	.15	.08	.07
Acceptance	.27**	.28***	.27	.09	.18
Friend - Positive Strategies	.26**	.23***	.24	.09	.15
Positive Engagement	.30***	.09***	.15	.09	.06
Acceptance	.22*	.26***	.24	.07	.17
Parent - Positive Strategies	.15 ^t	.07***	.10	.05	.05
Positive Engagement	.09 ^t	.04 ^t	.05	.02	.03
Acceptance	.15 ^t	.07***	.10	.05	.05
DV: Negative Emotions					
Total Positive Strategies	.04	15***	08	.01	09
Positive Engagement	.16 ^t	01	.04	.05	01
Acceptance	04	19***	14	01	12
Friend - Positive Strategies	.05	13***	07	.02	08
Positive Engagement	.14	02	.03	.04	01
Acceptance	01	16***	11	0	10
Parent - Positive Strategies	04	04	04	01	02
Positive Engagement	.08	.03	.04	.02	.02
Acceptance	10	08***	08	03	05

Table 7. WABA II and III Results: Between, Within, and Total Correlations, and WABA Components, between pairs of IVs and DVs

Note. IV = independent variable, DV = dependent variable $*p < .05, **p < .01, ***p < .001, ^t = trend$

Hypothesis 2a: Positive interpersonal ER strategies, and specifically positive engagement and acceptance strategies (at the subscale level), were expected to be associated with higher levels of positive emotion and lower levels of negative emotions.

(i) Positive Emotions Model

Global Strategy Level. Using the results from the WABA analyses, a model was constructed for positive emotions. A baseline, or null model, was established, which estimated the amount of variability in levels of positive emotion. The ICC was 0.33, indicating that approximately one-third of the variability in positive emotions existed between people (i.e., as a result of the nesting), relatively consistent with WABA results. The null model was defined by the following equations:

Level 1: $Y_{ij} = \beta_{0j} + r_{ij}$ Level 2: $\beta_{0i} = \gamma_{00} + u_{0i}$,

where level of positive emotions (outcome variable; Y_{ij}) at any given time point is equal to the person's mean level of positive emotion across all time points (intercept; β_{0j}) plus any deviation from this average (residual; r_{ij}). This is known as the within-person model. The Level 2, between-person model, indicates that a person's average level of positive emotions across all time points (β_{0j}) is equal to the overall level of positive emotions in the sample (γ_{00}) plus any other unexplained variance (u_{0j}). The null model thus estimated three parameters, one that was fixed across all people (γ_{00}), and two that were random (u_{0j} , r_{ij}), with -2LL = 13378.12.

Positive interpersonal strategies were first entered as fixed, which resulted in a significant improvement from the null model, $\chi^2(1) = 13378.12 - 13055.07 = 323.052$, p < 1000

.01. However, when allowing strategy use to vary, the model improved further, $\chi^2(2) = 13055.07 - 13034.25 = 20.82$, p < .01, suggesting that the association between positive interpersonal ER strategies and positive emotions varied across people. The final model at Level 1 was defined by the following equations:

Level 1:
$$Y_{ij} = \beta_{0j} + \beta_{1j} (\text{POSSTRAT}_{ij}) + r_{ij}$$

Level 2:
$$\beta_{0j} = \gamma_{00} + u_{0j}$$
$$\beta_{1j} = \gamma_{10} + u_{1j}.$$

In other words, for each person (*j*), an intercept and slope were estimated, and were then analyzed at Level 2, where γ_{00} tested whether the mean intercept was different from zero and γ_{10} tested if the mean slope (i.e., the relationship between positive strategies and positive emotion) was different from zero.

Level 2 covariates were added to the model next. If a Level 2 covariate improved the model, it was tested for a cross-level interaction with the Level 1 predictor, total positive interpersonal strategies. As WABA I analyses revealed a portion of positive strategy use variability was between-person (33%), positive interpersonal strategies were aggregated and entered at Level 2, and the model was improved with this addition, $\chi^2(1) = 13034.25 - 13021.17 = 13.08$, p < .01, indicating that higher overall levels of positive interpersonal strategies were associated with higher levels of positive emotions. The order of entry for other Level 2 variables was determined based on the strength of their bivariate correlation with positive emotion intensity (see Table 8). They were entered in the following order: extraversion, neuroticism, and gender.

	1	2	3	4
1. Positive Emotion Intensity				
2. Negative Emotion Intensity	220**			
3. Gender	.107**	0		
4. Neuroticism	151**	.324**	.165**	
5. Extraversion	.172**	056**	.082**	365**
	0 1			

Table 8. Bivariate Correlations of Level 2 Variables

Note. Gender was coded as: Males = 0, Females = 1

***p* < .01

Extraversion improved the model, $\chi^2(1) = 13021.17 - 13013.48 = 7.69$, p < .01, as did neuroticism, $\chi^2(1) = 13013.48 - 13007.20 = 6.28$, p = .01. Gender did not significantly improve model fit, $\chi^2(1) = 13007.20 - 13005.24 = 1.96$, p > .05. Cross-level interactions were tested between Level 1 and Level 2 predictors, but none improved model fit. The final, best-fitting model for positive emotion intensity was defined by the following equations:

Level 1:
$$Y_{ij} = \beta_{0j} + \beta_{1j}(\text{POSSTRAT}_{ij}) + r_{ij}$$

Level 2:
$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{POSSTRAT}_{j}) + \gamma_{02}(\text{EXTRAVERSION}_{j}) + \gamma_{03}(\text{NEUROTICISM}_{j}) + u_{0j}$$
$$\beta_{1j} = \gamma_{10} + u_{1j}.$$

Results from this model indicate that the study hypothesis was confirmed: at times when participants used more than their usual number of positive interpersonal ER strategies, they reported significantly higher levels of positive emotions ($\gamma_{10} = 0.76$, SE = .06, p < .01). Similarly, when they used more than the overall average amount of positive strategies, higher levels of positive emotions were also observed ($\gamma_{01} = 0.91$, SE = .01, p < .01). As hypothesized, extraversion had significant direct associations with positive emotions ($\gamma_{02} = 0.47$, SE = .09, p < .01), meaning that participants higher on extraversion reported significant direct negative associations with levels of positive emotion. Neuroticism also had significant direct negative associations with levels of positive emotions experienced ($\gamma_{03} = -0.72$, SE = .10, p < .01), such that participants higher on neuroticism reported significantly lower positive emotion. With the addition of these predictors, the final model accounted for 9.81% of the within-person variance in positive emotions and 21.49% of the between-person variance in positive emotions.

Strategy Subscale Level. Acceptance and positive engagement strategies were entered into the model as Level 1 predictors. Acceptance was a significant improvement to the model $[\chi^2(1) = 13378.12 - 13024.65 = 353.47, p < .01]$, but positive engagement strategies was not $[\chi^2(1) = 13024.65 - 13023.44 = 1.21, p > .05]$. Acceptance strategies were permitted to vary randomly, and the model improved further, $\chi^2(2) = 13024.65 - 13005.84 = 18.81, p < .01$, indicating influence of acceptance strategy use varied across individuals.

At Level 2, acceptance strategies were considered in the model to account for the between-person variation identified in WABA. The fit was improved with this addition, $\chi^2(1) = 13005.84 - 12993.48 = 12.36$, p < .01. Extraversion and neuroticism also improved the model [$\chi^2(1) = 12993.48 - 12984.39 = 9.09$, p < .01 and $\chi^2(1) = 12984.39 - 12978.76 = 5.63$, p < .01, respectively]. Gender was not a significant Level 2 predictor, $\chi^2(1) = 12978.76 - 12976.47 = 2.29$, p > .05. No cross-level interactions were found. The final model was represented by the following equations:

Level 1:
$$Y_{ij} = \beta_{0j} + \beta_{1j}(\text{ACCEPTANCE}_{ij}) + r_{ij}$$

Level 2:
$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{ACCEPTANCE}_{j}) + \gamma_{02}(\text{EXTRAVERSION}_{j}) + \gamma_{03}(\text{NEUROTICISM}_{j}) + u_{0j}$$
$$\beta_{1j} = \gamma_{10} + u_{1j},$$

The final positive emotions model confirmed the hypothesis that when individuals are using more acceptance strategies than they normally do, and when they are using more than the overall average amount of acceptance strategies, they experience higher levels of positive emotions ($\gamma_{10} = 1.10$, SE = .09, p < .01 and $\gamma_{01} = 1.21$, SE = .13, p < .01, respectively). Similarly, those higher on extraversion reported significantly higher levels of positive emotions ($\gamma_{02} = 0.55$, SE = .09, p < .01) and for those higher in neuroticism, lower positive

emotions were reported ($\gamma_{03} = -0.68$, SE = .10, p < .01). This model accounted for 11.09% and 19% of the respective within- and between-person variability in positive emotions.

(ii) Negative Emotions Model

Global Strategy Level. The negative emotion model follows a similar procedure as outlined above. Positive interpersonal strategies improved the null model, $\chi^2(1) = 11851.11 - 11631.03 = 220.08$, p < .001, and when allowed to vary across people, model fit improved further, $\chi^2(2) = 11631.03 - 11617.52 = 13.51$, p < .001, implying that association between positive interpersonal strategies and negative emotions was not consistent across individuals.

Neuroticism, followed by extraversion, and positive strategy use at Level 2, was entered into the model based on the strength of the bivariate correlation with negative emotions. The addition of neuroticism resulted in a model that did not converge, which may reflect a high degree of multicollinearity between variables (Garson, 2013), or a low level of endorsement for negative emotion ratings. Neither extraversion nor positive strategy use improved the model at Level 2. The final, best-fitting model for negative emotions was thus defined by the following equations:

Level 1:
$$Y_{ij} = \beta_{0j} + \beta_{1j} (\text{POSSTRAT}_{ij}) + r_{ij}$$

Level 2:
$$\beta_{0j} = \gamma_{00} + u_{0j}$$
$$\beta_{1j} = \gamma_{10} + u_{1j},$$

Consistent with expectations, at times when individuals used more positive strategies than they typically do, they reported a lower level of negative emotions (γ_{10} = -0.29, SE = .04, *p* < .01). The inclusion of acceptance strategies at Level 2 yielded a non-significant result, meaning that when participants used more acceptance strategies than the overall average amount, level of negative emotions was not significantly affected. The final model accounted for 4.24% of the variability within-persons. Parameter estimates for the final global interpersonal strategy models are presented in Table 9. Table 9. MLM Parameter Estimates for Total Interpersonal ER Strategy Use for Positive Emotions (Top) and Negative Emotions(Bottom)

			Bootstrap ^a				
		-			Sig. (2-	95%	% CI
	Parameter	Estimate	Bias	Std. Error	tailed)	Lower	Upper
Positive Em	otion Intensity						
Fixed Comp	ponents						
Level 1	Intercept (γ_{00})	5.299	008	.139	.001	5.014	5.578
	Total Positive Strategies (γ_{10})	.755	.034	.064	.001	.660	.914
Level 2	Total Positive Strategies (γ_{01})	.909	.010	.096	.001	.735	1.115
	Extraversion (γ_{02})	.471	001	.094	.001	.277	.659
	Neuroticism (γ_{03})	721	008	.102	.001	924	530
Negative Er	notion Intensity						
Fixed Comp	ponents						
Level 1	Intercept (γ_{00})	2.961	0	.053	.001	2.850	3.064
	Total Positive Strategies (γ_{10})	292	015	.040	.001	383	228
an 1 1							

^a Based on 1000 samples

Strategy Subscale Level. Total acceptance strategies was entered into the model as a Level 1 predictor, and was a significant improvement to the model as both a fixed $[\chi^2(1) = 11851.11 - 11595.55 = 255.56, p < .01]$ and random predictor $[\chi^2(2) = 11595.55 - 11582.21 = 13.34, p < .01]$. The influence of acceptance strategies, then, was not consistent among people. Positive engagement strategies were not entered as Level 1 predictors as per WABA results, indicating no significant within- or between-person association with levels of negative emotions.

At Level 2, neuroticism, extraversion, and aggregated acceptance strategies were entered into the model. Neuroticism significantly improved model fit, $\chi^2(1) = 11582.21 - 11545.48 = 36.73$, p < .01, but extraversion and between-person acceptance strategies did not [$\chi^2(1) = 11545.48 - 11544.31 = 1.17$, p > .05 and $\chi^2(1) = 11545.48 - 11545.23 = 0.25$, p > .05, respectively]. The only cross-level interaction of significance was between neuroticism and acceptance strategies, $\chi^2(1) = 11545.48 - 11538.19 = 7.29$, p < .01. Thus, the final negative emotions model was defined by the following equations:

Level 1:
$$Y_{ij} = \beta_{0j} + \beta_{1j} (\text{ACCEPTANCE}_{ij}) + r_{ij}$$

Level 2:
$$\beta_{0j} = \gamma_{00} + \gamma_{01} (\text{NEUROTICISM}_j) + u_{0j}$$
$$\beta_{1j} = \gamma_{10} + \gamma_{11} (\text{NEUROTICISM}_j) + u_{1j}.$$

The best-fitting model included direct associations between negative emotions and acceptance strategies ($\gamma_{10} = -0.53$, SE = .05, p < .01), and neuroticism ($\gamma_{01} = 1.31$, SE = .07, p < .01). In other words, lower levels of negative emotions were experienced when individuals used more acceptance strategies than usual, consistent with expectations. Similarly, as predicted, those higher in neuroticism reported higher levels of negative emotions. A significant cross-level interaction between neuroticism and acceptance strategies was also

found ($\gamma_{11} = -0.21$, SE = .07, p < .01), such that the association between greater than usual use of acceptance strategies and lower negative emotions was stronger among those with higher levels of neuroticism. The simple slopes were plotted and are presented in Figure 2, suggesting that for those higher in neuroticism, the association between acceptance strategy use and negative emotions is stronger than for those lower in neuroticism. All simple slopes were significant (p < .05). This model accounted for 4.95% and 29.72% of the within- and between-person variability in emotions, respectively. Parameter estimates for the final strategy subscale models are presented in Table 10.



Total Acceptance X Neuroticism Interaction

Figure 2. Total Acceptance Strategy Use X Neuroticism Cross-Level Interaction

Note. Low, mean, and high levels of neuroticism are defined as 1 SD below the mean, equal to the mean, and 1 SD above the mean, respectively. Values along the x-axis refer a person's mean level of strategy use.

Table 10. MLM Parameter Estimates for Interpers	sonal ER Strategy Subscales for Positive Emo	tions (Top) and Negative Emotions
(Bottom)		

					Bootstrap ^a		
		-			Sig. (2-	95%	% CI
	Parameter	Estimate	Bias	Std. Error	tailed)	Lower	Upper
Positive Em	otion Intensity						
Fixed Comp	onents						
Level 1	Intercept (γ_{00})	5.348	.014	.145	.001	5.053	5.635
	Total Acceptance Strategies (γ_{10})	1.104	.032	.089	.001	.962	1.318
Level 2	Total Acceptance Strategies (γ_{01})	1.212	015	.136	.001	.931	1.461
	Extraversion (γ_{02})	.055	002	.089	.001	.373	.728
	Neuroticism (γ_{03})	682	.004	.102	.001	879	459
Negative En	notion Intensity						
Fixed Comp	onents						
Level 1	Intercept (γ_{00})	2.964	001	.053	.000	2.862	3.072
	Total Acceptance Strategies (γ_{10})	532	010	.053	.000	644	432
Level 2	Neuroticism (γ_{01})	1.31	.002	.071	.000	1.119	1.458
	Total Acceptance Strategies X	207	009	.073	.000	351	070
	Neuroticism Interaction $(\gamma_{11})^{b}$						
^a D 1 14	100 1 $100 1 0000 1$						

^a Based on 1000 samples; ^b Based on 2000 samples

In sum, this hypothesis was partially confirmed by analyses. Positive interpersonal strategies were indeed associated with higher levels of positive emotions and lower levels of negative emotions. However, when looking more closely at the subscales of positive interpersonal strategies, only acceptance strategies were associated with similar levels of positive and negative emotions, not positive engagement strategies. When between-person factors were considered, neuroticism was found to moderate the relationship between total acceptance strategies and negative emotions.

Hypothesis 2b: negative interpersonal ER strategies, and specifically negative engagement and rejection strategies, were expected to be associated with lower levels of positive and higher levels of negative emotions.

Negative interpersonal strategy use, including each of the negative strategy subscales, was infrequent, and it was thus not possible to reliably test this hypothesis.

4.5 Research Aim 3: The Role of Support Source in Interpersonal ER Strategies and Emotions

The third study aim was mainly exploratory and sought to examine the relationship between interpersonal ER strategies and emotions when considering whether support came from a friend or a parent.

WABA Results. Results of WABA I analyses revealed that acceptance strategy use by friends and parents was comprised substantially of within-person variation (70% for both). WABA I also suggested that positive engagement strategy use by friends and parents was primarily attributable to within-person variation (77% and 85%, respectively). WABA II results revealed a significant relationship between positive engagement and positive (but not negative) emotions, and only when used by friends. A trend was found between positive engagement strategy use and positive emotions when used by parents (p = .07). According to WABA II and III, acceptance strategies used with friends had a significant within-person association with positive and negative emotions. Significant, but weaker, within-person associations between acceptance strategies used by parents were also found with positive and negative emotions.

Hypothesis 3a: positive engagement strategies would be associated with higher levels of positive emotion and lower levels of negative emotions when elicited by parents.

(i) Positive Emotions Model

Positive engagement strategies used by friends significantly improved the null model for positive emotions, $\chi^2(1) = 13378.12 - 13183.60 = 194.53$, p < .001, but when the slope was permitted to vary, the model failed to converge. As WABA analyses identified a trend for positive engagement strategies used by parents, this variable was also included, but it failed to improve the model.

At Level 2, predictors were entered based on the strength of their bivariate correlations with the outcome variable. Between-person positive engagement strategies used by friends $[\chi^2(1) = 13183.60 - 13170.78 = 12.82, p < .01]$, extraversion $[\chi^2(1) = 13170.78 - 13164.33 = 6.44, p < .01]$, and neuroticism $[\chi^2(1) = 13164.33 - 13158.10 = 6.24, p < .01]$ all improved the model. No cross-level interactions were found. The best-fitting model was thus represented by the following equations:
Level 1:
$$Y_{ij} = \beta_{0j} + \beta_{1j}(\text{POSENG}_FRIEND_{ij}) + r_{ij}$$

Level 2: $\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{POSENG}_FRIEND_j) + \gamma_{02}(\text{EXTRAVERSION}_j) + \gamma_{03}(\text{NEUROTICISM}_j) + u_{0j}$
 $\beta_{1j} = \gamma_{10}$.

The final model explained less than 1% of the within-person variation, and an estimated 20% of between-person variation. There were significant direct associations on positive emotions found for both within- ($\gamma_{10} = 0.57$, SE = .14, p < .01) and between-person ($\gamma_{01} = 2.34$, SE = .28, p < .01) positive engagement strategies used by friends, meaning that at times when positive engagement strategies by friends are used more than usual, higher levels of positive emotions are experienced. This contradicts expectations that positive engagement strategies would be most beneficial when used by parents. In terms of personality, extraversion ($\gamma_{02} = 0.41$, SE = .10, p < .01), and neuroticism ($\gamma_{03} = -0.73$, SE = .11, p < .01) were both found to have direct influences on positive emotions. For those individuals higher in extraversion, more positive emotions were reported, and for those higher in neuroticism, fewer positive emotions were reported.

(ii) Negative Emotions Model

Prior to testing whether positive engagement strategies used by parents were associated with *negative* emotions, WABA analyses revealed that positive engagement strategies by parents (as well as friends) were not significantly associated with level of negative emotions. As a result, this model was not tested, and the hypothesis was thus not confirmed. In fact, neither positive engagement strategies used by friends nor parents were significantly associated with negative emotion outcomes. Parameter estimates for the final positive engagement models are presented in Table 11.

			Bootstrap ^a					
		_			Sig. (2- 95% CI		% CI	
Parameter		Estimate	Bias	Std. Error	tailed)	Lower	Upper	
Positive Emotion Intensity								
Fixed Components								
Level 1	Intercept (γ_{00})	5.781	002	.098	.001	5.577	5.971	
	Friend positive engagement strategies (γ_{10})	.566	.004	.143	.001	.300	.841	
Level 2	Friend positive engagement strategies (γ_{01})	2.336	.006	.277	.001	1.800	2.896	
	Extraversion (γ_{02})	.411	005	.101	.001	.213	.622	
	Neuroticism (γ_{03})	726	004	.109	.001	943	509	

Table 11. MLM Parameter Estimates for Support Source X Positive Engagement Strategies for Positive Emotions

^a Based on 1000 samples

Hypothesis 3b: acceptance strategies were expected to be associated with higher levels of positive emotions and lower levels of negative emotions when used by friends.

(i) Positive Emotions Model

A model for acceptance strategies by support source was built. As the strength of WABA II correlations for acceptance strategies used by friends was greater than that of parents, this Level 1 variable was entered into the model first. The inclusion of acceptance strategies used by friends was an improvement in model fit compared to the null model, $\chi^2(1) = 13378.12 - 13051.20 = 326.93$, p < .01, and acceptance strategies by parents improved it further, $\chi^2(1) = 13051.20 - 13032.42 = 18.78$, p < .01. When allowing acceptance strategies to vary across people, the model significantly improved for acceptance strategies by friends $[\chi^2(2) = 13032.42 - 13022.00 = 29.197$, p < .01], but failed to converge once acceptance strategies used by friends is not consistent across all people, but the role of acceptance strategies by parents is.

Model fit was improved with the addition of friend acceptance strategies at Level 2 $[\chi^2(1) = 13022.00 - 13013.90 = 8.10, p < .01]$, extraversion $[\chi^2(1) = 13013.90 - 13005.67 = 8.23, p < .01]$, neuroticism $[\chi^2(1) = 13005.67 - 13000.85 = 4.82, p < .05]$, and parent acceptance strategies at Level 2 $[\chi^2(1) = 13000.85 - 12993.714 = 7.14, p < .01]$. The addition of gender or any cross-level interactions did not result in significant improvements to the model. The final model for positive emotion intensity was defined by the following equations:

Level 1:
$$Y_{ij} = \beta_{0j} + \beta_{1j} (\text{ACCEPTANCE}_{FRIEND}_{ij}) +$$

$\beta_{2j}(\text{ACCEPTANCE}_PARENT_{ij}) + r_{ij}$ Level 2: $\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{ACCEPTANCE}_FRIEND_j) + \gamma_{02}(\text{EXTRAVERSION}_j) + \gamma_{03}(\text{NEUROTICISM}_j) + \gamma_{04}(\text{ACCEPTANCE}_PARENT_j) + u_{0j}$ $\beta_{1j} = \gamma_{10} + u_{1j}$ $\beta_{2j} = \gamma_{20} .$

Consistent with study hypotheses, during times when individuals use more acceptance strategies by friends than they normally do ($\gamma_{10} = 1.06$, SE = .09, p < .01), as well as more than an overall average amount ($\gamma_{01} = 0.95$, SE = .14, p < .01), they reported experiencing more positive emotions. Similar results were found for acceptance strategy use by parents, which were not originally hypothesized. More than average amounts of acceptance strategies used by parents at the time point and overall level were associated with increased positive emotions ($\gamma_{20} = 0.66$, SE = .16, p < .01, and $\gamma_{04} = 1.98$, SE = .22, p < .01, respectively). Results for personality were also confirmed: people who scored higher on extraversion experienced more positive emotions ($\gamma_{02} = 0.62$, SE = .09, p < .01). Additionally, those higher on neuroticism experienced fewer positive emotions ($\gamma_{03} = -0.67$, SE = .10, p < .01). The final model accounted for 9.84% and 21.39% of the within- and between-person variance in positive emotions, respectively.

(ii) Negative Emotions Model

A model was constructed for use of acceptance strategies by friends and parents and negative emotions. As guided by WABA, acceptance strategies used by friends was the stronger predictor and was thus entered at Level 1 first. The null model improved with the inclusion of acceptance strategies by friends, $\chi^2(1) = 11851.11 - 11622.33 = 228.78$, p < .01, and improved further with the inclusion of parent acceptance strategies, $\chi^2(1) = 11622.33 - 11604.91 = 17.42$, p < .01. When allowed to vary, acceptance strategies used by friends improved model fit, $\chi^2(2) = 11604.91 - 11587.14 = 17.77$, p < .01, but the addition of acceptance strategies from parents failed to allow the model to converge, suggesting that the role of friend acceptance strategies on negative emotions is variable across people, whereas the role of parent acceptance strategies on negative emotions is consistent.

Based on the magnitude of correlations, Level 2 predictors were entered in the following order: neuroticism, between-person acceptance strategies used by friends and parents, and extraversion. Neuroticism improved the model, $\chi^2(1) = 11587.14 - 11551.00 = 36.14$, p < .01, but extraversion nor between-person acceptance strategies by friends or parents resulted in a better fitting model. All Level 2 variables were tested for cross-level interactions in a similar order. The best-fitting model for negative emotions by support source included a cross-level interaction between friend acceptance strategies and neuroticism, $\chi^2(1) = 11551.00 - 11543.36 = 7.65$, p < .01. The final model was defined by the following equations:

Level 1:
$$Y_{ij} = \beta_{0j} + \beta_{1j}(\text{ACCEPTANCE_FRIEND}_{ij}) + \beta_{2j}(\text{ACCEPTANCE_PARENT}_{ij}) + r_{ij}$$

Level 2:
$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{NEUROTICISM}_{j}) + u_{0j}$$
$$\beta_{1j} = \gamma_{10} + \gamma_{11}(\text{NEUROTICISM}_{j}) + u_{1j}$$
$$\beta_{2j} = \gamma_{20} .$$

The final model explained 4.83% of the within-person variation and roughly 30.12% of the between-person variation in negative emotions. This model indicated that acceptance strategies used by friends ($\gamma_{10} = -0.47$, SE = .06, p < .01) had a significant direct association

with negative emotions, such that when individuals used more acceptance strategies by friends than they typically do, their levels of negative emotions were reduced. This was consistent with hypotheses. Not hypothesized was the significant influence of acceptance strategies by parents, where using more than typically are used also influenced levels of negative emotions ($\gamma_{20} = -0.47$, SE = .10, p < .01). The weight of this association was virtually identical regardless of support source. Those with higher neuroticism were found to experience significantly more negative emotions, as expected ($\gamma_{01} = 1.31$, SE = .07, p < .01).

There was also a cross-level interaction found between neuroticism and acceptance strategies used by friends ($\gamma_{11} = -0.23$, SE = .07, p < .01), suggesting that neuroticism moderated the relationship between acceptance strategies used by friends and negative emotion intensity. Figure 3 depicts the nature of this interaction, and suggests that acceptance strategies by friends had a stronger association with negative emotions for those with higher levels of neuroticism. All simple slopes were significant (p < .05).

Parameter estimates for both acceptance strategy models are presented in Table 12.



Friend Acceptance X Neuroticism Interaction

Figure 3. Acceptance Strategies Used by Friends X Neuroticism Cross-Level Interaction

Note. Low, mean, and high levels of neuroticism are defined as 1 SD below the mean, equal to the mean, and 1 SD above the mean, respectively. Values along the x-axis refer a person's mean level of strategy use.

Table 12. MLM Parameter Estimates for Support Source X Acceptance Strategies for Positive Emotions (Top) and Negative Emotions(Bottom)

				Bootstrap ^a				
		-			Sig. (2-	95% CI		
	Parameter	Estimate	Bias	Std. Error	tailed)	Lower	Upper	
Positive Em	otion Intensity							
Fixed Components								
Level 1	Intercept (γ_{00})	5.398	004	.141	.001	5.131	5.675	
	Friend acceptance strategies (γ_{10})	1.063	.032	.090	.001	.924	1.282	
	Parent acceptance strategies (γ_{20})	.662	.004	.166	.001	.333	.984	
Level 2	Friend acceptance strategies (γ_{01})	.946	004	.134	.001	.671	1.195	
	Extraversion (γ_{02})	.618	001	.091	.001	.440	.793	
	Neuroticism (γ_{03})	665	.004	.097	.001	858	466	
	Parent acceptance strategies (γ_{04})	1.975	010	.230	.001	1.502	2.409	
Negative Er	notion Intensity							
Fixed Comp	ponents							
Level 1	Intercept (γ_{00})	2.965	002	.053	.001	2.857	3.064	
	Friend acceptance strategies (γ_{10})	468	013	.060	.001	593	362	
	Parent acceptance strategies (γ_{20})	465	0	.096	.001	659	279	
Level 2	Neuroticism (γ_{01})	1.314	0	.069	.001	1.177	1.444	
	Friend acceptance strategies X	225	006	.072	.001	370	090	
	Neuroticism Interaction (γ_{11})							

^a Based on 1000 samples

Chapter 5: Discussion

From the very early stages of life, individuals seek social contact when confronted with distressing experiences or emotions, so it is surprising that ER research has only recently begun to more deeply explore the role of interpersonal relationships. This study is one of the first of its kind to explore and assess the use of interpersonal ER strategies in an intensive longitudinal design. Results provide novel insights into the types of interpersonal ER strategies used by emerging adults, who is helping their ER process, and what the impact is on daily emotions.

Consistent with study hypotheses, positive, and particularly acceptance strategies (e.g., spending time with an individual or making them laugh), were the most frequently used interpersonal ER strategies on a daily basis. About 50% of strategy use was comprised of positive strategies involving friends, whereas only about 14% involved parents. For negative strategies, this was about 6% for friends and just under 2% for parents. One of the novel aspects of this study was the examination of the respective roles of friends and parents as support sources in daily ER. In line with study hypotheses, strategies, both positive and negative, were consistently used more often with friends than they were with parents. Key developmental tasks during emerging adulthood include developing a sense of autonomy and beginning to form relationships outside of the family, where other social supports, such as close friends, become important (Arnett, 2007a; 2007b). Thus, it was not surprising that ER support in this study came primarily from friends as opposed to parents. This is also in line with past lifespan research showing not only that individuals undergo changes in social networks over specific life transitions, such as beginning university (Hays & Oxley, 1986), but also that the social networks of young adults is comprised of fewer family members than

of friends (Levitt, Weber, & Guacci; 1993). However, it is interesting to note that at the beginning of the study period, during the baseline assessment, the majority of participants in this sample identified *parents* (not friends) as being their preferred source of social support. Reasons for this discrepancy may be explained in part by logistical issues in seeking support, such as spending more time away from parents, and having more opportunities to share with friends, either because more time is spent with friends, or because of the sheer number of friends in their social networks. This highlights a presumable and important difference between what is preferred and what is actually observed on a daily basis, which has yet to be explored in daily ER research.

At times when participants used more acceptance strategies than usual, they reported significantly higher levels of positive emotions and lower levels of negative emotions. This finding was consistent when broken down by support source, suggesting that when more acceptance strategies were used by friends *or* parents, participants reported higher levels of positive and lower levels of negative emotions. Thus, in terms of both frequency and impact, acceptance strategies emerged as particularly relevant for emerging adults in this sample. As defined by Niven and colleagues (2009), acceptance strategies are "behaviors that communicate validation." These relationship-oriented acceptance strategies may be particularly important for emerging adults, who are generally keen on expanding their social networks (Wrzus, Hänel, Wagner, & Neyer, 2013) and who may be especially receptive to exchanges that build intimacy in relationships (Zimmer-Gembeck, Hughes, Kelly, & Connolly, 2012). These results are also in line with previous research that links empathic responding and esteem support with positive outcomes, such as greater positive affect,

intimacy, and relationship satisfaction (Beggs, Holtzman, & DeLongis, 2016; Byrd O'Brien, DeLongis, Pomaki, Puterman, & Zwicker, 2009; Lyubomirsky, King, & Diener, 2005).

Results for positive engagement strategies, however, were not as straightforward; they were used less frequently and were less consistently associated with daily emotions. A relationship between total positive engagement strategies and positive or negative emotions was not found, however, when support source was considered, higher than usual levels of positive engagement strategies by *friends* emerged as being significantly related to higher positive emotions, explaining less than 1% of the within-person variability in positive emotions. The interpretation of these results is threefold. First, this finding may be explained, in part, by how positive engagement strategies were conceptualized. Positive engagement strategies are essentially attempts to involve another person in one's situation (e.g., giving advice, listening to one's problems) in order to make one feel better. That is, they are behaviours that are more focused on the situation or task itself (Niven, Totterdell, & Holman, 2009). Past research on failed support attempts suggests that support in the form of advicegiving (i.e., a positive engagement strategy) can sometimes be perceived as being *unhelpful* for the distressed individual (Lehman, Ellard, & Wortman, 1986), as it may communicate dismissiveness of the individual and his or her situation or emotion (Wortman & Lehman, 1985). Further, benefits of received support have been inconsistent, with some research suggesting supportive behaviours also have costs, such as one's feelings of indebtedness to their support source, and a lowered sense of competence or self-efficacy (Bolger, Zuckerman, & Kessler, 2000). Second, there may also be additional elements to positive engagement strategies that make them more influential to positive emotions when used by one support source and not another. It may be that those strategies involving more of a direct

effort to influence feelings, thoughts, or behaviours may be implicitly *expected* from parents (i.e., attachment figures) during times of stress, but not necessarily from friends. As a result, when friends do show a vested interest in working through a problem, or actively discussing alternative opportunities, for instance, positive emotions would likely increase, as these efforts may not have been expected. This notion is supported by Berscheid's (1983; 1991) emotion-in-relationships model, which suggests that when the expectations of one's close relationships are interrupted in a positive way (i.e., the unexpected provision of positive engagement strategies from friends), more positive emotions will be experienced. Finally, from a statistical standpoint, the comparative roles of support sources were not directly assessed in a single model, and preliminary results reported non-significant associations between positive engagement by parents and emotions to begin with. This finding may have been due to a lack of statistical power given that parent positive engagement was observed less than 10% of the time strategies were used. However, this is, in and of itself, meaningful, as it suggests that parents are more inclined to support their children in such a way that communicates empathy, companionship, and nurturance on a daily basis, as opposed to providing advice or assistance.

Interesting insights regarding the role of friends and family in ER also come from findings related to fixed versus random effects of the predictor variables. For example, the use of acceptance strategies by friends was variable across individuals, whereas the use of acceptance strategies by parents was more similar across individuals. This, in other words, suggests that the association between parent acceptance strategies and emotions, unlike those used by friends, had a similar influence across individuals. The social provisions model proposed by Weiss (1974) may help to explain this finding. According to Weiss (1974), there

are six social provisions in relationships that help to promote individual well-being. Attachment and reliable alliance, in particular, involve providing intimacy, security, and reliability, and have been suggested to be especially salient in parent-child relationships (e.g., Blieszner, Mancini, & Marek, 1996; Weiss, 1974). Given that acceptance strategies, which involve emotional support and valuation, are an inherent feature of the parent-child relationship, it is perhaps not surprising that the effects of parent acceptance did not vary from person to person. Furthermore, there appeared to be more variability in the association between ER support from friends and daily emotions, which can be understood in several ways. First, in contrast to the parent-child relationship, friendships may be less intimate, of a reduced longevity, and may be especially nascent in emerging adulthood. Second, emerging adults are also significantly more stressed than any other age group (APA, 2016). As a result, they may themselves be more taxed and unable to provide adaptive coping or emotional support. Finally, emerging adults are still undergoing cognitive and emotional changes following adolescence, a period typically associated with less emotional stability and more difficulties in ER (Silk, Steinberg, & Sheffield Morris, 2003). Neurocognitive research shows that brain development in areas central to ER, such as the prefrontal cortex, continue to form well into adulthood (Ochsner & Gross, 2008; Paus, Keshavan, & Giedd, 2008), so despite their best efforts, there may be more variability in emerging adults' ability to regulate their own, or their friends', emotions.

Findings from this study also highlighted that both within- and between-person variance existed in key study variables. Specifically, results of WABA analyses revealed that variability in positive and negative emotions, as well as interpersonal ER strategy use, was due to both within- and between-person factors. Although the majority of variability was

within-person (range: 62%-85%), in most cases, when the IV-DV relationship was considered, between-person correlations were higher than within-person. In other words, though the use of positive strategies and experience of emotions themselves varied substantially within individuals, the relationship between strategies and emotions was relatively consistent for individuals and predominantly influenced by person-factors. In either case, these results highlight the importance of continued research that examines both the within- and between-person factors using similar methodologies that were used here. These results also suggest that clinically, consideration of factors that contribute to or maintain an individual's emotion response to a particular event or situation should be given at both a state and trait level in an effort to inform treatment outcomes.

Personality seemed to play an important role as an individual difference predictor in the association between interpersonal ER and daily emotions. With respect to positive emotions, neuroticism and extraversion showed consistent and direct influences across all models, with neuroticism being linked to significantly lower levels of positive emotions, and extraversion being linked to significantly higher levels of positive emotions, in line with past research (e.g., Larsen & Ketelaar, 1989; 1991). The pattern was less consistent for negative emotions. Although neuroticism was found to have a significant positive association with negative emotions, no effect was found for extraversion. The role of neuroticism on both negative *and* positive emotions, on the other hand, points to the overall pervasiveness of this trait in a range of physical and mental health issues, including somatic complaints, cardiovascular disease, depression, and anxiety (Lahey, 2009). Though higher levels of extraversion may predispose individuals to feel more positive affect (e.g., Costa & McCrae,

1980; Larsen & Ketelaar, 1991), their experience of *negative* emotions may not differ from those low on extraversion, as suggested by some past research (Watson & Clark, 1997).

Neuroticism also emerged as a significant moderator of the relationship between acceptance strategy use and emotion. Specifically, for those with higher levels of neuroticism, the association between negative emotion intensity and acceptance strategies was particularly salient. This finding suggests that there may be a quality unique to acceptance strategies that individuals higher in neuroticism may be particularly responsive to. Those high in neuroticism have been shown to choose more maladaptive coping strategies as a result of their highly negative emotionality (Byrd O'Brien & DeLongis, 1996; DeLongis & Holtzman, 2005; Lee-Baggley, Preece, & DeLongis, 2005). However, they have also been shown to seek emotional support - an adaptive coping strategy - as well (Connor-Smith & Flachsbart, 2007; Lee-Baggley, Preece, & DeLongis, 2005). Thus, despite an overall higher susceptibility to negative emotions, highly neurotic individuals also desire the emotional closeness that comes with the esteem support and valuing from loved ones. Acceptance strategies measured in this study provide just that, and may help explain why acceptance strategies had a particularly strong effect on negative emotions, compared to those low on neuroticism. This may have important clinical implications for individuals high in neuroticism, who already experience a great deal of negative emotionality. Seeking out support in the form of spending time with others and using humour (rather than seeking advice and talking about the problem itself) may be particularly valuable for those high in neuroticism and may ultimately be more effective in reducing the intensity of negative emotions.

5.1 Study Limitations

While the intensive longitudinal design employed in the current study allowed for an in-the-moment assessment of emotional experience, recall bias may have been at play with respect to interpersonal strategy use, as participants were required to select all strategies used in the past four hours. Given that participants were being asked to complete the same survey three times per day for one week, it was crucial that daily assessments were as brief as possible. As such, descriptions or examples of survey items were not provided. Therefore, it is possible that some participants may have misinterpreted the meaning of some of the questions regarding their daily experiences (e.g., the emotion "interested" could have been interpreted as excited or impressed). However, since the focus of this study was on within-person effects of ER on daily emotions, misinterpretations would have likely remained consistent within person, and therefore would not likely have impacted the overall findings.

Likewise, because the use of interpersonal strategies was self-reported, these findings must be framed in terms of the participant's *perception* of strategy use by their support sources. This study did not assess the strategies support sources felt they themselves had used, so it is not certain whether the strategies endorsed by participants were based on actual events (e.g., that the support source indeed ignored the participant). In other words, the participant may have over- or underestimated the *actual* support they received from others (i.e., termed "invisible support"). Past research suggests that certain support transactions can be considered "invisible" when either the individual is aware of, but does not consider an act as supportive, or when the individual is not aware of the supportive act altogether (Bolger, Zuckerman, & Kessler, 2000). Invisible support has been shown to be beneficial to individuals in past research (Bolger, Zuckerman, & Kessler, 2000), and thus, the receipt of

additional types of supportive gestures not endorsed or measured in this study may have ultimately contributed to the emotional outcomes reported. In addition to gaining insight about strategy use from support sources, participant ratings of effectiveness or impact of the strategies on emotions may have helped to elucidate the discrepancy between visible and invisible support strategies and their perceived effectiveness.

Due to the need for brevity, the list of emotions and strategies was also not exhaustive, and it may not have accurately captured the full range of emotional experience of the participants. For instance, in over a quarter of the time points collected, no interpersonal strategies were endorsed at all. Likewise, the emotions measured involved generally higher levels of arousal (e.g., joyful, angry, surprised), which may explain why both positive and negative emotions in this study had low intensity ratings. It may be difficult in daily diary studies to assess and measure a range of emotions as wide as those that can be experienced. It is thus not difficult to imagine why some researchers tend to focus on a more limited range of emotions in their studies, either in terms of valence (e.g., negative emotions alone), or select emotions, specifically (e.g., Martini (2011)'s focus on anger and disappointment).

A goal of this study was to explore a diverse repertoire of interpersonal strategies used in the ER process. Given the lack of definitive theoretical underpinnings about the effectiveness of these particular strategies, and given the manner in which information about strategy use was collected, no conclusions were made about the use of any specific strategy (e.g., complaining, specifically), or its relationship to any one emotion (e.g., guilt, specifically). Rather, the aim of the study was in further describing the nature of which *types* of interpersonal strategies are being used, and whether the number of strategies used was associated with overall levels of either positive or negative emotion. Consequently, the

measurement of interpersonal strategy use (i.e., total strategies utilized) resulted in data based around a non-normal, zero-inflated (frequency) distribution. Attempts were made for more robust estimates through the use of bootstrapping and by having a sufficient sample size, but it is likely that the accuracy of the parameter estimates may have been influenced by the data's non-normal skew.

While this study highlights the influences of different support sources in ER, it was limited to friends and parents. Additional sources of support may have been found to influence emotions, such as romantic partners. From an attachment perspective, romantic relationships in adulthood reflect the same needs for safety, intimacy, and closeness that children have with their primary caregiver (Hazan & Shaver, 1987). Romantic relationships in emerging adulthood are particularly salient (Meeus, Branje, van der Valk, & de Wied, 2007), and though often associated with happiness, positive affect, and a greater sense of well-being (see Ramsey & Gentzler, 2015), they can also be the source of negative feelings, or maladaptive behaviours (Yu, Branje, Keijsers, & Meeus, 2015). Given that the majority of the present sample was not currently involved in a romantic relationship, however, these types of relationships were not tested.

Finally, as the study's sample was largely Caucasian, results offer limited generalizability to other, more diverse populations. Cultural differences have been identified in the experience of emotion (see Hofmann, 2013), the ER process (De Leersnyder, Boiger, & Mesquita, 2013; Matsumoto et al., 2008), and in the relative importance or function of social groups (Burleson & Mortenson, 2003). A more ethnically diverse sample may have allowed for cultural comparisons in daily interpersonal ER, which has yet to be explored.

5.2 Future Directions

It will be important for future research to continue to study the interpersonal factors that contribute to emotion and ER. First, while some of variability in emotion experience was explained by the interpersonal strategies measured in this study, a portion still remains unexplained. Additional between- and within-person factors are clearly contributing to an individual's emotional experience. There may be additional individual difference (betweenperson) factors that warrant future examination, including general coping styles, perceptions of social support network, difficulties with ER, or other facets of personality that have been previously linked to coping strategies (Byrd O'Brien & DeLongis, 1996). Similarly, additional within-person factors not addressed in this present study may have been viable predictors, such as a distressing or triggering event occurring before emotional ratings were collected (Heiv & Cheavens, 2014; Luminet, Bouts, Delie, Manstead, & Rimé, 2000), *intra*personal ER strategy use, or the perception of interpersonal strategy effectiveness altogether (Heiv & Cheavens, 2014). Additionally, as there were differences between preferred and actual sources of support, future work may wish to explore whether the effectiveness of an interpersonal strategy is influenced when it is elicited by one's preferred source of support or not.

Second, low incidence of negative interpersonal strategy use precluded any conclusions being made about their association with positive and negative emotions. There is strong evidence that negative interactions have important influences on an individual's emotional experience and overall well-being (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001), and future work should examine this more closely. Daily diary studies that use eventcontingent designs, and especially those that employ a longer study period may provide more

opportunities to capture negative events as they unfold. Alternatively, milder forms of negative interactions than assessed in this study, such as passive aggression or even support acts deemed as being unhelpful, are worthy of exploration. Experimental research designs that specifically study negative strategies, such as rejection and criticism, in an interpersonal context may also provide insight into these processes that are otherwise (albeit fortunately) not observed at a frequent rate in naturalistic, daily diary research. Furthermore, as these findings point to important differences between friends and parents with respect to ER using positive strategies, the respective roles of support source in negative interactions may yield particularly interesting findings.

Finally, in addition to the concurrent effects presented here, lagged effects of interpersonal strategy use on positive and negative emotions may also be at play, and may differ from within time point associations. Lagged analyses can assist in determining the relative influence of previous experiences, emotions, or social interactions on subsequent outcomes (e.g., emotions) both in the short term (e.g., same day, next day) and longer-term (e.g., cumulative effects over weeks or months). Indeed, it is not difficult to imagine the lasting influence that negative strategies (such as rejection or criticism), for example, can have on an individual and the especially compounding influence of these strategies when used by close social supports such as parents or friends.

5.3 Conclusions

As emerging adults are at a particularly vulnerable stage of social and emotional development, how positive and negative emotions are managed on a daily basis is important. Social support, particularly within this age group, has been shown to be effective in reducing

feelings of distress and increasing positive affect and well-being (Allen, Ciambrone, & Welch, 2000; Friedlander, Reid, Shupak, & Cribbie, 2007; Strayhorn, 2012). Considering that emerging adults engage in social support seeking more than any other age group (Meléndez, 2012), and that those with maladaptive ER are at a risk of experiencing psychological and emotional difficulties, it is surprising that interpersonal ER research is still in its infancy. The present study represents a preliminary attempt at describing the social aspect of ER through the use of interpersonal regulation strategies, and in further understanding the influence of different support sources who employ these strategies. While the results suggest that the overall number of positive strategies, positive engagement strategies used by friends, and acceptance strategies used by either friends or parents, are related to positive and negative emotion intensity, definitive conclusions about particular strategies, particular emotions, and the differences between particular support sources still have yet to be made. This study is only one step in this direction, and researchers are urged to continue to explore the dynamic and dyadic nature of interpersonal ER that is so greatly warranted.

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Appendices

Appendix A: Daily Assessment Items

Daily Assessments 1-3

- Rate your overall mood right now. (0 = the worst you have ever felt and 100 = the best you have ever felt)
- How JOYFUL are you feeling *right now?* (0 = Not at all, 1 = A little, 2 = Somewhat, 3 = A lot)

*Repeated for each of the emotions below (adapted from Heiy & Cheavens, 2014).

Positive Negative Jovful Angry Excited Anxious Proud Embarrassed Loved Guilty Amused Disgusted Interested Sad Lonely Surprised

- **Right now, which emotion are you feeling most strongly?** [Only 1 possible to select] same emotions listed above
- Since your last entry, did someone ? Check all that apply. *Repeated for each of the strategies in Table A1 (adapted from Niven et al., 2009; Niven et al., 2011).
- [For each strategy selected:] Who LISTENED TO YOUR PROBLEMS? Check all that apply.
 - □ Friend
 - Parent
 - □ Boyfriend/Girlfriend
 - \Box Other
 - o [If 'Other' selected:] Who else LISTENED TO YOUR PROBLEMS?
 (Specify 'Other') ______
- If you talked to someone about how you were feeling since your last entry, was this... Check all that apply
 - □ In Person
 - □ Talking on the phone
 - □ Using digital communication (e.g., texting, Facebook, Twitter)
 - \Box Other
 - □ Does not apply
 - [If 'Other' selected:] How else did you talk about how you were feeling with someone else? (Specify 'Other')

Affect-Improving Engagement (Posit	ive Engagement)
Affective engagement	
Problem-focused	Listen to your problems
Target-focused	Point out your positive characteristics
Cognitive engagement	Give you advice
Affect-Improving Relationship-Orien	nted (Acceptance)
Attention	
Valuing	Spend time with you
Distraction	Do something nice with you
Humour	Make you laugh
Affect-Worsening Engagement (Nega	ative Engagement)
Affective engagement	Explain how you hurt them or someone else
Behavioural engagement	Complain about your behaviour
Affect-Worsening: Relationship-Orien	ted (Rejection)
Rejecting feelings	Make it clear they don't care about how you feel
Confrontation	Tell you about your shortcomings
Non-confrontation	Ignore you
Putting own feelings first	Act annoyed around you
	None of the above

Table A1. Interpersonal ER Strategies

Appendix B: Model Building Specifications

		Level 1 H	Predictors		Level 2 I	Cross-Level Interactions			
								PosStrat X	PosStrat X
	Null	PosStrat	PosStrat		Extra-	Neurot-		Extra-	Neurot-
	Model	(Fixed)	(Rdm)	PosStrat	version	icism	Gender	version	icism
Fixed Components									
Intercept	6.51	6.49	6.49	5.23	5.41	5.30	4.85	5.30	5.30
PosStrat (L1)		0.72	0.76	0.76	0.76	0.76	0.76	0.76	0.75
PosStrat (L2)				0.96	0.83	0.91	0.80	0.91	0.91
Extraversion					0.73	0.47	0.44	0.47	0.47
Neuroticism						-0.72	-0.79	-0.72	-0.72
Gender							0.76		
PosStrat X Extraversion								-0.09	
PosStrat X Neuroticism									0.05
Random Components									
Residual	13.03	12.2	11.78	11.78	11.78	11.78	11.78	11.77	11.78
Intercept	6.52	6.51	6.53	5.85	5.50	5.22	5.14	5.22	5.22
Slope			0.27	0.27	0.27	0.27	0.27	0.26	0.27
Intercept-Slope Covariance			-0.16	-0.04	-0.02	0	0.01	-0.01	0
Model Fit Information									
# Parameters	3	4	6	7	8	9	10	10	10
-2LL	13378.12	13055.07	13034.25	13021.17	13013.48	13007.20	13005.24	13006.09	13006.90
χ^2		323.05	20.82	13.08	7.69	6.28	1.96	1.11	0.30
BIC	13401.49	13086.18	13080.92	13075.61	13075.69	13077.20	13083.01	13083.87	13084.67
ICC	33.35								
% Variance Explained		6.37	3.44	10.41	5.98	5.09			

Table B1. Model 1: Total Interpersonal ER Strategy Use for Positive Emotions

Note. Bolded values are significant at p < .05. Shaded columns did not significantly improve the model. % Variance explained represents the additional % variance contributed to the model by the single added predictor. Gender was coded as: Males = 0, Females = 1; PosStrat = Total Positive Strategies (centred); Rdm = Random; L1 = Level 1; L2 = Level 2; -2LL = -2 Log Likelihood; BIC = Bayesian Information Criteria; ICC = Intraclass Correlation.

		Le	vel 1 Predic	tors		Level 2	Predictors		Cross-Level Interactions		
	Null Model	Accept (Fixed)	PosEng (Fixed)	Accept (Rdm)	Accept	Extra- version	Neurot- icism	Gender	Accept X Extra- version ^a	Accept X Neuroticism	
Fixed Components		//	//		1						
Intercept	6.51	6.49	6.49	6.49	5.25	5.42	5.35	4.87	5.35	5.35	
Accept (L1)		1.08	1.06	1.10	1.10	1.10	1.10	1.10	1.10	1.10	
PosEng			0.13								
Accept (L2)					1.31	1.14	1.21	1.04	1.21	1.21	
Extraversion						0.79	0.55	0.52	0.54	0.55	
Neuroticism							-0.68	-0.77	-0.68	-0.66	
Gender								0.83			
Accept X Extraversion									-0.07		
Accept X Neuroticism										0.08	
Random Components											
Residual	13.03	12.20	12.03	11.78	11.62	11.62	11.62	11.62	11.62	11.62	
Intercept	6.52	6.51	6.52	6.53	5.98	5.57	5.33	5.24	5.33	5.33	
Slope				0.27	0.49	0.49	0.49	0.49	0.48	0.48	
Intercept-Slope				0.16	0.14	0.17	0.10	0.20	0.10	0.10	
Covariance				-0.10	0.14	0.17	0.19	0.20	0.19	0.19	
Model Fit Information											
# Parameters	3	4	5	6	7	8	9	10	10	10	
-2LL	13378.12	13024.65	13023.44	13005.84	12993.48	12984.39	12978.76	12976.47	12978.44	12978.33	
χ^2		353.47	1.21	18.81	12.36	9.09	5.63	2.29	0.32	0.43	
BIC	13401.49	13055.76	13062.33	13052.50	13047.92	13046.61	13048.75	13054.25	13056.22	13056.10	
ICC	33.35										
% Variance Explained		7.60		3.41	8.56	6.86	4.31				

Table B2. Model 2: Interpersonal ER Strategy Subscales for Positive Emotions

Note. Bolded values are significant at p < .05. Shaded columns did not significantly improve the model. % Variance explained represents the additional % variance contributed to the model by the single added predictor. Gender was coded as: Males = 0, Females = 1; Rdm = Random; Accept = Total Acceptance Strategies (centred); PosEng = Total Positive Engagement Strategies (centred); L1 = Level 1; L2 = Level 2; -2LL = -2 Log Likelihood; BIC = Bayesian Information Criteria; ICC = Intraclass Correlation.

^a Model failed to converge.

							Cros	s-Level
		Level 1 I	Predictors	Le	evel 2 Predicto	ors	Inter	actions
							PosStrat	PosStrat X
	Null	PosStrat	PosStrat	Neurot-	Extra-		X Neurot-	Extra-
	Model	(Fixed)	(Rdm)	icism ^a	version ^a	PosStrat ^a	icism ^a	version
Fixed Components								
Intercept	2.96	2.96	2.96	2.96	2.96	2.72	2.96	2.96
PosStrat (L1)		-0.30	-0.29	-0.3	-0.29	-0.3	-0.29	-0.29
Neuroticism				1.23				
Extraversion					-0.21			
PosStrat (L2)						0.18		
PosStrat X Neuroticism							-0.05	
PosStrat X Extraversion								0.01
Random Components								
Residual	6.91	6.72	6.62	6.63	6.62	6.62	6.62	6.62
Intercept	3.59	3.59	3.59	2.52	3.56	3.6	2.52	3.59
Slope			0.06	0.05	0.06	0.06	0.05	0.06
Intercept-Slope Covariance			-0.65	-0.54	-0.65	-0.68	-0.54	-0.64
Model Fit Information								
# Parameters	3	4	6	7	7	7	7	7
-2LL	11851.11	11631.03	11617.52	11578.82	11616.33	11616.64	11617.08	11617.51
χ^2		220.08	13.51	38.70	1.19	0.88	0.44	0.01
BIC	11874.48	11662.14	11664.19	11633.26	11670.77	11671.08	11671.52	11617.95
ICC	34.19							
% Variance Explained		2.75	1.49					

Table B3. Model 3: Total Interpersonal ER Strategy Use for Negative Emotions

Note. Bolded values are significant at p < .05. Shaded columns did not significantly improve the model. % Variance explained represents the additional % variance contributed to the model by the single added predictor. PosStrat = Total Positive Strategies (centred); Rdm = Random; L1 = Level 1; L2 = Level 2; -2LL = -2 Log Likelihood; BIC = Bayesian Information Criteria; ICC = Intraclass Correlation.

^a Model failed to converge.

		Level 1 F	Predictors	Le	vel 2 Predicto	ors	Cross-Level	Interactions
							Accept X	Accept X
	Null	Accept	Accept	Neurot-	Extra-		Neurot-	Extra-
	Model	(Fixed)	(Rdm)	icism	version	Accept	icism	version
Fixed Components								
Intercept	2.96	2.96	2.96	2.96	2.97	3.08	2.96	2.96
Accept (L1)		-0.54	-0.53	-0.54	-0.54	-0.53	-0.53	-0.53
Neuroticism				1.20	1.28	1.21	1.31	1.31
Extraversion					0.20			
Accept (L2)						-0.12		
Accept X Neuroticism							-0.21	-0.23
Accept X Extraversion								-0.07
Random Components								
Residual	6.91	6.61	6.57	6.58	6.58	6.58	6.57	6.56
Intercept	3.59	3.59	3.6	2.53	2.50	2.52	2.53	2.53
Slope			0.05	0.04	0.04	0.04	0.03	0.25
Intercept-Slope Covariance				-0.87	-0.84	-0.86		
Model Fit Information								
# Parameters	3	4	6	7	8	8	8	9
-2LL	11851.11	11595.55	11582.21	11545.48	11544.31	11545.23	11538.19	11537.39
χ^2		255.56	13.34	36.73	1.17	0.25	7.29	0.81
BIC	11874.48	11626.66	11628.88	11599.92	11606.53	11607.45	11600.41	11607.38
ICC	34.19							
% Variance Explained		4.34	0.61	29.72			0.15	

Table B4. Model 4: Interpersonal ER Strategy Subscales for Negative Emotions

Note. Bolded values are significant at p < .05. Shaded columns did not significantly improve the model. % Variance explained represents the additional % variance contributed to the model by the single added predictor. Accept = Total Acceptance Strategies (centred); Rdm = Random; L1 = Level 1; L2 = Level 2; -2LL = -2 Log Likelihood; BIC = Bayesian Information Criteria; ICC = Intraclass Correlation.

		Lev	vel 1 Predict	ors		Level 2 I	Cross-Level Interactions			
		F	Р	F					F PosEng	F
	Null	PosEng	PosEng	PosEng	F	Extra-	Neurot-		X Extra-	PosEng X
	Model	(Fixed)	(Fixed)	(Rdm) ^a	PosEng	version	icism	Gender	version	Neuroticism
Fixed Components										
Intercept	6.51	6.49	6.49	6.49	5.69	5.87	5.78	5.11	5.78	5.78
F PosEng (L1)		0.57	0.55	0.65	0.57	0.57	0.57	0.57	0.60	0.56
P PosEng			0.28							
F PosEng (L2)					2.59	2.07	2.34	2.06	2.34	2.34
Extraversion						0.69	0.41	0.37	0.41	0.41
Neuroticism							-0.73	-0.82	-0.73	-0.73
Gender								0.96		
F PosEng X Extraversion									-0.17	
F PosEng X Neuroticism										0.11
Random Components										
Residual	13.03	12.92	12.91	12.69	12.92	12.92	12.92	12.92	12.91	12.91
Intercept	6.52	6.47	6.47	6.48	5.82	5.52	5.24	5.11	5.24	5.24
Slope				0.72						
Intercept-Slope Covariance				-0.26						
Model Fit Information										
# Parameters	3	4	5	6	5	6	7	8	8	8
-2LL	13378.12	13183.60	13181.82	13174.90	13170.78	13164.33	13158.10	13154.83	13156.79	13157.63
χ^2		194.53	1.77	8.69	12.82	6.44	6.24	3.27	1.31	0.47
BIC	13401.49	13214.70	13220.77	13221.57	13209.66	13211.00	13212.54	13217.05	13219.01	13219.85
ICC	33.35									
% Variance Explained		0.84			10.05	5.16	5.07			

Table B5. Model 5: Source X Positive Engagement Strategy Use for Positive Emotions

Note. Bolded values are significant at p < .05. Shaded columns did not significantly improve the model. % Variance explained represents the additional % variance contributed to the model by the single added predictor. Gender was coded as: Males = 0, Females = 1; F = Friend; P = Parent; PosEng = Total Positive Engagement Strategies (centred); Rdm = Random; L1 = Level 1; L2 = Level 2; -2LL = -2 Log Likelihood; BIC = Bayesian Information Criteria; ICC = Intraclass Correlation.

^a Model failed to converge.

		Level 1 Predictors					Level 2 Predictors					Cross-Level Interactions			
												F		Р	
											F	Accept		Accept	
		F	Р	F							Accept	Х	P Accept	Х	
	Null	Accept	Accept	Accept	P Accept	F	Extra-	Neurot-	Р		X Extra-	Neurot	X Extra-	Neurot-	
	Model	(Fixed)	(Fixed)	(Rdm)	(Rdm) ^a	Accept	version	icism	Accept	Gender	version	-icism	version	icism	
Fixed Components															
Intercept	6.51	6.49	6.49	6.49	6.49	5.58	5.8	5.74	5.4	4.92	5.40	5.40	5.40	5.40	
F Accept (L1)		1.02	1.04	1.07	1.08	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.07	
P Accept (L1)			0.68	0.66	0.81	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.62	0.66	
F Accept (L2)						1.09	0.85	0.92	0.95	0.78	0.95	0.95	0.95	0.95	
Extraversion							0.77	0.54	0.62	0.58	0.62	0.62	0.62	0.62	
Neuroticism								-0.64	-0.67	-0.75	-0.67	-0.66	-0.67	-0.67	
P Accept (L2)									1.98	1.84	1.98	1.98	1.98	1.98	
Gender										0.81					
F Accept X											0.02				
Extraversion											0.03				
F Accept X												~ ~ -			
Neuroticism												0.07			
P Accept X													o 1 -		
Extraversion													-0.17		
P Accept X															
Neuroticism														-0.17	
Random Components															
Residual	13.02	12.18	12.08	11.78	11.51	11.78	11.78	11.77	11.77	11.77	11.77	11.77	11.77	11.77	
Intercept	6.52	6.51	6.52	6.53		6.14	5.75	5.53	5.24	5.15	5.24	5.24	5.24	5.24	
Slope				0.37		0.37	0.37	0.38	0.38	0.38	0.38	0.37	0.38	0.38	
Intercept-Slope				0.04		0.01		0.04				0.44			
Covariance				-0.04		-0.01	-0.03	-0.01	0.11	0.11	0.11	0.11	0.11	0.11	
Model Fit Information															
# Parameters	3	4	5	7	10	8	9	10	11	12	12	12	12	12	
-2LL	13378.12	13051.20	13032.42	13022.00	13009.53	13013.90	13005.67	13000.85	12993.71	12991.53	12993.63	12993.38	12992.79	12992.90	
$\sqrt{2}^{2}$		326.93	18.78	29.20	22.89	8.10	8.23	4.82	7.14	2.18	0.09	0.34	0.92	0.81	
A BIC	13401 49	13082 31	13071 31	13076 44	13087 30	13076.12	13075 67	13078.63	13079 27	13084.86	13086.96	13086 71	13086.12	13086 23	
ICC	33 35	15002.51	15071.51	15070.44	15007.50	15070.12	15075.07	15070.05	15019.21	15004.00	15000.90	15000.71	15000.12	15000.25	
% Variance Explained	55.55	6.45	0.82	2 19		5.07	6 25	2 9 2	5.24						
70 variance Explained		0.45	0.82	∠.48		5.97	0.33	3.83	5.24						

Table B6. Model 6: Source X Acceptance Strategy Use for Positive Emotions

Note. Bolded values are significant at p < .05. Shaded columns did not significantly improve the model. % Variance explained represents the additional % variance contributed to the model by the single added predictor. Gender was coded as: Males = 0, Females = 1; F = Friend; P = Parent; Accept = Total Acceptance Strategies Used (centred); Rdm = Random; L1 = Level 1; L2 = Level 2; -2LL = -2 Log Likelihood; BIC = Bayesian Information Criteria; ICC = Intraclass Correlation. ^a Model failed to converge.

										Cross	s-Level
			Level 1	Predictors			Level 2	Intera	Interactions		
		F	Р		Р					F Accept	P Accept
	Null	Accept	Accept	F Accept	Accept	Neurot-	F	Р	Extra-	X Neurot-	X Neurot-
	Model	(Fixed)	(Fixed)	(Rdm)	(Rdm) ^a	icism	Accept	Accept	version ^a	icism	icism ^a
Fixed Components											
Intercept	2.96	2.96	2.96	2.96	2.96	2.96	2.98	3.06	2.97	2.97	2.97
F Accept (L1)		-0.46	-0.48	-0.47	-0.47	-0.47	-0.47	-0.47	-0.47	-0.47	-0.47
P Accept (L1)			-0.48	-0.47	-0.47	-0.48	-0.48	-0.48	-0.48	-0.47	-0.46
Neuroticism						1.18	1.18	1.20	1.24	1.31	1.31
F Accept (L2)							-0.01				
P Accept (L2)								-0.57			
Extraversion									0.15		
F Accept X Neuroticism										-0.23	-0.23
P Accept X Neuroticism											0.03
Random Components											
Residual	6.91	6.69	6.64	6.58	6.54	6.58	6.58	6.58	6.58	6.58	6.58
Intercept	3.59	3.59	3.59	3.6		2.53	2.53	2.48	2.50	2.52	2.52
Slope				0.08		0.07	0.07	0.07	0.07	0.05	0.05
Intercept-Slope				0.07		0.92	0.83	0.79	0.70	0.04	0.05
Covariance				-0.97		-0.85	-0.85	-0.78	-0.79	-0.94	-0.93
Model Fit Information											
# Parameters	3	4	5	7	10	8	9	9	9	9	10
-2LL	11851.11	11622.33	11604.91	11587.14	11587.59	11551.00	11551.00	11549.62	11550.33	11543.36	11543.30
χ^2		228.78	17.42	17.77	-0.45	36.14	0	1.38	0.67	7.65	0.06
BIC	11874.48	11653.44	11643.79	11641.58	11665.37	11613.22	11621.00	11619.62	11620.34	11613.35	11621.07
ICC	33.35										
% Variance Explained		3.18	0.75	0.90		29.72				0.40	

Table B7. Model 7: Source X Acceptance Strategy Use for Negative Emotions

Note. Bolded values are significant at p < .05. Shaded columns did not significantly improve the model. % Variance explained represents the additional % variance contributed to the model by the single added predictor. F = Friend; P = Parent; Accept = Total Acceptance Strategies Used (centred); Rdm = Random; L1 = Level 1; L2 = Level 2; -2LL = -2 Log Likelihood; BIC = Bayesian Information Criteria; ICC = Intraclass Correlation. ^a Model failed to converge.