Who eats their feelings, and who sweats them out?: Understanding how individuals and their romantic partners use eating and exercise for emotion regulation

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Rachael E. Jones

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Advisors: Dr. Jeffry A. Simpson and Dr. Alexander J. Rothman

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Abstract

Researchers argue that individuals' emotion regulation affects their long-term health outcomes by leading them to engage in health behaviors to cope with their stress and negative emotions. However, there is a need to isolate health behavior for this purpose from individuals' typical health behavior, and to include health-promoting behaviors, such as exercise, in addition to health-compromising behaviors, such as eating junk food. Furthermore, emotion regulation and health behavior often occur around close others and are influenced by them, highlighting the need to study the social context around these processes. Thus, this dissertation examines how individuals' and their romantic partners' emotion regulation and typical health behavior predict their use of eating and exercise to down-regulate negative emotion.

Participants reported their typical health habits and use of eating and exercise for emotion regulation, including how frequently they engaged in the behaviors and how they deviated from their typical health behavior when doing so. Participants' balanced (i.e., constructive and effective) emotion regulation was measured by well-established self-report surveys as well as by their behavior during conflict discussions with their romantic partners, which was coded by trained observers.

The results indicated that balanced emotion regulation was not related to individuals' typical health behavior but was related to their health behavior for emotion regulation. Furthermore, participants reported significantly changing their typical health behavior when using it to cope. Actor Partner Interdependence Model regressions revealed that participants lower in self-reported balanced emotion regulation engaged in eating for emotion regulation more frequently than those higher, especially if they were

women. Their typical junk food consumption was not predictive. In contrast, those who typically exercised more in their daily lives used exercise for emotion regulation more frequently than those who exercised less. They also tended to increase their exercise more when using it to regulate their emotions, especially if they were men. Balanced emotion regulation was not related to individuals' use of exercise to manage their feelings, although those higher in balanced emotion regulation used exercise significantly more often than they used eating for this purpose. Individuals' partners' tendencies were sometimes associated with individuals' eating for emotion regulation, but not with their exercise. Self-reported balanced emotion regulation was more strongly related to other variables than was behavioral balanced emotion regulation.

These findings suggest that health behavior for emotion regulation differs from typical health behavior, more dysregulated individuals may eat (but not exercise) more often to cope with their negative feelings, and experience with exercise may be needed to employ physical activity for emotion regulation.

Keywords: emotion regulation, stress, coping, eating, exercise, romantic relationships

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Who eats their feelings, and who sweats them out?: Understanding how individuals and their romantic partners use eating and exercise for emotion regulation

It is no secret that engaging in health-compromising behaviors can lead to worse health outcomes and, eventually, death. In fact, up to half of premature deaths in the United States can be attributed to patterns of health behavior (Institute of Medicine and National Research Council, 2015). For some of the most common causes of mortality, such as heart disease and cancer, eating and exercise habits are important predictors (Islami et al., 2018; Smirnova et al., 2020). Health organizations recommend that people need to eat less sugar, fat, and salt (i.e., junk food), and exercise more in order to protect their health (U.S. Department of Health and Human Services, 2020; World Health Organization, 2018). Changing these health behaviors, however, is easier said than done. To help individuals change, then, psychologists must understand what motivates them to eat more junk food and exercise less.

One reason people may engage in these health-compromising habits is to regulate their emotions. That is, many people eat, smoke cigarettes, drink alcohol, use drugs, exercise, or even sleep to manage the experience and expression of their emotions (Gross, 1998). Specifically, they often do so to down-regulate (feel less) negative emotion and/or stress. For example, in one national survey, 27% of adults said they eat to manage stress, and 43% said they exercise to manage stress (American Psychological Association, 2014). Thus, in this dissertation, I focus on factors that predict the use of eating and exercising to down-regulate negative emotion.

While using health behavior for emotion regulation is widely recognized, it is rarely actually studied. For example, research abounds showing that stress is associated

with overeating and consuming junk food, and exercising leads to lower stress (Cardi et al., 2015; Stults-Kolehmainen & Sinha, 2014; Torres & Nowson, 2007). None of these effects indicate that the health behavior was done to regulate emotions, yet this assumption is often made. In fact, as Park and Iacocca (2014) state in their review of coping perspectives on health behavior, "We could find no study that explicitly assessed stress and diet or exercise behaviors as coping" (p. 127). Thus, many researchers justifying their hypotheses or findings with a health-behavior-as-coping argument are not actually testing it. This absence is problematic because eating and exercising for emotion regulation may differ from individuals' typical health behavior.

For example, some people may *change* their health behavior *more* than others do when they use it for emotion regulation or use health behavior as emotion regulation *more frequently* than others do. Specifically, I hypothesize that people with less effective emotion regulation may do so more than those with more effective emotion regulation in order to down-regulate their greater negative affect. Effective emotion regulation (here, called balanced emotion regulation; Overall & Girme, 2014) involves recognizing and engaging with negative emotion; accepting it, rather than judging it; and being able to let it go and move forward from it. Those lower in balanced regulation may under-engage or over-engage with negative emotion, preventing them from successfully down-regulating it. Because negative emotion remains, individuals lower in balanced emotion regulation may turn to external behaviors, such as eating and exercise, to cope.

In addition to their balanced emotion regulation, another potential predictor of how people use eating and exercise to manage their feelings is their typical health behavior, i.e., their usual eating and exercise habits. Those that already have the

knowledge and resources to engage in exercise, for instance, face fewer barriers to employing the behavior for emotion regulation. Typical health behavior may also meaningfully interact with emotion regulation tendencies. For example, having healthy habits may prevent those with lower balanced emotion regulation from engaging in health-compromising behavior to regulate their emotions. Likewise, having higher balanced emotion regulation may prevent those with unhealthy habits from using them to regulate their emotions.

Individuals' health behavior for emotion regulation may also be influenced by the people around them. In adulthood, people spend the most time around their romantic partners. Consequently, partners often affect each other's health habits (e.g., Jackson et al., 2015; Meyler et al., 2007). Similarly, partners may affect each other's use of eating and exercising for emotion regulation. For example, if an individual's partner has lower balanced emotion regulation and is not successful at down-regulating negative emotion, they may pass that negative emotion on to the individual through what they say and how they act (Bodenmann, 2005; Hatfield et al., 1994). By doing so, they create more negative emotion that the individual must then regulate. This extra negative emotion may be particularly difficult for individuals lower in balanced emotion regulation to manage, and they may turn to eating and/or exercise to help them do so. Therefore, by adding or removing stress from individuals' lives, partners may contribute to how individuals use health behavior to regulate their emotions.

In sum, this dissertation aimed to address gaps in the measurement of emotion regulation for health behavior and highlight the role of the social context in determining it. I examined how individuals' and their partners' typical health behaviors and balanced

emotion regulation predicted how they used eating and exercise to manage negative emotion, while comparing the utility of traditional, self-report measures of emotion regulation to behaviorally coded emotion regulation in a realistic, interpersonal situation.

Emotion Regulation

Individuals feel emotion when they have attended to and appraised how a situation compares to their goals (Barrett et al., 2007). For example, if an individual wants to join the soccer team (goal) but does not perform well during try-outs (situation), they may experience disappointment or frustration (negative emotions). If the individual does well at soccer try-outs and believes that they will attain their goal of joining the team, they may feel excitement and satisfaction (positive emotions).

People often attempt to change how they feel and/or show emotion, though. This management of the experience and expression of emotions is called emotion regulation (Gross, 1998). Individuals may want to regulate their emotions because they believe that the emotions are harmful, not useful, or simply aversive to experience (see Tamir, 2016 for a review of motivations for emotion regulation). For example, an individual may want to rid themselves of the anxiety they feel before taking an exam because they believe it may hinder their performance. People may also change the outward presentation, rather than the internal experience, of their emotions because they believe that showing them is inappropriate or could lead to negative consequences. For instance, a contestant receiving news that their competitor has won an event may feel angry or heartbroken. However, they are expected to express happiness for their opponent, especially while being watched by others.

In general, people are motivated to down-regulate (lower the intensity and/or duration of) negative emotions. In the emotion regulation literature, down-regulating negative emotions receives more study than down-regulating positive emotions or up-regulating (raising the intensity or duration of) positive or negative emotions (DeSteno et al., 2013; Nelis et al., 2011). This research emphasis on negative emotion is likely due to its importance in humans' lives. The first emotion infants feel is distress, and the first emotion regulation they experience is caregivers' attempts to down-regulate their distress (Morris et al., 2017). Furthermore, throughout life, "bad" events hold more weight psychologically than "good" events (Baumeister et al., 2001). This bias may stem from the evolutionary advantage gained by attending to negative stimuli and emotions. While positive emotions may help one grow and thrive, being aware of threats and preparing to handle them was necessary to survive (Fredrickson, 2001; Vaish et al., 2008). Experiencing negative emotions is thus a significant part of people's lives. However, holding on to negative emotion can be physically and cognitively taxing, rendering individuals susceptible to mental and physical health problems over time (Aldao et al., 2010; John & Gross, 2004). Therefore, the ability to reduce these negative feelings is essential, too.

Balanced Emotion Regulation

Down-regulating negative affect[1] successfully can be a challenge, though. Research shows that engaging with emotions is important for down-regulating them, but

[1] Throughout this dissertation, I will refer to stress, negative emotion, negative affect, and negative feelings often interchangeably, as the same target for down-regulation. I will also use emotion regulation, coping, and managing feelings to refer to similar processes. I acknowledge that these terms may have important distinctions elsewhere (see John & Eng, 2014).

individuals must do so in a balanced manner, neither under-engaging nor over-engaging with their negative feelings. Hence, this skill will be referred to as balanced emotion regulation (see Overall & Girme, 2014). Like emotion regulation in general, balanced emotion regulation is a broader construct that consists of specific strategies and competencies. Emotion regulation strategies are tactics that individuals employ to change how they feel or how they express their emotions. Emotional competencies consist of skills and processes, and they may be prerequisites for using emotion regulation strategies effectively (John & Eng, 2014). For example, an individual likely needs emotional awareness, a competency, in order to identify their negative affect before being able to implement a strategy to down-regulate it.

To best capture a complex process such as emotion regulation, researchers need to include measures of both strategies and competencies. Most emotion regulation strategies are narrowly defined and have limited durations. Although a few strategies, such as suppression and reappraisal, have been well-studied, they do not represent the full range of emotion regulation (DeSteno et al., 2013; Naragon-Gainey et al., 2017). In contrast, individuals may rely on their emotional competencies in more situations, but unlike strategies, competencies do not indicate what people *do* to alleviate their stress and negative feelings. Therefore, strategies and competencies may describe distinct, but related, components of emotion regulation (John & Eng, 2014). Nevertheless, there is not one agreed-upon conceptualization of emotion regulation, with scholars from different research traditions ascribing to different definitions and measurements (Bridges et al., 2004). Thus, without one, clear operationalization of emotion regulation and with the

goal of capturing the holistic construct of balanced emotion regulation, I will use measures of both emotion regulation strategies and emotional competencies.

Effective emotion regulation can be conceptualized as the presence of constructive strategies and competencies. However, it also includes the absence of ineffective strategies and tendencies. Perhaps due to the clinical implications of emotion *dys*regulation, much research has focused on measuring destructive strategies and tendencies (Nelis et al., 2011). In these measures, scoring lower represents better emotion regulation. For example, scoring lower on the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004), a widely used measure of emotional competence, indicates a *lack* of emotion regulation difficulties and, therefore, more effective emotion regulation. Measuring the use of destructive emotion regulation in addition to the use of constructive emotion regulation adds important information because an individual scoring low on the usage of a balanced emotion regulation strategy does not necessarily imply that they would score high on the usage of lower balanced emotion regulation strategies. Rather, they may use balanced strategies that have not been measured. Furthermore, individuals' use of lower balanced strategies may not necessarily be associated with their use of higher balanced strategies (John & Gross, 2004). Thus, to gain a holistic view of individuals' emotion regulation, I will measure the presence or absence of effective/constructive strategies and competencies, and the presence or absence of ineffective/destructive strategies and tendencies.

Emotion Regulation Strategies. Strategies often studied in the emotion regulation literature include the higher balanced emotion regulation strategy of reappraisal and the lower balanced strategies of suppression and rumination. Reappraisal

is generally considered adaptive. It consists of cognitively reinterpreting stimuli that could elicit emotion, such that a subsequent emotional experience is prevented or lessened (e.g., John & Gross, 2004). For example, an individual could reappraise when their favorite meal at a restaurant is unavailable by considering the situation an opportunity to try something new.

In a meta-analysis by Webb et al. (2012) examining the effects of several emotion regulation strategies, reappraisal strategies were associated with better self-reported and behavioral emotional outcomes with small to medium effect sizes ($d_+ = 0.36$). In an experiment showing the benefits of reappraisal strategies, participants watched film clips designed to elicit negative emotions (e.g., fear, disgust, sadness; Wolgast et al., 2011). They were instructed to reappraise what they saw by focusing on the acting and special effects, to accept the feelings that came without trying to control them, or to simply watch the clips (the control condition). Participants in the reappraisal and acceptance conditions reported feeling less negative emotion, showed less behavioral avoidance of the films, and exhibited less physiological stress than those in the control condition. Thus, reappraisal reflects a higher balanced emotion regulation strategy.

Lower balanced emotion regulation strategies sustain or exacerbate negative emotion and, thus, are not successful at down-regulation. Individuals using lower balanced strategies tend to be overwhelmed or threatened by the negative emotions. Two well-known strategies are suppression and rumination (Naragon-Gainey et al., 2017). Suppression involves avoiding negative emotion, whereas rumination involves excessively focusing on it. Though these two may sound dissimilar, they are both indicative of the intolerance of negative emotion and share many common effects.

Inhibiting the expression of emotion is called expressive suppression (Gross & Levenson, 1993). Individuals who suppress may believe that controlling and hiding emotion will make it disappear. However, not showing emotion is not the same as not feeling emotion. Because suppression targets the behavioral display of emotion, rather than the emotion itself, it does not decrease the intensity of the emotion (Gross, 1998). The emotion is "bottled up" rather than released. Consequently, those who suppress may end up feeling more negative emotion than those who engage in higher balanced emotion regulation strategies (John & Gross, 2004).

In contrast, other strategies reflecting lower balanced emotion regulation involve acknowledging negative affect, but *over*-engaging with it in such a way that it is consuming. A prime example of this kind of strategy is rumination. Rumination is repetitive thinking about negative affect, its causes, and its effects (Smith & Alloy, 2009). It involves cognitive perseveration, the repeated or sustained cognitive representation of past negative events or future negative possibilities (Clancy et al., 2016; Ottaviani et al., 2016). Rumination is a defining characteristic of many mental health disorders, such as anxiety and depression, and has a unique negative association with mental health outcomes, above and beyond the effects of other emotion regulation strategies (Ottaviani et al., 2016; Zawadski, 2015). Individuals may engage in rumination because they believe it aids them in identifying why and how negative events occurred, preventing negative events from happening again, and preparing them for future negative events (Smith & Alloy, 2009). However, ruminating individuals may be *avoiding* truly processing their threatening negative emotions, similarly to those using expressive suppression

(Borkovec, 1994; Newman & Llera, 2011). Thus, rumination prolongs and exacerbates distress.

Though rumination and suppression may seem different, they share common effects. Psychologically, rumination, avoidance, and suppression are all positively related to the presence of psychopathology, particularly depression and anxiety, with medium to large effect sizes (Aldao et al., 2010). Hence, these strategies may cause or co-occur with mental health issues. Lower balanced emotion regulation may also lead to interpersonal difficulties. For example, individuals using avoidant strategies may disengage from threatening conversations, frustrating their partners (e.g., Girme et al., 2020). Those suppressing their emotions may feel inauthentic with others and be less likely to receive support (John & Gross, 2004). Meanwhile, individuals prone to rumination may find moving past relationship threats especially difficult, thus maintaining negative feelings towards their partner (Jostmann et al., 2011).

In sum, suppression and rumination are both defined by maladaptive engagement with negative emotion. While individuals using suppression under-engage with it, those using rumination over-engage with it. Therefore, both types lack a balanced approach to managing emotion and are ultimately ineffective at down-regulation.

Emotion Regulation Competencies and Tendencies. Emotional competencies needed for balanced emotion regulation include recognizing one's emotions, accepting those emotions, and remaining in control of (rather than being controlled by) of one's emotions. Recognition consists of emotional awareness (attending to and valuing one's emotions) and emotional clarity (knowing how specific emotions "feel" in the body and being able to distinguish one emotion from another) (Boden & Thompson, 2017). These

competencies support successful emotion regulation because an individual must be aware of experiencing negative emotions to downregulate them and to assess whether downregulation was effective. Knowing which emotions one is feeling is also useful for choosing an appropriate regulation strategy (Barrett et al., 2001). Finally, emotional awareness and clarity benefit one's relationships, as being able to identify and communicate emotions is important for relationship functioning and solving interpersonal problems (Cordova et al., 2005).

Another relevant ability to balanced emotion regulation is being comfortable with emotions, including negative ones. Though experiencing a negative emotion is inevitable, it can feel threatening or aversive (Tamir, 2016). By remaining open to these internal experiences, rather than fighting them, individuals learn to accept and grow comfortable with their emotions. Becoming comfortable with negative emotions may not only render them less threatening, but also prevent additional suffering over feeling them (Campbell-Sils et al, 2006; Wolgast et al., 2011). That is, it may prevent feeling negative emotions *about* feeling negative emotions (Gratz & Gunderson, 2006). People often struggle to accept their negative emotions, criticize themselves for feeling them, and attempt to avoid them (Gratz & Roemer, 2004; Hayes et al., 1996). Avoiding unwanted inner experiences, however, is associated with experiencing less positive affect and more negative affect on a daily basis (Kashdan et al., 2006). In contrast, accepting and not judging oneself for having negative emotions is associated with less daily negative affect and more willingness to reencounter negative stimuli in a lab setting (Arch & Craske, 2006; Ford et al., 2018). Accepting negative emotions facilitates engaging with them in a balanced

manner during downregulation and, therefore, can lead to more effective emotion regulation.

Feeling in control of negative emotions, rather than controlled by them, is another part of balanced emotion regulation. For example, people who are beholden to their negative emotions may act impulsively when upset, engaging in destructive or risky behaviors, rather than overriding their initial reactions (Tice et al., 2001). These hasty actions may in turn harm their progress towards their more important long-term goals. Similarly, if individuals are preoccupied with negative emotions, they may not be able to focus on these goals. While a lack of impulsivity itself does not qualify as balanced emotion regulation, it is needed to engage in balanced emotion regulation, and is thus an emotional competency worth measuring.

Individuals who feel in control of their negative emotions typically are not overwhelmed or carried away by them. Instead, they are able to acknowledge the negative emotions they experience without needing to react to them or letting them dictate their future behavior (Bohlmeijer et al., 2011). Feeling in control may also indicate that individuals have confidence that negative affect will pass and that they are able to downregulate it, rendering the experience of negative emotions less threatening. For example, believing in one's ability to take action to feel better is associated with less emotional distress and more effective coping (Catanzaro et al., 2014). Therefore, reacting thoughtfully to negative emotions rather than being consumed by them is an emotional competency that facilitates balanced emotion regulation.

Measuring Emotion Regulation

Emotion regulation has been measured in many ways over the years, from surveys to physiological responses to minute facial expressions (Goldin et al., 2008; Gross & John, 2003; Izard, 1990). With questionnaires, researchers have gathered participants' self-reports of emotion regulation strategies and emotional competencies. Self-reports may be appropriate for capturing emotion regulation because much of emotion regulation occurs internally in an individual's thoughts and feelings. It may thus be observable to the individual but not to others. However, the accuracy of self-reports relies on self-awareness and honesty. Consequently, participants' responses are prone to being biased. Researchers agree that there is a need to study participants' actual emotion regulation ability, rather than their perceived ability (John & Eng, 2014).

Behavioral observation may provide a more accurate assessment of emotion regulation. Behavioral observation consists of objective researchers watching how participants act and rating their behavior on a construct of interest, such as emotion regulation (Furr & Funder, 2007). Observers are often more objective and can notice tendencies that participants hide or of which participants are unaware. For example, while someone may report that they possess emotional clarity, observers may notice that the individual cannot specifically describe how they feel. Someone may report that they accept their negative emotions, but observers may notice that, during an upsetting situation, the individual's non-verbal behavior reveals discomfort with expressing their emotions. In addition to providing a more objective perspective of participants' emotion regulation, behavioral observation also allows researchers to make between-person comparisons and assess which participants behave more extremely than others (Furr &

Funder, 2007). Due to the contrasting strengths of these self-report and behavioral methods, I will use both to measure emotion regulation.

Health Behavior as Emotion Regulation

Emotion regulation tendencies affect many areas of life, and physical health is no exception. Researchers argue that emotion regulation affects health via two primary paths. First, having lower balanced emotion regulation can lead to the dysregulation of the body's stress response systems. Physiologically, when an individual does not successfully down-regulate negative affect, their body's stress response stays activated. For example, if the initial stressor has passed, but an individual continues to ruminate about it, the body still responds as if a stressor is present. It does not discern that the stress is now self-generated in the individual's mind (Zawadzki, 2015). Accordingly, perseverance has been linked to higher blood pressure, heart rate, and cortisol levels in experimental studies (Ottaviani et al., 2016). Many studies have also found that avoidance strategies are also related to increased or dysregulated cardiovascular, electrodermal, and endocrine (cortisol) responses (e.g., Gross, 1998; Otto et al., 2018). Thus, lower balanced emotion regulation is associated with problematic physiological responses to stress, which can lead to health issues over time, such as cardiovascular disease, obesity, inflammation, pain, and illness (e.g., Appleton et al., 2013; Turner et al., 2020).

The second path through which emotion regulation affects physical health is through health behaviors, such as eating, exercising, imbibing, and smoking. The argument for this path is that people engage in health behaviors to regulate their emotions. When internal emotion regulation fails to successfully down-regulate negative

affect, people may turn to external resources for regulation (Phillips & Power, 2007). Indeed, many people say they use health behavior for this reason. For example, in a 2017 representative sample of adults in the United Kingdom, almost 60% of respondents indicated that they drank alcohol for coping purposes (Appleton & James, 2018). Many studies have also found that people smoke cigarettes for stress relief (Lawless et al., 2015). In my dissertation, I focus on eating and exercising, two of the most common health behaviors that people may use for coping.

Unfortunately, when researchers argue that emotion regulation affects health outcomes via health behavior, they often do not measure if the health behavior is done for coping purposes (Park & Iacocca, 2014). Typical health behavior and health behavior for emotion regulation may be important to distinguish because many studies show that people *change* their health behavior when stressed, as I will discuss in the next section. Presumably, then, that behavior does not reflect their usual health behavior. If health behavior when stressed *does* represent efforts to cope, as researchers often assume, then it should differ from people's typical health behavior. Yet many researchers measure typical health behavior while justifying effects with the argument that the health behavior is used for emotion regulation (e.g., see Kassel et al., 2003; Park & Iacocca, 2014; Umberson et al., 2008). Thus, one aim of my dissertation is to clarify the difference between the two. To begin, in the following sections, I will cover what has been studied about eating and exercising when stressed, the effectiveness of eating and exercising to down-regulate negative emotions, and how eating and exercise relate to emotion regulation.

Eating as Emotion Regulation

Eating When Experiencing Negative Emotion. One of the ways in which people use health behavior to regulate their emotions is through eating. Unfortunately, when people eat in response to stress or negative emotion, they usually do so in a health-compromising manner. For example, a large cross-sectional study of over 12,000 participants found that higher levels of stress were associated with diets higher in fat intake (Ng & Jeffery, 2003). Indeed, many studies show that when individuals experience negative emotions, they eat more than they usually do, choosing foods higher in fat and sugar (e.g., see Torres & Nowson, 2007 for a review).

In an experimental test of the proposed causal relationship between stress and food intake, Oliver et al. (2000) examined what participants ate based on whether or not they were stressed, and how likely they were to eat when they felt negative emotions (emotional eating). The researchers created stress in one group of participants by telling them that after they ate a meal, they would be giving a speech about a controversial topic that would be evaluated (the Trier Social Stress Test). The unstressed group was told that they would listen to a neutral reading after the meal. During the meal, participants chose from bland, sweet, and salty foods that were low or high in fat. The results indicated that participants high in emotional eating and in the stressed group ate sweeter, fattier foods than unstressed participants and those low in emotional eating. A meta-analysis by Cardi et al. (2015) corroborated these results, finding that experimentally inducing negative mood was associated with greater food intake. This effect was more pronounced in restrained and binge eaters. Thus, generally the literature suggests that people are likely to consume more when feeling negatively, and the food that they choose is higher in fat and sugar.

Effectiveness of Eating for Down-Regulating. Whether or not eating successfully reduces negative emotion is debatable. As evidence for its effectiveness, Macht and Mueller (2007) found that participants' negative mood improved after eating chocolate that they liked. However, this effect was short-lived; the improved mood lasted only three minutes. Furthermore, an earlier study by the same group suggested that eating high-energy food may *increase* negative emotion. In this study, after women ate higher energy foods, which were rated as unhealthier, they felt higher anger, fear, shame, and sadness than when they ate lower energy foods (Macht et al., 2003). Eating unhealthy foods can also cause people to feel guilty for not being able to resist temptation (American Psychological Association, 2014; Kuijer & Boyce, 2014). If consuming higher energy food prompts more negative feelings or only lasts for a few minutes, then it may be ineffective as an emotion regulation tool.

Still other work suggests that eating high calorie food does not affect emotion. For example, in one study, participants were offered carrots, a candy bar, or no food after completing a stressful task. Participants' *liking* of their food condition predicted better recovery from stress, but the type of food itself did not affect either their emotional or physiological recovery (McKay et al., 2021). Interestingly, participants who were offered the candy bar did not like their condition significantly more than those in other conditions. These results suggest that liking the food is more important than the content of the food for down-regulating negative emotion.

But liking may not matter either. Participants in Wagner et al.'s (2014) studies watched film clips designed to elicit negative emotion in two separate lab sessions and then reported how they were feeling. In one of the lab sessions, participants were next

offered comfort food, food that they had previously identified as likely to make them feel better if they were in a bad mood. During the other lab session, participants were offered either food that they liked but did not find comforting, a food they neither liked nor disliked, or no food. After having time to eat the food if they wished, participants reported how they were feeling again. The results showed that after a negative mood induction, comfort food did not improve negative mood any more than did a liked (but not comforting) food, a neutral food, or no food. Thus, comfort food was not responsible for reducing negative affect. Synthesizing the results of these studies, whether or not overeating down-regulates negative emotion is unclear.

If eating does not down-regulate negative emotion, then why do people do it when stressed? Perhaps by overeating when upset, an individual directs their attention to the food they are consuming rather than to themselves, thereby escaping from aversive self-awareness (Heatherton & Baumeister, 1991). They may also overeat in order to attribute their negative feelings to eating rather than to the original stressor (Herman & Polivy, 1988). Other researchers argue that eating when stressed has a physiological basis. For example, when an individual is stressed, their body may release glucocorticoids that motivate them to seek food and insulin, and/or release endogenous opioids, which feel calming and rewarding (Adam & Epel, 2007; Dallman, 2010). Some scholars doubt this theory however, noting that when an individual experiences stress, the body enters "fight or flight" mode. This response includes suppressing digestion and feelings of hunger in order to direct resources to combat the stressor at hand. Hence, there are several reasons people may seek food when stressed, but these reasons are disputed.

Emotion Regulation and Eating. Regardless of whether eating more is effective at down-regulating negative emotion, much work has connected emotion regulation to eating when experiencing negative affect. Overall, lower balanced emotion regulation has been associated with eating more. For example, in an experiment, Evers et al. (2010) induced negative affect in participants using emotional film clips. Participants then participated in a taste test. In one study, the researchers found that those dispositionally higher in suppression ate more comfort food (defined by researchers) during the taste test. In their other studies, participants instructed to suppress their emotions about the film ate more comfort food compared to those instructed to reappraise or those given no instructions (the control group). Significant group differences did not emerge for non-comfort food.

In a meta-analysis, rumination has also been positively associated with engaging in health-compromising behaviors, including unhealthy eating (Clancy et al., 2016). Engaging in avoidance and emotion-oriented coping (in this case, containing self-preoccupation, worry, and negative emotion; similar to rumination) are also positively related to emotional eating and disordered eating (Aldao et al., 2010; Litwin et al., 2017; Prefit et al., 2019; Spoor et al., 2007).

Using balanced emotion regulation strategies has been associated with comparatively better outcomes related to eating when experiencing negative emotion. In the aforementioned experiment by Evers et al. (2010), participants assigned to reappraise their feelings from watching a negative film clip were less likely to eat comfort food afterwards. In a meta-analysis of emotion regulation strategies and eating pathology, Prefit et al. (2019) showed that emotional awareness, emotional clarity, acceptance,

problem solving, and reappraisal were all negatively associated with symptoms of problematic eating, even in non-clinical samples. Finally, several studies suggest that when participants undergo interventions that incorporate balanced emotion regulation training, they improve their emotion regulation skills, and disordered or emotional eating (Baer et al., 2005; Godfrey et al., 2015; Juarascio et al., 2020; Katterman et al., 2014; Larsson et al., 2020). Interventions incorporated teaching and practice of emotional competencies such as emotional awareness, labeling, acceptance, expression, distress tolerance, and mindfulness. In conclusion, balanced emotion regulation is negatively associated with unhealthy or problematic eating behavior.

Consequences of Eating for Emotion Regulation. Using eating to down-regulate stress and negative emotion may or may not be effective, but doing so has clear implications for health outcomes. Because people tend to overeat and consume fatty, sugary foods when eating for emotion regulation, they are at higher risk of developing obesity, heart disease, stroke, type 2 diabetes, and/or cancer (CDC, 2021). For example, in a cross-sectional study of about 1,000 participants, the tendency to eat when stressed was associated with health outcomes, such as worse fat distribution, glucose metabolism, and chance of diabetes (Tsenkova et al., 2013). In a similarly sized prospective study of over 1,000 participants, higher emotional eating tendencies predicted more weight gain two years later (Koenders et al., 2011). As eating for emotion regulation compromises individuals' health and is only questionably successful at down-regulating negative affect, it is surprising that so many people engage in it.

Gaps in the Literature on Eating for Emotion Regulation. At first glance it may seem as though there is plenty of research on eating as emotion regulation. However,

if one takes a closer look, this work focuses on eating, stress, and emotion regulation, but not actually eating *as* emotional regulation. For instance, the Emotional Eating Scale measures the extent to which people have the urge to eat when feeling certain emotions (Arnow et al., 1995) but does not specify eating *to cope* with these emotions. Furthermore, in this review of the literature, participants' motivation to eat was not measured, and researchers never explicitly instructed them to eat to manage their feelings. Thus, we cannot definitively say that participants were eating to cope.

Measuring the motivation behind eating is important because eating when stressed and eating to regulate stress are different constructs. According to a nationally representative survey of 2000 American adults, 38% of adults reported overeating or eating unhealthy foods *due to stress,* while only 27% said they eat to *manage stress* (American Psychological Association, 2014). Therefore, the two are distinguishable practices.

Additionally, eating in response to negative emotion and eating to regulate negative emotion should be distinct because they predict outcomes differently. For example, in Taut et al.'s (2012) study, participants watched a negative film clip, and were instructed to reappraise, suppress, or given no directions during a second clip. They were then left alone to complete questionnaires in a room that had chocolate and chips. Researchers told participants to feel free to eat some while they answered questions. Ultimately, individuals in the group instructed to reappraise were less likely to eat than those in the suppression or control groups, but if they did eat, they consumed just as much. Of note, while the emotion regulation condition predicted eating behavior, the amount of negative emotion participants felt did not. Evers et al. (2010) and Spoor et al.

(2007) also found that emotion regulation, not emotion, predicted food intake and eating in response to negative emotion, respectively. In conclusion, researchers should separate the experience of emotion from the use of emotion regulation, and eating when stressed from eating to manage stress.

Exercise as Emotion Regulation

In contrast to eating more junk food, exercising more is good for physical health. Not only does exercising provide physical health benefits, but it also provides an effective way to manage negative emotions and stress (for meta-analyses, see Hamer et al., 2006; Stubbs et al., 2007). However, very little work has examined whether the ways in which people manage negative emotions and stress affects their tendency to exercise and their motivation for doing so.

Exercising when Experiencing Negative Emotion. Unlike with eating, when people are stressed, they tend to exercise less. When Stults-Kolehmainen and Sinha (2014) conducted a systematic review of the effects of stress on exercise, they found that 73% of the 168 studies they examined showed that stress was negatively related to physical activity. This effect was found in the majority of cross-sectional and prospective studies. Of course, that leaves 27% studies showing that some individuals exercise more when stressed. These individuals may have a different relationship with exercise, as I discuss later.

Effectiveness of Exercise for Down-Regulating Negative Emotions. People may exercise because they believe it will down-regulate stress and negative emotion (Dalton, 2020). Presumably, some of the same arguments for eating when stressed apply to exercising when stressed. For example, exercise can draw attention away from oneself

and the stressor, providing an alternate explanation for discomfort. In the case of exercise, however, there is ample evidence that it *does* make people feel better.

Exercise improves negative affect through several processes. For example, in the brain and body, exercise increases the levels of dopamine, which regulate motivation and reward, epinephrine and norepinephrine, which regulate energy, and possibly serotonin, which regulates mood (Basso & Suzuki, 2017; Dishman et al., 2006). Thus, exercise can make people feel less negative and more motivated, rewarded, alert, energetic, and positive. Exercise also leads to cognitive changes, which may indirectly aid emotion regulation. In several meta-analyses, acute exercise has been shown to improve cognitive functioning, including processes related to attention, memory, and executive functioning, which are needed for regulating emotion (Chang et al., 2012; Ludyga et al., 2016). For example, Lott and Jensen (2017) found that children's aerobic fitness was positively associated with their emotion regulation, and this effect was mediated by executive control. Therefore, exercise improves cognitive processes that are used during emotion regulation.

More directly, exercise affects how people experience emotions, too. Most likely with the aid of increased hormone and neurotransmitter levels, exercise produces positive emotions (Liao et al., 2015). For example, in a meta-analysis, Reed and Ones (2006) examined the effect of bouts of exercise on emotions that are positive (valence) and activated (arousal/energy), such as excited, energetic, and cheerful. They found a medium effect ($\overline{d} = 0.47$) of exercise on positive, activated affect. Hyde et al. (2011) replicated this effect between-people as well as within-people. People experienced more positive, activated emotions if they exercised more than others and if they exercised more than

they usually did. Likewise, using ecological momentary assessment, Kanning and Schlicht (2010) found that after participants were active, they felt more positive, awake/energetic, and calm/relaxed than after they were not active. Thus, many studies show that exercise boosts positive affect.

Research also supports that exercise facilitates recovering from negative affect and stress. In an ecological momentary assessment study, Bernstein et al. (2019) found that participants that exercised more recovered from anxiety more quickly. In other words, when they were anxious, their anxiety did not persist as long as it did for participants who exercised less. Bernstein and colleagues have also investigated these effects in a controlled laboratory setting. In their 2017 study, participants answered questions about their emotion regulation and were then assigned to either jog or stretch for 30 minutes. Afterwards, they watched a film clip that induced sadness. Participants in both conditions felt equally negative after the mood induction, suggesting that exercise did not prevent negative affect. However, it did help participants recover. Specifically, participants who reported struggling with emotion regulation felt stronger and longer sadness, but these effects were reduced for those in the jogging condition as compared to the stretching condition. Finally, in a study using cycling instead of jogging, and the Trier Social Stress Test instead of a sad film clip, Bernstein and McNally (2018) found similar results. Cycling did not prevent negative emotion after the stressor, but it did help participants that ruminated down-regulate their negative emotion, while stretching did not. Thus, those with emotion regulation difficulties may more easily return to their emotional baselines if they have recently exercised. In sum, there is ample evidence that exercise is beneficial for down-regulating negative emotion and stress.

Emotion Regulation and Exercise. Exercise appears to have both physical and mental health benefits. In fact, it has been "prescribed as medicine" for a wide range of mental and physical health issues (Pedersen & Saltin, 2015). Much research shows that exercise facilitates successful emotion regulation, but the relationship between emotion and exercise is actually bidirectional (Stults-Kolehmainen & Sinha, 2014). Not only does exercise affect emotions, but also emotions (and how they are regulated) affect exercise. For example, Riley et al. (2019) conducted a diary study examining how rumination related to engagement in health behaviors. Their results showed that when individuals ruminated more than they usually did, they felt more amotivation, leading them to exercise less. Buman et al. (2007) found similar effects. In a daily diary study, on days when individuals engaged in more emotion-focused coping, they were less likely to exercise.

These studies did not explicitly measure exercise as a coping strategy, although, when researchers measure motives for exercise, emotion regulation (sometimes called alleviating stress, stress management, or mood regulation) is a consistently reported motive, found in government workers, teachers, and nurses (Markland & Ingledew, 1997; Steptoe et al., 1998). Exercise was also the most common activity college students reported using to alleviate stress (Spillman, 1990). More recently, 40% of Canadians in a survey of 37,000 reported that they used exercise for coping or emotion regulation (Cairney et al., 2014) and 64% of Americans in survey of 10,000 reported exercising at least weekly to cope with the COVID-19 pandemic (Gecewicz et al., 2020). Finally, Dalton (2020) showed that when college students were experiencing greater daily stress, those who more highly endorsed exercise as a coping mechanism were more likely to

exercise than those lower in these beliefs. Therefore, many people acknowledge and use physical activity as a way to down-regulate negative emotion and stress.

Consequences of Exercising for Emotion Regulation. Exercise positively affects health outcomes. For example, it enhances neuronal plasticity, promoting growth and protecting against neurodegenerative diseases (Dishman et al., 2006). In contrast, lack of exercise contributes to cardiovascular and chronic diseases (Booth et al., 2012). Exercise is also beneficial for mental health. It improves symptoms of anxiety and depression and can even aid emotion regulation tendencies over time (Salmon, 2001). For example, after eight weeks of jogging and yoga, participants in Zhang et al. (2019)'s study fared better at implicit emotion regulation, showing less reactivity to negative images, than did a control group. This effect was the result of a combination of improved aerobic fitness and improved mindfulness, which involves becoming aware of one's body and emotions, and accepting rather than judging them. These abilities are also relevant to balanced emotion regulation. Though yoga more directly targets mindfulness, aerobic exercise also enhances it (Mothes et al., 2014).

Researchers have also argued that exercise may teach the body to successfully withstand stress by mimicking the stress response, increasing heart rate and releasing epinephrine, for example (Bernstein & McNally, 2018). Over time, those who exercise may have lower resting heart rates and return to their baseline more quickly after their heart rate rises, indicating that the parasympathetic nervous system has activated, which is the body's way of calming down after stress. Exercise may therefore build the ability to manage future stress. Unfortunately, lack of physical activity is common. For example, in 2018, 42% of American adults did not meet aerobic *or* muscle-strengthening physical

activity guidelines (CDC, 2018). Due to the positive physical and mental health effects of exercise, and its effectiveness at down-regulating negative emotion, many people would benefit from engaging in it.

Gaps in the Literature on Exercising for Emotion Regulation. Though some people use exercise for emotion regulation, we do not know much about who is more likely to do so. According to Stults-Kolehmainen and Sinha (2014), work acknowledging that stress affects exercise is rarer than work showing that exercise affects stress. Even in their review of the former, they examine how stress affects exercise habits instead of how people manage stress, how they use exercise to relieve it, or their association. Of particular relevance, there is very little research about how using exercise for emotion regulation relates to other emotion regulation tendencies.

Hypotheses

Many studies have investigated the connection between stress, emotion regulation, and health behaviors. In particular, the effect of stress on eating and the effect of exercise on stress have been widely researched. Although many people admit to eating and exercising for emotion regulation purposes, comparatively little work has examined these constructs. Therefore, in my dissertation study, I predict that participants will report engaging in both eating and exercise for emotion regulation. The key hypotheses are listed below.

H1A[2]: The reported frequency of using eating for emotion regulation will significantly

[2] I use "A" and "B" to distinguish hypotheses that, besides the health behavior domain, are the exact same for eating and for exercise.

differ from zero.

H1B: The reported frequency of exercising for emotion regulation will significantly

differ from zero.

Furthermore, I predict that participants will deviate from their typical eating and exercise patterns when they engage in these health behaviors for emotion regulation purposes. Because eating more tends to be associated with experiencing negative emotion/stress and ineffective emotion regulation practices, people may be more likely to change their eating when they use it to cope with negative emotions/stress. Similarly, because people report exercising more (or less) when stressed, changes in exercise when people use it to cope may also emerge.

H2A: People will significantly change their typical eating behavior when they use it for

emotion regulation.

H2B: People will significantly change their typical exercise behavior when they use it for

emotion regulation.

It is important to isolate health behavior *for* emotion regulation and how it differs from typical health behavior. Many researchers argue that health behavior is a critical mediating mechanism through which emotion regulation affects long-term physical health outcomes (DeSteno et al., 2013). They claim that emotion regulation should predict health behavior because individuals may use health behaviors to downregulate their negative feelings. However, prior studies have often measured individuals' typical

health behavior, rather than the health behavior they engage in to manage their emotions (see Park & Iacocca, 2014). Yet, if people report significantly altering their usual eating or exercise in order to cope, then typical health behavior is not a good proxy for health behavior *for* emotion regulation, and these measures should not be used interchangeably.

Measuring the amount of deviation from typical health behavior is also important because it captures within-person change, whereas many studies examine between-group differences (Newman & Nezlek, 2022). For example, studies have established a link between eating and emotion regulation strategies by comparing outcomes between groups. Participants who are instructed to use a lower balanced emotion regulation strategy (e.g., suppression) during an experiment tend to eat more *compared to* another experimental or control group (e.g., Evers et al., 2010), but this does not reveal how emotion regulation relates to within-person change. In other words, it does not elucidate how people vary their usage of health behaviors in different contexts or for different purposes.

Additionally, the amount of change regardless of direction (i.e., the absolute value) is worth examining because it allows one to assess how extremely individuals change their eating or exercise when they use it for emotion regulation and what predicts that deviation. For example, we can examine whether individuals who are lower in balanced emotion regulation change their eating and exercise more for coping purposes than those who are higher in balanced emotion regulation do. This outcome is rarely studied, especially for coping purposes (Park & Iacocca, 2014). To the extent that individuals who are lower in balanced emotion regulation struggle to downregulate their negative emotions effectively, they should have more intense and longer-lasting negative

emotions than better-regulated individuals do. Lacking the ability to regulate their emotions internally, poorly balanced individuals may turn to external sources of emotion regulation, such as eating or exercise. More intense emotions often require greater emotion regulation (Barrett et al., 2001; Dixon-Gordon et al., 2015), so greater changes in health behavior may be needed to manage stronger negative emotions. In other words, there may be a dose (emotional intensity) – response (amount of change to typical health behavior) association.

H3A: Individuals with lower balanced regulation will change their typical eating behavior more for emotion regulation purposes than will those with higher balanced emotion regulation.

H3B: Individuals with lower balanced regulation will change their typical exercise behavior more for emotion regulation purposes than will those with higher balanced emotion regulation.

Engaging in health behavior "more" or "less" for emotion regulation can be operationalized several different ways. In addition to degree of change, how often someone uses a health behavior for emotion regulation purposes (i.e., the frequency) can represent more or less eating and exercise. Several daily diary studies provide an estimate for how emotion regulation tendencies affect the frequency of health behavior, but not the frequency of health behavior for emotion regulation purposes (Buman et al., 2007; O'Connor et al., 2008; Riley et al., 2019). Large surveys provide statistics about health behavior for emotion regulation, but these typically address prevalence, not frequency (e.g., American Psychological Association, 2014; Cairney et al., 2014). To fill this gap, in this study I measure the frequency of eating and exercise for coping purposes. Frequency

is important to assess because, while some people may change their typical eating or exercise only moderately when using it for emotion regulation, if they do so frequently, effects on their health could accumulate over time.

Many people experience negative emotions frequently throughout the day. For instance, Trampe et al. (2015) examined emotions using ecological momentary assessments. During 49% of the 11,000 participants' assessments, participants reported feeling negative emotions or negative and positive emotions simultaneously (Trampe et al., 2015). Those with lower balanced emotion regulation may experience negative emotions more often because the strategies they use tend to prolong negative emotions and may even intensify them over time (Brans et al., 2013; Résibois et al., 2018). Consequently, people who have lower balanced emotion regulation may need to use health behavior for emotion regulation more frequently than higher balanced people.

H4A: Individuals with lower balanced emotion regulation will use eating as emotion regulation more frequently than those with higher balanced emotion regulation.

H4B: Individuals with lower balanced emotion regulation will use exercise as emotion regulation more frequently than those with higher balanced emotion regulation.

More or less eating/exercise for emotion regulation could also mean directional change (more or less food consumed or time spent on exercise than usual). As described earlier, many studies link ineffective emotion regulation strategies to eating more (Cardi et al., 2015; Torres & Nowson, 2007). Thus, when people with lower balanced emotion regulation eat to manage their feelings, they are likely to eat more as well.

H5: Controlling for their typical junk food consumption, when individuals who have lower balanced regulation, as compared to higher, use eating for emotion regulation, they will eat at least as much as they usually do.

While eating more, especially of sweet or fatty foods, is generally considered an unhealthy behavior, exercising more is generally considered a healthy behavior. Thus far, I have assumed that lower balanced emotion regulation should lead to greater use of both healthy and unhealthy behaviors for coping. However, people may engage with eating and exercise differently based on their emotion regulation patterns.

Few studies have examined the effect of emotion regulation on exercise. As with eating, it is possible that people who are lower in balanced emotion regulation will increase their exercise more than those higher in balanced emotion regulation due to the need to manage more intense or prolonged negative emotions. However, there is also reason to believe that individuals higher in balanced emotion regulation may be more likely to increase their exercise than those lower in balanced emotion regulation. Though individuals with higher balanced regulation may need to use health behavior for emotion regulation purposes less frequently in general, when they do so, they may choose strategies that more effectively down-regulate their negative emotions, such as engaging in exercise. Furthermore, they may be more likely to have the self-regulatory resources needed to enact them (John & Gross, 2004; Butler, 2011). Thus, I predict that such individuals will increase or maintain their usual amount of exercise when engaging in it for coping purposes.

Exploratory H6: Controlling for their typical exercise behavior, when individuals who have higher balanced regulation, as compared to lower, use exercise for emotion regulation, they will exercise at least as much as they usually do.

Typical Health Behavior

Another reason it is important to distinguish between health behavior and health behavior for emotion regulation is that typical health behavior may influence how someone uses health behavior for emotion regulation. For example, though on average, people exercise less when stressed, people who are physically active regularly may exercise more (Lutz et al., 2010; Schultchen et al., 2019). For example, Seigel et al. (2002) asked about 700 young Swedish women, ‘‘Usually, does your drive or need to be physically active change during periods when you are significantly worried about something?’’. Participants could answer that their drive increased, decreased, or stayed the same. The researchers grouped them based on their responses and examined their usual exercise habits. The results revealed that women in the group that felt the need to be more physically active when worried were also more physically active in their daily lives, as compared to women in the other groups. Thus, people who are already familiar and comfortable with exercise may be more likely to turn to exercise when stressed, contradicting the general pattern. As the literature does not clarify whether typical exercise should predict greater frequency of or amount of exercise for emotion regulation, I will examine both outcomes.

H7: Controlling for their balanced emotion regulation, individuals who typically exercise more, as compared to less, will use exercise for emotion regulation more frequently.

H8: Controlling for their balanced emotion regulation, when individuals who typically exercise more, as compared to less, use exercise for emotion regulation, they will exercise at least as much as they usually do.

While evidence shows that individuals who cope with exercise are more likely to exercise in their daily lives, the literature is mixed as to whether individuals that cope with eating are likely to eat more in their daily lives. For example, in his synthesis of the literature, Macht (2008) found that 43% of studies examining normal eaters experiencing negative emotion showed an increase in consumption, while 39% showed a decrease, and 26% showed no change. In the absence of evidence that eating habits in daily life lead to overeating to cope with negative emotion, I do not have a prediction about the association of typical junk food consumption and eating for emotion regulation.

Typical Health Behavior x Emotion Regulation

Health behavior could meaningfully interact with balanced emotion regulation to affect how individuals use health behavior to cope. For example, research suggests that some people may be more susceptible to eating for emotion regulation. In a meta-analysis, Cardi et al. (2015) found that both restrained eaters (who restrict their intake) and binge eaters (who consume large amounts in bouts) were more prone to overeat in response to feeling negative emotions. Restrained eaters may even report overeating more than unrestrained eaters do (Van Strien et al., 2009). Restraining and binging are not just indicative of typical eating habits, though. They are also characterized by their association with self-regulation and emotion regulation. For instance, restraining and binging are associated with disordered eating, mental illness, experiencing more negative affect, and poor emotion regulation (Dingemans et al., 2017; Polivy et al., 2020).

Restraining, like dieting, requires constant self-control. When experiencing negative emotions that also require self-regulation to manage, restrained eaters may be vulnerable to self-regulatory failure (Tice et al., 2001). Consequently, they overeat (e.g., Vohs & Heatherton, 2000).

Restrained eaters and binge eaters may be more prone to overeat to cope, but it is less clear whether their eating habits, emotion regulation, or the interaction of the two is the "active ingredient" in this process. For example, does consuming more junk food, as binge eaters may do, lead to overeating to manage negative feelings in individuals with higher balanced emotion regulation, or does higher balanced emotion regulation prevent them from doing so? To answer these questions, I will test the following hypotheses.

Exploratory H9: Individuals that typically eat more junk food but have higher balanced emotion regulation will use eating for emotion regulation less frequently than those who have lower balanced emotion regulation.

Exploratory H10: Individuals that typically eat more junk food but have higher balanced emotion regulation will increase their eating for emotion regulation less than those who have lower balanced emotion regulation.

Additionally, as exercise effectively down-regulates negative emotion, those lower in balanced regulation (as opposed to higher) should be more motivated and have more opportunity to use it. In other words, exercise could compensate for their struggle to manage their emotions internally. In such cases, more regular physical activity may encourage people with lower balanced regulation to engage in the health-promoting, stress-reducing behavior of exercise.

Exploratory H11: Individuals who are lower in balanced emotion regulation but typically exercise more will use exercise for emotion regulation more frequently compared to those who typically exercise less.

Exploratory H12: When individuals who are lower in balanced emotion regulation but typically exercise more use exercise for emotion regulation, they will exercise more than they usually do, compared to individuals that typically exercise less.

So far, I have articulated how individuals' emotion regulation and usual health behavior may affect their own eating and exercising for emotion regulation, but people do not live in a vacuum. They are constantly influenced by their environment and the people around them. Therefore, other people's emotion regulation and health behavior tendencies may impact how individuals cope via eating and exercise.

Influence of Partner's Emotion Regulation

People are likely to influence and be influenced by those close to them (e.g., Kimura et al., 2008). Romantic partners may be poised to exert a particularly large influence on each other, as these are the adult relationships in which people spend the most time. As partners grow closer and their lives intertwine, they may share resources, goals, environments, and outcomes (Sels et al., 2020). Thus, what one partner does inherently affects the other (Kelley & Thibaut, 1978). Consequently, an individual's eating and exercising for emotion regulation may be influenced not only by their own emotion regulation and health behavior, but also by their partner's.

Romantic relationships are a fruitful setting in which to study emotion regulation. Most emotion regulation occurs in social contexts and individuals may use emotion

regulation especially frequently around their romantic partners (Gross et al., 2006). Although there is ample opportunity to use emotion regulation given the time partners spent together, emotions may also be particularly salient in romantic relationships. For example, partners may be more comfortable showing their feelings to each other than to others (Lewis, 1978). Furthermore, their interactions may generate strong positive emotions (e.g., love, joy) and strong negative emotions (e.g., contempt, rejection) that require managing (English et al., 2013).

While emotion regulation takes place intrapersonally, within an individual, internal regulation can be motivated, facilitated, or hindered by others, including others' emotions and emotion regulation. For example, when one partner feels more stressed than usual, they may think more negatively about their relationship and behave more negatively towards their partner, acting impatient and critical (Buck & Neff, 2012). Additionally, they may overlook their partner's needs, not noticing when their partner wants support, or not providing support even when they notice their partner's desire for it (Neff et al., 2021). Outside stressors may thus spill over into the relationship, leading to negative relational behaviors (Randall & Bodenmann, 2009). The stressed partner's negative relational behaviors may then create negative affect in the non-stressed partner, who may feel uncared for or offended.

Another way one partner's negative emotion can lead to the other partner feeling negative emotion is through a process called emotional contagion, in which partners spread their emotions to each other (Hatfield et al., 1994). Though measuring the exact instance of emotional contagion has proven challenging, some research has shown that, over multiple days, partners' negative affect and cortisol levels were in synchrony and

changed similarly over time (Butner et al., 2007; Saxbe & Repetti, 2010). That is, when one partner felt more sad, angry, or stressed, the other partner likely did, too, suggesting some contagion or at least concordance of emotion.

Emotional contagion can benefit relationships because it helps people communicate with, coordinate with, and understand one another. For example, Mazzuca et al. (2019) found that those more susceptible to emotion contagion were more likely to have higher marital satisfaction. Attuning to another's negative emotions communicates responsiveness to them, making them feel understood and cared for, and can lead to giving and receiving support (Maisel & Gable, 2009).

Emotional contagion is not always beneficial, however. For example, a student may be anxious about an upcoming exam in one of their classes. After spending time with their best friend, the friend may feel anxious as well because of emotional contagion, even though they are not taking the same class. In fact, the best friend may feel anxious even if they do not know about the student's exam because, whether consciously or not, they can detect the student's nonverbal indicators of anxiety. Thus, the stress of a close other can make an individual feel stressed even if the stressor is not relevant to them (see Bodenmann, 2005; Reiner et al., 2015).

Individuals who are less able to manage stress effectively may be more likely to pass on negative affect to their partners. For example, Cooper et al. (2020) found that on days when individuals' partners experienced more stress external to the relationship, individuals felt more stressed if their partners had more difficulty regulating their emotions, compared to less. Ben-Naim et al. (2013) also conducted an experiment that supported this idea. Before romantic partners entered a conflict discussion, one partner

was given instructions to suppress their emotions during the upcoming interaction, think about the positive aspects of their relationship (similar to reappraisal), or nothing. Their partners were unaware that they had received these instructions. Partners of those who suppressed showed increased cardiovascular responses and negative affect, and decreased positive affect compared to their baselines. Partners of those who adopted a positive mindset experienced the opposite; they showed decreased cardiovascular responses and negative affect, and increased positive affect.

Partners may thus be able to recognize each other's emotion regulation cues even if they are unaware of them, and partners using lower balanced emotion regulation strategies may cause stress and negative affect in each other. The partners receiving negative affect must then regulate it, possibly using eating or exercise to do so. Thus, those with partners lower in balanced emotion regulation may need to use health behavior for emotion regulation more frequently.

H13A: Controlling for their own balanced regulation, individuals with partners with lower balanced regulation, as compared to higher, will use eating as emotion regulation more frequently.

H13B: Controlling for their own balanced regulation, individuals with partners with lower balanced regulation, as compared to higher, will use exercise as emotion regulation more frequently.

Of course, everyone may not be equally affected by having a dysregulated partner. Better emotion regulation has been shown to be protective against the negative impact of stress, including stress from relationships (Cooper et al., 2020; English et al., 2013). Individuals with higher balanced emotion regulation may be more able to manage

the negative emotion from their partners. They also may not be reliant on their partners to regulate *them*. That is, those lower in balanced emotion regulation may depend on their partner to be well-regulated in order to soothe them when they experience negative emotion. However, if the partner is the source of the negative emotion, this dependence does not work. The mood of individuals with lower balanced emotion regulation may thus be more sensitive to the mood of their partners.

H14A: The frequency of using eating for emotion regulation for individuals who have higher balanced regulation, as compared to lower, will be less affected by their partner's balanced emotion regulation.

H14B: The frequency of using exercise for emotion regulation for individuals who have higher balanced regulation, as compared to lower, will be less affected by their partner's balanced emotion regulation.

Influence of Partner's Typical Health Behavior

Partners' mutual influence also applies to health behavior (Huelsnitz et al., 2022). Accordingly, an individual's partner's health habits could also affect how the individual uses health behavior for emotion regulation. For example, if an individual's partner usually eats or exercises more, the individual has greater access to the resources needed for that health behavior, and thus may be more likely to adapt the same behavior for emotion regulation purposes. Furthermore, partners may serve as models for each other (e.g., Selzler et al., 2019). One partner may notice that the other feels more relaxed after going for a run, for instance, so they may decide to run the next time they are stressed, hoping it will down-regulate their negative emotions.

In the realm of eating, partners often share activities around food, such as dining, buying groceries, and cooking together. What one eats, the other will eat (e.g., Meyler et al., 2007). Sometimes partners' goals around eating conflict, however. Say one partner wants to stop eating junk food, as they are prone to do when they have a bad day, so they do not buy it. However, if they cohabit with their romantic partner who brings home chips and ice cream, they now have access to junk food. Research shows that one person making food available in the home leads to others in the home consuming more of it (e.g., Campbell et al., 2007). Furthermore, the partner avoiding junk food must then use self-control to avoid the temptation of eating it, which may be especially difficult when they are stressed (Vohs & Heatherton, 2002). Thus, the next time they have a stressful day, they may be more likely to turn to the chips and ice cream to feel better. Their partner's eating habits therefore affect how they use eating for emotion regulation by making unhealthy but enticing foods easily available.

Exploratory H15A: Controlling for their own junk food consumption and balanced regulation, individuals with partners who typically eat more junk food, as compared to less, will use eating for emotion regulation more frequently.

Exploratory H15B: Controlling for their own typical exercise and balanced regulation, individuals with partners who typically exercise more, as compared to less, will use exercise for emotion regulation more frequently.

Finally, having a partner with lower balanced emotion regulation, and thus exposed to greater negative emotion, individuals may turn to a familiar health behavior to down-regulate.

H16: Controlling for their own balanced regulation, individuals who typically exercise more will exercise more frequently for emotion regulation if their partners have less, as compared to more, balanced emotion regulation.

The Current Study

To examine how individuals used eating and exercise to regulate their emotions, I used survey and behavioral data from a study about romantic relationships and emotion regulation. In the study, 292 participants (146 couples) reported their use of eating and exercise to manage their negative emotions, including how often they used these health behaviors for emotion regulation (frequency). Those that acknowledged engaging in eating and/or exercise for emotion regulation then reported how they changed their everyday use of eating and exercise for non-emotion regulation purposes (amount of change) when doing so.

Participants also answered questions about several factors that should be related to these outcomes, such as their typical junk food eating and exercise habits, and emotion regulation strategies and competencies. From these established self-report measures of emotion regulation strategies and competencies, I created a composite measuring the extent to which participants were able to regulate their emotions constructively (balanced emotion regulation).

I also captured participants' emotion regulation from their behavior. During a lab session, romantic partners discussed a serious, unresolved conflict in their relationship while being videorecorded. This interaction was used to evoke emotion in participants that they would need to regulate. Trained coders later watched these videos and rated the extent to which participants displayed balanced emotion regulation.

Using these data, I examined how individuals' balanced emotion regulation, typical eating (of junk food) and exercise, and interaction of the two predicted how often they used eating/exercise to downregulate negative emotion and how they deviated from their usual health behavior when doing so. Finally, because much emotion regulation occurs in social contexts, and individuals are likely to be influenced by those close to them, I investigated how individuals' eating and exercise for emotion regulation was predicted by their romantic partners' balanced emotion regulation and typical health behavior.

Method

Participants

From May 2017 to December 2018, romantic couples that had been together for at least six months, but no longer than 15 years, were recruited from the Twin Cities area. Recruitment efforts included flyers, online postings and advertisements, and the Department of Psychology's participant pool. Those from the participant pool were compensated with Research Experience Points, and the others received a $45 Amazon gift card ($90/couple). The University of Minnesota Institutional Review Board approved this study (1607P90901).

Couples of all gender compositions were welcome to participate. However, because the literature suggests that important gender differences may exist for eating and exercise, I used distinguishable dyad analyses based on gender (Kenny et al., 2006). There were only 13 couples not composed of one cisgender woman and one cisgender man, which was not enough to analyze separately. Hence, I used the data from all couples consisting of one cisgender woman and one cisgender man, leaving 146 couples.

These 292 participants had been in their relationships for about 2.47 years on average (*SD* = 2.27). Most couples were dating exclusively but not cohabitating (60%), followed by cohabitating (24%), married (10%), engaged (4%), and other (2%). The mean age was 22.3 years (*SD* = 4.38), and the vast majority of participants (97%) did not have children. Most participants were working, and most participants were in school (72% each). Seventy-five percent of the sample reported being somewhat or fully white, 20% somewhat or fully Asian, 4% somewhat or fully Hispanic/Latinx, 3% somewhat or fully black, 1% somewhat or fully American Indian/Alaskan Native, and 1% somewhat or fully another race/ethnicity.

Procedure

Once participants had consented to participate, they were sent an initial online survey through Qualtrics, which included questions about their demographics, relationship, emotion regulation tendencies, typical health behavior, health behavior for emotion regulation purposes, and more. Couples' lab sessions at the University of Minnesota were scheduled about one week later.

During their lab sessions, couples completed several surveys, tasks, and interactions; only those utilized in this study are described in greater detail. One of these interactions was a conflict resolution discussion. Participants chose the most important issue in their relationship to discuss. They could choose a topic from a Markman-Cox inventory of common relationship problems (Cox, 1991), or they were free to pick another issue. Experimenters probed participants to make sure that the issue was consequential to both partners. Partners were instructed to tell each other what they thought and felt about the issue and to do their best to reach a resolution for it. The

conflict discussions lasted five minutes, and participants were left alone to discuss with the knowledge that their conversation was being videorecorded.

Later, five trained behavioral coders watched the videos. Focusing on one partner at a time, they independently rated participants on their balanced emotion regulation behavior, according to the coding scheme described next. Coders regularly met with me to resolve large discrepancies in scores and prevent drift.

Materials

Balanced Emotion Regulation

Behavioral. The behavioral coding scheme was originally developed by Overall and Girme (2014) based on attachment-relevant emotion regulation strategies. The coding scheme consisted of three subscales for balanced regulation, one of which measured balanced emotion (see Appendix A). Participants higher in balanced emotion were comfortable with their emotions and their partner's emotions, expressing and acknowledging emotions without becoming overwhelmed by them. Participants lower in balanced emotion appeared uncomfortable with or threatened by their own and/or their partner's negative feelings. These feelings may "overwhelm or disable" them, so that instead of focusing on resolving the issue at hand, they were dwelling on their emotions, unable to recognize their emotions, or attempting to avoid conflict by withholding their emotions.

Five behavioral coders rated participants on scales from 1 (*low*) to 7 (*high*), watching one partner at a time. They were instructed to begin coding each participant assuming their balanced emotion was at the midpoint of the scale (4), and then to raise or lower the participant's score based on their behavior. After establishing decent interrater

reliability (α = .77), I calculated the mean of all raters' balanced emotion codes. This score represented their behavioral balanced emotion regulation.

Self-Reported. There is not one standard measure of individuals' self-reported balanced emotion regulation in the emotion regulation literature, so participants completed four well-established surveys. These surveys were chosen to capture both emotion regulation strategies and competencies, and to represent both higher and lower balanced emotion regulation. For instance, reappraisal is a high balanced emotion regulation strategy, whereas suppression and rumination are low balanced emotion regulation strategies. Mindfulness consists of higher balanced emotion regulation competencies such as being able to articulate emotions and not judging oneself for having negative emotions. The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) measures abilities (or the lack thereof) that comprise lower balanced emotion regulation.

Reappraisal. Participants' tendencies to reappraise were assessed with Gross and John's (2003) Emotion Regulation Questionnaire (ERQ; Appendix B). Participants rated how strongly they agreed with six items such as, "When I want to feel less *negative* emotion, I *change the way I'm thinking* about the situation" on a scale of 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). The scale showed good reliability (α = .87), so responses were then averaged to create a mean reappraisal score for each participant. Scores more than three standard deviations from the mean were considered outliers (n = 3) and replaced with the value of three standard deviations from the mean. No other variables included outliers more than three standard deviations above or below the mean.

Suppression. Gross and John's (2003) Emotion Regulation Questionnaire contains an expressive suppression scale in addition to a cognitive reappraisal scale (ERQ; Appendix B). To measure suppression, participants responded to four items such as, "I keep my emotions to myself," rating how strongly they agreed with each statement on a scale of 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). All items were then reverse coded so that *higher* suppression indicated *lower* balanced emotion regulation. The suppression scale showed good reliability ($\alpha = .81$) so each participant's responses were averaged to create a mean suppression score.

Rumination. Individuals' tendencies to ruminate were captured by the rumination subscale of Trapnell's (1997) Rumination and Reflection Questionnaire – Short Form (Appendix C). Participants rated how much they agreed with six items on a scale from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). Example items include, "It is easy for me to put unwanted thoughts out of my mind" (reverse coded) and "I tend to ruminate or dwell over things that happen to me for a really long time afterward." All items were then reverse scored, so that *higher* rumination scores reflected *lower* balanced emotion regulation. The scale showed good reliability ($\alpha = .86$) so each participant's responses were averaged to create a mean rumination score.

Mindfulness. Mindfulness was measured with the Five Facet Mindfulness Questionnaire - Short Form by Bohlmeijer et al. (2011; Appendix D). This questionnaire measured participants' tendencies to be aware of their sensations, behaviors, and emotions (the "Observe" and "Act with awareness" facets), to be able to articulate what they feel (the "Describe" facet), and to accept their feelings and let them pass, rather than judge them or react impulsively to them (the "Nonreact" and "Nonjudge" facets).

Participants rated how often statements were true of them, from 1 (*Never or Very Rarely True*) to 5 (*Very Often or Always True*). Example items include, "I'm good at finding the words to describe my feelings," "When I have distressing thoughts or images, I don't let myself be carried away by them," and "I think some of my emotions are bad or inappropriate and I shouldn't feel them" (reverse coded).

Upon examining the reliability of participants' responses to all the mindfulness items, scores from one of the five facets, "Observe," correlated negatively with the rest of the items. In addition to this negative association, the "Observe" statements referred to noticing sensations, such as sounds, smells, and colors, rather than emotions (see Appendix D). These items were thus removed. The reliability of all the mindfulness items improved slightly ($\alpha = .78$ to $\alpha = .82$). I then averaged the remaining 20 items to create a mean mindfulness score for each participant.

Difficulties in Emotion Regulation Scale. The Difficulties in Emotion Regulation Scale (DERS, Gratz & Roemer, 2004; Appendix E) consists of 36 items describing six areas in which people may struggle with emotion regulation. These six areas are: nonacceptance of emotional responses (e.g., "When I'm upset, I become embarrassed for feeling that way"), difficulties engaging in goal-directed behavior (e.g., "When I'm upset, I have difficulty focusing on other things"), impulse control difficulties (e.g., "When I'm upset, I lose control over my behaviors"), lack of emotional awareness (e.g., "I pay attention to how I feel" (reverse coded)), limited access to emotion regulation strategies (e.g., "When I'm upset, I believe that there is nothing I can do to make myself feel better") and lack of emotional clarity (e.g., "I have difficulty making sense out of my feelings").

Participants rated how often each statement applied to them from 1 (*Almost Never, 0-10% of the time*) to 5 (*Almost Always, 91-100% of the time)*. To ensure that the DERS was coded in the same direction as other emotion regulation measures, all items were reverse scored. Thus, higher scores represented higher balanced emotion regulation. When the DERS has been used in past research as a total measure of emotion regulation, the items are usually summed. However, because there were missing responses for a few items, I calculated each participant's mean instead of their sum. The DERS was very reliable ($\alpha = .92$).

Balanced Emotion Regulation Composite. The emotion regulation constructs were fairly normally distributed but were measured on different scales. Suppression was not significantly correlated with reappraisal or rumination, but all other measures were positively and significantly correlated (see Table 1). To compare the measures, I standardized participants' scores on each variable (reappraisal, suppression, rumination, mindfulness, and the DERS) by subtracting the grand mean from each participant's score and dividing the result by the standard deviation. Together, these standardized scores showed decent reliability ($\alpha = .68$). To create a composite self-reported emotion regulation score, I found the mean of each participant's standardized scores on the five emotion regulation variables.

Typical Health Behavior

Eating Junk Food. Participants reported how many servings they ate on a typical day from 0 (*0 Servings*) to 5 (*5+ Servings*) of each of sweet food, fatty food, and salty food. Some categories were defined for participants to dispel common nutritional misconceptions (e.g., that energy and sports drinks, fruit juices, and fruit snacks were

considered sweets; see Appendix F). These items were modeled on items from the Adult Health Survey in the Minnesota Longitudinal Study of Risk and Adaptation, which were based on items in the Dietary Screener Questionnaire used in the National Health and Nutrition Examination Survey (NHANES) (National Cancer Institute, 2015). Participants' responses for the three categories were averaged to create a mean score of their typical junk food consumption.

Exercise. Participants were asked, "In a typical week, how many hours *per day* do you engage in physical activity?". They answered on a scale with the options of 0 (*None*), 1 (*Less than 1 hour*), 2 (*1 hour*), 3 (*2 hours*), 4 (*3 hours*), 5 (*4 hours*), and 6 (*5+ hours*). This item was also modeled on an item in the Adult Health Survey in the Minnesota Longitudinal Study of Risk and Adaptation.

Health Behavior for Emotion Regulation

These items were designed for this study based on gaps in the literature about using health behavior to down-regulate stress and negative emotions. In addition to reporting about eating and exercise, participants also answered questions about their alcohol use, smoking, and sleeping to regulate emotion regulation, but the responses to these items were not analyzed as part of this project. Eating and exercise were the most highly endorsed health behaviors for emotion regulation among participants.

Frequency. Participants first indicated whether they ever used eating to deal with or feel less stress or negative emotion (see Appendix G). If they answered yes, they were asked, "When you feel stress or negative emotion, *how often* do you use eating to feel less/deal with it (whether on purpose or not)?" or "When you feel stress or negative emotion, *how often* do you use exercise to feel less/deal with it (whether on purpose or

not)?". They answered on a scale of 1 (*Rarely*) to 4 (*Very Often*). Participants who indicated that they never used eating or exercise for emotion regulation were given a score of 0. Thus, the scale ranged from 0 (*Never*) to 4 (*Very Often*).

Amount of Change. If participants indicated that they ever used eating or exercise for emotion regulation, they were then asked, "To deal with/feel less stress or negative emotion, do you eat less or more than you usually do (whether on purpose or not)?" or "To deal with/feel less stress or negative emotion, do you exercise less or more than you usually do (whether on purpose or not)?" (see Appendix G). They answered on a scale from 1 (*Much Less*) to 5 (*Much More*). These data were transformed to represent how participants' eating or exercise for emotion regulation differed from their typical behavior (-2 = *Much Less*, 0 = *About the Same*, and 2 = *Much More*). When examining the deviation from participants' typical health behavior and agnostic to the direction of the change, I will use the absolute value of participants' responses (0 to 2). When interested in the direction of change, I will use participants' responses of -2 to 2.

Effectiveness. If participants indicated that they ever used eating or exercise for emotion regulation, they reported the extent to which doing so actually helped them successfully manage/feel less stress or negative emotion on a scale of 1 (*It Doesn't Help at All)* to 6 (*It Helps a Great Deal*). This measure was used in follow-up analyses described later.

Analysis Plan

I conducted analyses in the statistical software R. I used one sample T-tests to test H1 and H2, and correlations to test H3 and H4. I tested the rest of the hypotheses with regressions, using an Actor Partner Interdependence Model framework (APIM; Kenny et

al., 2006). The APIM calculates the effects for each partner, while accounting for the nonindependence between partners' scores. Specifically, one can separate the effects of individuals' own predictor variable scores on their own dependent variable scores (actor effects), individuals' partners' predictor variable scores on individuals' own dependent variable scores (partner effects), and how individuals' predictor variable scores and individuals' partners' predictor variable scores interact to affect individuals' own dependent variable scores (actor x partner effects). To use the APIM, I employed the gls function in the nlme package in R 3.5.2. All continuous predictor variables were grand-mean centered in the regression models.

Full Sample and Limited Sample Analyses

All participants answered questions about how often they ate or exercised to manage their stress and negative feelings, even if their answers were "never." Participants who reported never using these health behaviors for emotion regulation, however, were not asked subsequent questions about these practices. Therefore, these participants did not have data to include in analyses examining how individuals *changed* their eating and exercise when engaging in them for coping purposes. The samples without these participants are heretofore referred to as "limited samples." Of note, the limited sample for eating for emotion regulation is not necessarily the same as the limited sample for exercise for emotion regulation, as participants may have engaged in one health behavior but not the other (see Tables 3 and 4).

To account for this missing data, I tested hypotheses featuring frequency as the dependent variable in two samples: the full sample, including those who reported never using eating/exercise for emotion regulation, and the limited sample, including only those

who *did* report using eating/exercise for emotion regulation. In frequency analyses, the full sample allowed me to make use of all the data, while the limited sample facilitated comparison with analyses examining change in typical health behavior when using it for emotion regulation.

Effects of Gender

In the first stage of the regression models, I included gender and its interactions with all other predictors for several reasons. First, some variables (both predictor and dependent variables) significantly differed between women and men, such as their junk food consumption, typical exercise, and frequency of eating for emotion regulation (see Table 5). In other cases, the literature suggests that women and men may be affected differently by their partner's behavior or characteristics. For example, some research suggests that women have more influence on men's health behaviors than vice versa (Norcross et al., 1996; Rendall et al., 2011; Umberson et al., 2018). Thus, for consistency across analyses, I examined gender moderation for all effects.

If gender and/or its interactions with other variables were not significant, I removed them from the model. If interactions were significant or marginally significant, I retained them when testing the simplified model. Then, for any gender interactions that remained significant or marginally significant in the simplified model, I report them if they moderated the predictor(s) of interest in the hypothesis, if women and men had notably different patterns, or if the simple slopes of women or men significantly differed from zero. I report the results of these simplified models below.

Results

Organization of Results

First, I report the descriptive statistics of the full sample (Table 2), followed by the limited sample of only those who reported eating for emotion regulation (Table 3) and the limited sample of only those who reported exercising for emotion regulation (Table 4). Here, I do not yet discuss results of hypotheses H3A, H3B, H4A, and H4B, which were tested with correlations. I then compare the descriptive statistics by gender (Table 5) and examine partners' correlations (Table 6).

For clarity, I describe the findings of one health domain at a time, reporting the results from several analyses on eating for emotion regulation, and then the results from several analyses on exercise for emotion regulation. For example, I report how participants' balanced emotion regulation predicts eating for coping (H3A, H4A, H5) and then exercise for coping (H3B, H4B, H6). See Table 9 for a summary of the results of hypotheses 3-12.

Descriptive Statistics

Participants' self-reported and behavioral emotion regulation were not related to their typical junk food eating (see Table 2). Participants' typical junk food intake also did not significantly correlate with how they used eating for emotion regulation, when considering all participants (see Table 2) or only those who reported that they ate for emotion regulation (see Table 3). However, when examining participants by gender, women's typical junk food consumption was significantly positively correlated with how often they used eating for emotion regulation ($r(144) = .19$, $p = .022$) and negatively significantly correlated with how often they used exercise for emotion regulation ($r(143) = -.24$, $p = .004$; see Table 6). These relationships did not exist for men.

Frequency, change in eating, and deviation from typical eating were positively related to one another in all samples, indicating that those who ate for emotion regulation more often also made larger changes to their eating when doing so.

Neither participants' self-reported or their behavioral emotion regulation was significantly associated with their typical exercise. Participants' typical exercise was significantly associated with how frequently they used exercise for emotion regulation in the full sample ($r(289) = .25$, $p < .001$; see Table 2) and when considering only those who reported exercising for emotion regulation ($r(175) = .22$, $p = .003$; see Table 4). For men, but not women, typical exercise was also positively related to the extent to which they increased their exercise when using it for emotion regulation ($r(89) = .26$, $p = .014$).

Participants' emotion regulation was not related to their use of exercise for emotion regulation in any sample. However, frequency, change in exercise, and deviation from typical exercise were all positively related in all samples, indicating that those who exercised for emotion regulation more often also made larger changes to their exercise when doing so.

Participants' typical exercise did not significantly correlate with their typical junk food intake in any sample, but those that ate for emotion regulation more often tended to exercise for emotion regulation less often.

Women and men did not significantly differ on their self-reported or behaviorally coded balanced emotion regulation in any sample (see Table 5). Self-reported and behavioral balanced emotion regulation were weakly positively correlated ($r(286) = .15$, $p = .009$; see Table 2), indicating that those who reported that they managed their emotions effectively may not have necessarily done so when in conflict with their

partners. Women's self-reported and behavioral emotion regulation were more highly correlated than men's were, though (see Table 6). Partners' self-reported emotion regulation scores were uncorrelated with each other, but their behavioral ratings were positively correlated ($r(142) = .46$, $p < .001$). Therefore, when one partner constructively managed their emotions when discussing a relationship problem, the other partner likely did so as well.

Men reported typically eating more junk food and exercising more than women did (see Table 5), whereas women were significantly more likely than men to report using eating for emotion regulation. When they ate for emotion regulation, however, women and men did not differ in how much they increased their consumption. Women and men exercised for emotion regulation about equally frequently, and when they did so, similarly increased their typical exercise rates (see Table 5).

There were few differences in the descriptive statistics of the full sample and limited samples. Most notably, in the limited samples, the mean frequencies of engaging in eating/exercise for emotion regulation increased. Meanwhile, because of the more restricted range in frequencies, the standard deviations decreased. One hundred ten participants reported never eating for emotion regulation (i.e., their frequency score was zero). When they were excluded from analysis, the mean frequency of eating for emotion regulation rose from 1.90 ($SD = 1.65$) to 3.05 ($SD = 0.91$) indicating that participants who ate for emotion regulation did so "sometimes," on average (see Tables 2 and 3). When the 114 participants who said they never exercised for emotion regulation were dropped from analysis, the mean frequency of exercising for emotion regulation rose from 1.99

(*SD* = 1.77) to 3.27 (*SD* = 0.97) (See Tables 2 and 4). As with eating, participants who reported exercising for emotion regulation did so "sometimes," on average.

Acknowledgement of Use of Health Behavior for Emotion Regulation and Deviation from Typical Health Behavior (H1A, 1B, 2A, 2B)

Participants' frequency of using eating for emotion regulation (*M* = 1.90, *SD* = 1.65) was significantly different than zero ($t(291) = 19.74$, $p < .001$). Thus, participants acknowledged that they used eating for coping purposes, consistent with Hypothesis 1A. As predicted in Hypothesis 2A, individuals who reported using eating for emotion regulation significantly changed how much they typically ate when they did so (*M* = 1.12, *SD* = 0.55, $t(181) = 27.40$, $p < .001$)

Participants also acknowledged exercising for emotion regulation (*M* = 1.99*, SD* = 1.77, $t(290) = 19.17$, $p < .001$), consistent with Hypothesis 1B. Those who exercised for emotion regulation also significantly altered the amount of their usual exercise when they did so, supporting Hypothesis 2B (*M* = 1.06, *SD* = 0.62, $t(177) = 22.83$, $p < .001$). In sum, participants reported engaging in eating and exercising for emotion regulation, and when they did so, they ate and exercised differently than they typically did.

The Effects of Balanced Emotion Regulation on Eating for Emotion Regulation

Balanced Emotion Regulation → Deviation from Typical Eating when Eating for Emotion Regulation (H3A)

Of participants who reported eating for emotion regulation, the extent to which they changed their typical eating behavior when they ate to cope was significantly negatively correlated with self-reported balanced emotion regulation ($r(180) = -.17$, $p =$

.020), consistent with Hypothesis 3A. However, it was not significantly correlated with their behavioral balanced emotion regulation, inconsistent with Hypothesis 3A.

Balanced Emotion Regulation → Frequency of Eating for Emotion Regulation (H4A)

Consistent with Hypothesis 4A, participants' self-reported balanced emotion regulation was significantly negatively correlated with how often they engaged in eating for emotion regulation in the full sample ($r(290) = -.19$, $p = .001$). The same association was observed when the sample was limited to only those who reported eating for emotion regulation ($r(180) = -.19$, $p = .012$). As individuals scored lower in self-reported balanced emotion regulation, they used eating for emotion regulation more frequently.

However, how often participants engaged in eating for emotion regulation was not significantly correlated with their behavioral balanced emotion regulation in either sample, inconsistent with Hypothesis 4A.

Balanced Emotion Regulation → Change in Eating for Emotion Regulation (H5)

Controlling for their typical junk food consumption, participants with lower balanced emotion regulation ate at least as much as they usually did when they used eating for emotion regulation whether emotion regulation was measured by self-report (Intercept: $b = 0.64$, $t(179) = 7.88$, $p < .001$) or behavior (Intercept: $b = 0.63$, $t(175) = 7.67$, $p < .001$). However, they were no more likely than those with higher self-reported balanced emotion regulation to increase their eating when doing so for emotion regulation. That is, the main effect of emotion regulation was not significant in either analysis. In general, individuals ate more than they usually did when they ate to feel better, regardless of their emotion regulation. Thus, Hypothesis 5 was partially supported.

The Effects of Balanced Emotion Regulation on Exercise for Emotion Regulation

Balanced Emotion Regulation → Deviation from Typical Exercise when Exercising for Emotion Regulation (H3B)

Hypothesis 3B was not supported. The extent to which participants changed their typical exercise when they exercised for emotion regulation was not significantly correlated with their self-reported or behavioral balanced emotion regulation.

Balanced Emotion Regulation → Frequency of Exercise for Emotion Regulation (H4B)

Hypothesis 4B was not supported. Participants' self-reported and behavioral balanced emotion regulation were not significantly correlated with how often they engaged in exercise for emotion regulation when examining the full sample or when examining only those who reported exercise for emotion regulation.

Balanced Emotion Regulation → Change in Exercise for Emotion Regulation (H6)

When examining only those who reported exercising for emotion regulation and controlling for their typical exercise, participants with higher balanced emotion regulation exercised at least as much as they usually did when they used exercise for emotion regulation, regardless of whether emotion regulation was measured by self-report (Intercept: $b = 0.85$, $t(173) = 13.23$, $p < .001$) or behavior (Intercept: $b = 0.85$, $t(169) = 12.91$, $p < .001$). These results are consistent with Exploratory Hypothesis 6. However, individuals with higher balanced emotion regulation were no more likely than those with lower balanced emotion regulation to increase their exercise when doing so for emotion regulation, no matter how emotion regulation was measured. That is, the main effect of emotion regulation was not significant. In general, individuals exercised more

than they usually did when they exercised to feel better, regardless of their balanced emotion regulation.

The Effects of Typical Exercise on Exercise for Emotion Regulation

Typical Exercise → Frequency of Exercise for Emotion Regulation (H7)

Controlling for their balanced emotion regulation, individuals who typically spent more time exercising used exercise for emotion regulation more frequently, consistent with Hypothesis 7. This relation was observed for the self-reported analysis ($b = 0.26$, $t(288) = 4.40$, $p < .001$) and the behavioral analysis ($b = 0.26$, $t(284) = 4.47$, $p < .001$).

When examining only those who reported exercising for emotion regulation, the same pattern emerged in the self-reported analysis ($b = 0.11$, $t(172) = 2.68$, $p = .008$) and in the behavioral analysis ($b = 0.11$, $t(169) = 2.69$, $p = .008$). Additionally, in the limited samples, the main effect of typical exercise was significantly moderated by gender in the self-reported analysis ($b = -0.09$, $t(172) = -2.20$, $p = .029$) and in the behavioral analysis ($b = -0.09$, $t(169) = -2.17$, $p = .032$). Simple slope analyses showed that men used exercise for emotion regulation more frequently the more that they typically exercised, in the self-reported analysis ($b = 0.20$, $t(171) = 3.73$, $p < .001$) and in the behavioral analysis ($b = 0.20$, $t(171) = 3.81$, $p < .001$). Women's typical exercise, however, did not predict how often they used exercise for emotion regulation.

Typical Exercise → Change in Exercise for Emotion Regulation (H8)

When examining only those who reported exercising for emotion regulation and controlling for their balanced emotion regulation, participants who exercised more in their daily lives exercised at least as much as they usually did when they did so to manage their emotions. These findings align with Hypothesis 8, but the effect of typical

exercise was moderated by gender in the self-reported analysis (b = -0.10, t(173) = -2.85, p = .005) and in the behavioral analysis (b = -0.11, t(169) = -2.96, p = .004).

Specifically, men who exercised more in their daily lives more greatly increased the amount they exercised when they did so for coping purposes, compared to those who typically exercised less in the self-reported analysis (b = 0.13, t(172) = 2.49, p = .014) and in behavioral analysis (b = 0.13, t(169) = 2.54, p = .010). The effect of typical exercise was not significant for women. Women who typically exercised more were no more likely than those who typically exercised less to increase or decrease their physical activity when using it for emotion regulation.

The Effects of the Interactions of Typical Health Behavior and Balanced Emotion Regulation on Eating and Exercise for Emotion Regulation

Typical Junk Food Consumption x Balanced Emotion Regulation → Frequency of Eating for Emotion Regulation (H9)

The interaction between self-reported balanced emotion regulation and typical junk food consumption was marginally significant in the full sample (see Table 7). For those who typically ate more junk food, how often they used eating for emotion regulation did not depend on their self-reported balanced emotion regulation, contrary to Hypothesis 9. Instead, those who typically ate less junk food used eating for emotion regulation more frequently when they were lower in self-reported balanced emotion regulation (b = -0.73, t(286) = -3.76, p < .001; see Figure 1).

In this analysis, the main effect of emotion regulation remained significant. Those lower in self-reported balanced emotion regulation used eating to cope more often than did those higher in self-reported balanced emotion regulation. Additionally, women ate

for emotion regulation significantly more often than men did. The interaction between gender and junk food consumption was marginally significant as well. Simple slope analyses showed that women used eating for emotion regulation more frequently when they typically consumed more junk food ($b = 0.26$, $t(284) = 2.14$, $p = .033$), but men's behavior was not associated with their typical junk food habits.

When examining only those who reported eating for emotion regulation, the interaction between self-reported balanced emotion regulation and typical junk food consumption was not significant. However, the main effect of self-reported balanced emotion regulation remained significant, following the same pattern as in the full sample.

The interaction between behavioral balanced emotion regulation and typical junk food consumption was not significant in the full sample, but women ate for emotion regulation more frequently than men did. Furthermore, the interaction between gender and emotion regulation was marginally significant. Individuals lower in balanced regulation used eating for emotion regulation more frequently if they were women, as opposed to men.

When examining only those who reported eating for emotion regulation, the interaction between behavioral balanced emotion regulation and typical junk food consumption was significant (see Table 7). For those who typically ate more junk food, how often they used eating for emotion regulation did not depend on their behavioral balanced emotion regulation, contrary to Hypothesis 9. Instead, those who typically ate less junk food used eating for emotion regulation more frequently when they were *higher* in behavioral balanced emotion regulation ($b = 0.33$, $t(174) = 2.32$, $p = .021$; see Figure 2), in contrast to the findings in the full sample using self-reported emotion regulation. As

in the full sample, the interaction between gender and emotion regulation was marginally significant with individuals lower in balanced regulation using eating for emotion regulation more frequently if they were women rather than men.

Typical Junk Food Consumption x Balanced Emotion Regulation → Change in Eating for Emotion Regulation (H10)

The interaction between typical junk food consumption and balanced emotion regulation did not significantly predict how participants changed their eating when using it for emotion regulation, whether in the full sample or limited sample, and whether emotion regulation was measured by self-report or behavior. No other effects were significant either.

Typical Exercise x Balanced Emotion Regulation → Frequency of Exercise for Emotion Regulation (H11)

In the full sample, the interaction between participants' self-reported balanced emotion regulation and their typical exercise was a marginally significant predictor of how often they used exercise for emotion regulation (b = -0.15, $t(287)$ = -1.79, p = .075). Simple slope analyses showed that the frequency of using exercise for emotion regulation for individuals higher in balanced emotion regulation was not moderated by their typical exercise. Individuals lower in balanced emotion regulation, however, used exercise for emotion regulation more often if they typically exercised more rather than less in their daily lives (b = 0.34, $t(287)$ = 4.55, $p < .001$), supporting Hypothesis 11.

The interaction between participants' behavioral balanced emotion regulation and their typical exercise was not significant in the full sample. When examining only those who reported exercising for emotion regulation, the interaction between participants'

balanced emotion regulation and their typical exercise was not significant, whether emotion regulation was measured by self-report or behavior.

In accordance with the results of Hypothesis 7, in all analyses testing Hypothesis 11, typical exercise remained a significant main effect. More everyday exercise was associated with using exercise for emotion regulation more often. In the limited samples, this effect was further significantly moderated by gender. Men who typically exercised more used exercise for emotion regulation more frequently than men who typically exercised less. The frequency of women's exercise for emotion regulation, however, did not depend on their typical exercise. See comparable values in Hypothesis 7 results.

Typical Exercise x Balanced Emotion Regulation → Change in Exercise for Emotion Regulation (H12)

When examining only those who reported exercising for emotion regulation, the interaction of typical exercise habits and balanced emotion regulation, whether measured by self-report or behavior, did not significantly predict how individuals changed their exercise when they did so for emotion regulation. Those with lower balanced emotion regulation who typically exercised more were no more likely than those who typically exercised less to increase their exercise when using it for emotion regulation purposes. Thus, H12 was not supported.

The interaction between gender and typical exercise was significant, however, with the same gendered patterns as in Hypotheses 7, 8, and 11 (See comparable values in Hypothesis 8 results).

Partner and Actor x Partner Effects on the Frequency of Eating for Emotion Regulation

Partner's Balanced Emotion Regulation → Frequency of Eating for Emotion Regulation (H13A)

Controlling for the actor's emotion regulation, the main effect of the partner's emotion regulation was not a significant predictor of how often the actor used eating for emotion regulation, in contrast to Hypothesis 13A. This pattern of results was observed when measuring emotion regulation with self-reports or behavior, and when considering the full sample or only those who reported eating for emotion regulation (see Table 10).

When examining only those who ate for emotion regulation, though, the interaction of the partner's self-reported balanced emotion regulation and the actor's gender was significant**.** When their "opposite-sex" partners were higher, as compared to lower, in self-reported balanced emotion regulation, women used eating for emotion regulation more frequently, whereas men used eating for emotion regulation less frequently (see Figure 4). Although women's and men's slopes were in opposite directions, neither slope was significantly different than zero.

As in previous findings, individuals' own self-reported emotion regulation and gender were significant in some analyses (see Table 10). Individuals tended to eat for emotion regulation more frequently when they were women, rather than men, and when they were lower, rather than higher, in balanced emotion regulation.

Balanced Emotion Regulation x Partner's Balanced Emotion Regulation → Frequency of Eating for Emotion Regulation (H14A)

When examining the full sample, the interaction of the individual's self-reported emotion regulation and their partner's self-reported emotion regulation was not significant (see Table 11). However, the interaction of the individual's emotion

regulation, their gender, and their partner's emotion regulation was marginally significant (b = -0.41, t(284) = -1.74, p = .083; see Figure 5).

Simple slope analyses showed that the slopes of individuals higher in balanced emotion regulation were flatter than those of individuals lower in balanced emotion regulation, supporting Hypothesis 14A. Specifically, when an individual's balanced emotion regulation was higher, the interaction between their gender and their partner's balanced emotion regulation was not significant. When an individual's balanced emotion regulation was lower, the interaction was marginally significant (b = 0.35, t(284) 1.76, p = .080). In other words, how frequently individuals lower in balanced emotion regulation used eating for emotion regulation depended on their gender and their partner's emotion regulation, while how frequently individuals higher in balanced emotion regulation used eating for emotion regulation did not.

Of note, the slopes for women and men were in opposite directions (see Figure 3). Women lower in balanced emotion regulation ate to cope more often when their partners were higher, compared to lower, in balanced emotion regulation. Meanwhile, men lower in balanced emotion regulation ate to cope *less* often when their partners were higher, compared to lower, in balanced emotion regulation. Neither slope was significantly different than zero, though.

When examining only the participants who reported eating for emotion regulation, the interaction between an individual's self-reported emotion regulation and their partner's self-reported emotion regulation was marginally significant (see Table 11). However, the slope of individuals lower in balanced emotion regulation (b = -0.18, t(176) = -1.32, p = .190, see Figure 6) was of about equal magnitude to the slope of individuals

higher in balanced emotion regulation (b = .16, $t(176)$ = 1.06, p = .290), and neither was significantly different than zero. Therefore, these findings do not support Hypothesis 14A. Individuals lower in balanced emotion regulation were not more affected by their partners' emotion regulation than those higher in balanced emotion regulation.

Instead, simple slope analyses showed that, when individuals' partners were lower in balanced emotion regulation, individuals' emotion regulation was significant *(*b = -0.42, $t(176)$ = -3.04, p = .003). Individuals with partners lower in balanced emotion regulation ate to cope more often when they were also lower, rather than higher, in balanced emotion regulation When partners were higher in balanced emotion regulation, however, individuals' balanced emotion regulation was not significant.

The interaction between an individual's behavioral balanced emotion regulation and their partner's behavioral balanced emotion regulation was not significant, either when examining all participants or only those who reported eating for emotion regulation.

Individuals' emotion regulation, gender, and the interaction of the two were significant effects in some analyses (see Table 11). Women ate for emotion regulation more frequently than men did, and those lower in balanced emotion regulation ate for emotion regulation more frequently than those higher in balanced emotion regulation did. When individuals were lower in balanced emotion regulation, they ate for emotion regulation more often if they were women, rather than men. When individuals' partners were higher in balanced emotion regulation, individuals ate for emotion regulation more often if they were women, rather than men.

Partner's Typical Junk Food Consumption → Frequency of Eating for Emotion Regulation (Hypothesis 15A)

In the full sample, individuals' partners' typical junk food intake did not significantly predict how often the individuals used eating for emotion regulation, controlling for individuals' own junk food consumption and balanced emotion regulation, whether measured by self-report or behavior.

When examining only those who reported eating for emotion regulation, their partners' typical junk food intake marginally significantly predicted how often they used eating for emotion regulation. Individuals ate for emotion regulation more often when their partners usually consumed more, rather than less, junk food, controlling for their own typical junk food consumption and self-reported emotion regulation ($b = 0.11$, $t(178) = 1.67$, $p = .096$) or behavioral emotion regulation ($b = 0.11$, $t(174) = 1.68$, $p = .095$).

Gender, balanced emotion regulation, and the interaction between them were significant in some analyses (see Table 12). Women ate for emotion regulation more frequently than men did, those lower in balanced emotion regulation ate for emotion regulation more frequently than those higher in balanced emotion regulation did, and when individuals were lower in balanced emotion regulation, they ate for emotion regulation more often if they were women, rather than men.

Partner and Actor x Partner Effects on the Frequency of Exercise for Emotion Regulation

Partner's Emotion Regulation → Frequency of Exercise for Emotion Regulation (H13B)

Controlling for an individual's own balanced emotion regulation, their partner's emotion regulation did not predict how often they used exercise for emotion regulation, no matter how emotion regulation was measured or whether examining all participants or only individuals who reported exercising for emotion regulation. Thus, Hypothesis 13B was not supported.

The only other notable effect was that gender was a marginally significant predictor in the analysis with self-reported emotion regulation in the limited sample, with men using exercise for emotion regulation more than women (b = -0.13, t(173) = -1.79, p = .076).

Actor's Emotion Regulation x Partner's Emotion Regulation → Frequency of Exercise for Emotion Regulation (H14B)

The interaction between an individual's balanced emotion regulation and their partner's balanced emotion regulation was not significant, no matter how emotion regulation was measured or whether examining all participants or only individuals who reported exercising for emotion regulation. Thus, Hypothesis 14B was not supported. Individuals' partners' emotion regulation did not more greatly moderate how often individuals lower in balanced emotion regulation exercised to cope than how often individuals higher in balanced emotion regulation exercised to cope.

The only other notable effect was that gender was a marginally significant predictor in the analysis with self-reported emotion regulation in the limited sample, with men using exercise for emotion regulation more than women (b = -0.13, t(172) = -1.76, p = .081).

Partner's Typical Exercise → Frequency of Exercise for Emotion Regulation (H15B)

Controlling for an individual's own typical exercise and balanced emotion regulation, their partner's typical exercise did not significantly predict how often the individual used exercise for emotion regulation, no matter how emotion regulation was measured or whether examining all participants or only individuals who reported exercising for emotion regulation.

The main effect of typical exercise was significant in all analyses (see Table 13) with those who exercised more in their daily lives more often exercising for emotion regulation than those who exercised less in their daily lives. As in previous analyses, in the limited samples, this effect was driven by men.

Actor's Typical Exercise x Partner's Emotion Regulation → Frequency of Exercise for Emotion Regulation (H16)

Controlling for their own balanced regulation, individuals' typical exercise did not significantly interact with their partner's balanced emotion regulation to predict their frequency of exercise for emotion regulation, no matter how emotion regulation was measured or whether examining all participants or only individuals who reported exercising for emotion regulation. Therefore, Hypothesis 16 was not supported.

Individuals who typically exercised more did not exercise for emotion regulation more frequently if their partners had lower, as compared to higher, balanced emotion regulation. Rather, individuals who typically exercised more used exercise to cope more often, regardless of their partner's emotion regulation (see Table 14). In the limited samples, this effect was driven by men.

Follow Up Analyses Examining Differences Within Higher and Lower Balanced Emotion Regulation Groups

Previous analyses examined eating and exercise separately. However, the same individual may use eating differently than they do exercise to manage their feelings. Of particular interest in the current study was how individuals higher in balanced emotion regulation use eating compared to exercise, and how individuals lower in balanced emotion regulation use eating compared to exercise. To examine these potential differences, I split participants into two groups based on whether their balanced emotion regulation scores were above or below the median. Using t-tests, I then compared the groups' mean on the eating-related variable to their mean on the analogous exercise-related variable (see Tables 15 and 16). Finally, I investigated how effective each group found eating/exercise at down-regulating their negative emotions. If groups found different health behaviors more effective, this could explain their motivations for using eating and exercise for coping in distinct ways.

The typical junk food consumption and exercise habits (standardized to account for different scales) of those higher in self-reported and/or behavioral balanced emotion regulation did not significantly differ, indicating that they did not have healthier habits in one domain than the other (see Table 15). However, when using these health behaviors for emotion regulation, individuals higher in self-reported balanced emotion regulation used exercise significantly more often than they used eating. This difference was marginally significant when examining only those who reported engaging in these health behaviors for emotion regulation (the limited samples).

Individuals higher in self-reported and/or behavioral balanced emotion regulation who used both eating and exercise to cope increased their exercise significantly more than they increased their eating when they did so. This pattern aligned with how effective

they found eating and exercise for downregulating their negative emotions and stress; they found exercise significantly more effective than eating (see Table 15).

The typical junk food and exercise habits (standardized) of participants lower in self-reported and/or behavioral balanced emotion regulation did not significantly differ, indicating that they did not have healthier habits in one domain than the other (see Table 16). Individuals lower in self-reported balanced emotion regulation engaged in eating for emotion regulation significantly more frequently than those higher in self-reported balanced emotion regulation (Table 16). When limiting the sample to only those who reported engaging in eating or exercise for emotion regulation, the difference narrowed, suggesting that balanced emotion regulation was more indicative of whether or not individuals used eating for emotion regulation, rather than how frequently they did so. More participants who reported never eating for emotion regulation scored higher rather than lower in self-reported balanced emotion regulation (n = 67 versus 43, respectively).

Individuals lower in self-reported and/or behavioral balanced emotion regulation reported using eating and exercise for emotion regulation about equally frequently, despite the fact that they found exercise to be significantly more effective than eating for downregulating negative emotions and stress. Their effectiveness ratings of eating and exercising for emotion regulation were in line with those of individuals higher in self-reported and/or behavioral balanced emotion regulation (see Table 15). Furthermore, neither participants' self-reported nor behavioral emotion regulation was significantly correlated with how effective they found eating or exercise at making them feel better.

Discussion

This study sought to elucidate how individuals and their romantic partners use eating and exercise to regulate their emotions. One aim was to distinguish typical health behavior from health behavior used for emotion regulation purposes, arguing that while individuals' usual eating and exercise should predict how they use these behaviors to cope, individuals may also deviate from their usual health habits when using these behaviors to cope. Accordingly, I examined the extent to which individuals changed their typical eating and exercise when using them to manage their negative feelings and how frequently they did so.

I also investigated how these outcomes were predicted by individuals' usual junk food intake and physical activity, as well as by their balanced emotion regulation, measured with both self-reports and behavioral codes. For example, when those lower in balanced emotion regulation seek external sources of regulation, do they turn to health-compromising behaviors, such as overeating, or do they also turn to health-promoting behaviors, such as exercise? Examining the interaction of typical health behavior and balanced emotion regulation, I analyzed whether better emotion regulation protected individuals with worse health habits, and whether better health habits protected individuals with worse emotion regulation from engaging in health-compromising behavior for coping.

Lastly, to incorporate individuals' social context and a likely source of emotional and health behavior influence in their lives, I investigated whether individuals' partners' emotion regulation and health habits also predicted their eating and exercise for down-regulating their negative feelings. I discuss these findings below.

Balanced Emotion Regulation and Eating/Exercise for Emotion Regulation

In general, participants reported engaging in eating and exercising for emotion regulation (H1A, H1B), and when they did, they ate and exercised differently than they typically did (H2A, H2B). When individuals reported using eating to manage their feelings, those who scored lower in self-reported balanced emotion regulation[3] deviated from their typical eating habits more than those higher in self-reported balanced emotion regulation did (H3A). Possibly, they needed a more extreme change to manage their more extreme negative emotions. Furthermore, participants lower in self-reported balanced emotion regulation used eating to cope more often than did those higher in balanced emotion regulation (H4A). This effect of emotion regulation on frequency was robust, remaining significant even when accounting for other relevant factors, such as participants' typical health behavior and gender. However, individuals generally increased the amount that they ate when they did so to manage their emotions, regardless of their balanced emotion regulation (H5). Therefore, less constructive emotion regulation was associated with greater frequency of using eating to cope and deviations from typical eating, but not necessarily with greater increases in eating.

Still, if individuals lower and higher in self-reported balanced emotion regulation increase their eating by the same amount, but those who are lower use eating for emotion regulation more frequently than those who are higher, people who score lower in balanced emotion regulation should be more likely eat more over time. This extra food intake could accumulate in the long run, leading individuals lower in balanced emotion

[3] Unless otherwise stated, findings for balanced emotion regulation refer to findings for self-reported balanced emotion regulation, not for behavioral balanced emotion regulation. Differences between findings for the two measurements are discussed later.

regulation to gain weight and be at greater risk for health problems (Boggiano et al., 2015; Cutler et al., 2003).

Balanced emotion regulation did not predict more use of exercise for emotion regulation. Individuals higher and lower in self-reported balanced emotion regulation used exercise for emotion regulation just as frequently (H4B), and when they did so, similarly deviated from their typical physical activity (H3B) and increased the amount that they exercised (H6). Thus, individuals with lower self-reported balanced emotion regulation did not engage indiscriminately in more health behavior to regulate their emotions. Rather, how they managed their feelings depended on the health behavior in question and the operationalization of "more" (i.e., deviation from their typical health behavior, frequency of engaging in health behavior for emotion regulation purposes, or increase their amount of health behavior for emotion regulation purposes).

Follow-up analyses demonstrated that, while individuals higher in balanced emotion regulation engaged in both eating and exercise for emotion regulation, they were more likely to choose exercise over eating. For example, they used exercise to feel better significantly more often than they used eating to do so. Additionally, those who used exercise for emotion regulation increased their exercise more than those who used eating for emotion regulation increased their eating. In contrast, those lower in self-reported balanced emotion regulation used eating and exercise to cope equally frequently, and those who used exercise for emotion regulation increased their exercise about the same as those who used eating for emotion regulation increased their eating.

Another possible explanation for these differences in the use of health behavior for emotion regulation is that individuals higher in balanced emotion regulation may

differ from those lower in balanced emotion regulation in how effective they find eating and exercise at down-regulating their negative feelings. In theory, people lower in balanced emotion regulation could turn to eating more often than those higher in balanced emotion regulation because they find it more effective at down-regulating their negative affect. In practice, however, participants' self-reported and behavioral balanced emotion regulation were not significantly correlated with how effective they found eating or exercising in terms of making them feel better. Therefore, individuals lower in self-reported balanced emotion regulation probably did not engage in eating more frequently because they found it more effective. In both emotion regulation groups, participants found exercise significantly more effective than they found eating at down-regulation (see Tables 15 and 16). Differences in usage of eating and exercise for emotion regulation may not be due to different perceptions of effectiveness, then.

Rather, eating and exercise may have other characteristics that allow individuals higher in balanced emotion regulation to be better able to act in alignment with what they find effective. For example, though exercise can occur somewhat spontaneously and/or become a habit, it often requires planning (Scholz et al., 2008). To exercise, individuals may need specific equipment (e.g., weights) and clothing (e.g., running shoes) and may need to travel to specific locations (e.g., basketball courts) at specific times (e.g., group fitness classes starting at 6 p.m.). Furthermore, people may feel better after physical activity, but not during it, as they sweat, become out of breath, and grow tired, frustrated, embarrassed, or bored (Butryn et al., 2015). Those higher in balanced emotion regulation may more able to tolerate these negative sensations, similar to how they tolerate negative emotions. They may also more easily accept and work through exercise's long delay of

gratification. Planning and working towards far-off benefits often requires sustained self-regulation (Mann et al., 2013).

In contrast to physical activity, eating unhealthy foods is more immediately rewarding, even if it is ultimately less effective at downregulating negative affect (Dassen et al., 2015). Eating can be an automatic behavior (Cohen & Farley, 2007; Moldovan & David, 2012). Because individuals are prone to acting automatically when stressed, resisting the urge to eat when they want to relieve negative emotions and stress requires self-control. However, experiencing stress and negative emotions limits their ability to self-regulate (Tice et al., 2001). To the extent that those with more constructive emotion regulation are better at self-regulation in general, they may be better equipped to choose the healthier behavior that they find more effective, but that also requires more self-control.

Gender Differences

Women ate for emotion regulation more frequently than men did in this study (see Tables 7, 10, 11, and 12). This gender effect was present most often in analyses using the full sample, but women engaged in eating to cope significantly more frequently than men did in all samples (see Table 5). Furthermore, though individuals lower in balanced emotion regulation managed their feelings with eating more often than those higher in balanced emotion regulation did, they were particularly likely to do so if they were women, rather than men (see Tables 7, 10, 11, and 12). These findings align with past research showing that women, more than men, report engaging in emotional eating and overeating in response to negative emotion (e.g., Herren et al., 2021; Thompson & Romeo, 2015)

Typical Health Behavior and Eating/Exercise for Emotion Regulation

Typical eating of junk food was not a significant main effect in any analysis (e.g., Table 7, Table 12). The effect of the interaction of typical junk food consumption and emotion regulation on how participants increased their eating when using it for coping was not significant (H10), whereas the effect on frequency was sometimes significant (H9, see Table 7). When individuals typically ate less junk food, how often they engaged in eating to manage their feelings depended on their emotion regulation. This moderation did not exist for individuals who typically ate more junk food. This effect should be interpreted cautiously, however, as it was only present in some analyses, and the direction in which balanced emotion regulation moderated typical junk food intake was inconsistent (see Figures 1 and 2). Overall, these findings concur with the existing literature that people's everyday diets are not indicative of whether and how they eat when stressed.

In contrast to typical junk food consumption, typical exercise was the most consistent predictor of using exercise for emotion regulation. Compared to individuals who exercised less in their everyday lives, individuals who exercised more used exercise for emotion regulation more frequently (H7), and when they did so, increased how much they exercised (H8). Participants' typical exercise, frequency of using exercise for emotion regulation, and increase in exercise when using it for emotion regulation purposes were all positively correlated (except for women's typical exercise and increase in exercise when using it for emotion regulation; see Table 6). These findings are consistent with those of several other studies showing that more physically active

individuals are more likely to manage their emotions with exercise (e.g., Lutz et al., 2010; Schultchen et al., 2019; Seigel et al., 2002).

These findings also suggest that having the knowledge and resources to exercise may be needed to utilize them for emotion regulation purposes. In other words, individuals may need to exercise on a regular basis so that it is a built in part of their regular daily repertoire of emotion regulation strategies. Having personal experience with its emotional benefits may be what prompts people to use exercise a viable option for managing their negative feelings, even if they are aware that it is an effective stress reliever. For regular exercisers, physical activity may have also become a habit, requiring less self-regulation to engage in regardless of their emotion regulation (Rebar et al., 2020). This is a potential explanation for the lack of association between balanced emotion regulation and using exercise to cope. The interaction of balanced emotion regulation and typical exercise also did not predict how often individuals used exercise to manage their negative feelings (H11) or the extent to which they increased their exercise when doing so (H12). In sum, only exercise seemed to beget more exercise.

Gender Differences

Men reported eating significantly more junk food than women did in their everyday lives (see Table 5). Though individuals' typical eating of junk food did not predict their eating for emotion regulation, women's junk food consumption correlated positively with how frequently they used eating to cope, whereas men's was not (see Table 6). This gender difference suggests that women's eating habits may be more strongly related to their use of eating for emotion regulation than is true for men.

Women and men did not always use exercise in the same manner, either. Men reported higher levels of typical physical activity than women did, and the effects of typical exercise on increasing exercise for emotion regulation were driven mainly by men. Men who exercised more in their everyday lives increased their exercise more when using it for emotion regulation. This finding suggests that physically active men may need to "go harder" in order to reap the emotional benefits of exercise. Women's typical exercise did not predict how much they increased their exercise when using it for emotion regulation. Instead, perhaps women internally alter the function of their exercise without altering the amount of their exercise.

Exercise may be particularly important for men as an emotion regulation strategy because feeling emotions (with the exception of anger) is considered "unmanly" and men, on average, have been socialized to suppress and avoid negative emotions (Berke et al., 2018). Given these restrictions, exercise could serve an avoidant emotion regulation function, providing the opportunity to regulate emotions without having to acknowledge them (Gardner & Moore, 2008). When men do experience negative emotions, their masculinity may be threatened, and they may engage in masculine displays to restore it (Bosson et al., 2009). Physical activity could function as one of these displays. Exercise has been associated with masculinity as it incorporates stereotypical masculine values such as competition and strength (e.g., Langelier et al., 2019). Therefore, men may turn to exercise not only to regulate negative emotions, but also to regulate the uneasiness they feel about having them. Exercise, therefore, may serve as a viable outlet for negative emotions among men.

Partner Effects on Eating/Exercise for Emotion Regulation

Individuals' eating for emotion regulation was associated with their partners' actions, but their exercise for emotion regulation was not. When using eating to cope, men benefitted more than women did from their partner's higher balanced emotion regulation. For those who used eating for emotion regulation, when their partner was higher compared to lower in self-reported balanced emotion regulation, women used eating for emotion regulation more frequently, whereas men used eating for emotion regulation less frequently (H13A). This effect appeared to be driven by women and men who scored lower in balanced emotion regulation in the full sample (H14A).

At first glance, women's results may seem unexpected, but there is some research showing similar outcomes. In a daily diary study, Butler et al. (2010) found that on days when women with higher BMIs engaged in emotional suppression, their male partners reported fewer negative emotions about them than on days when women did not suppress. However, on these days, these women were more likely to overeat. The authors argue that women who use lower balanced emotion regulation strategies to preserve relational harmony end up eating more as a result. Dysregulated women with well-regulated partners may be similarly motivated. That is, such women may not express their negative emotions to avoid being a burden to their partners or to not risk unresponsive reactions from their partners (Kennedy-Moore & Watson, 2001). Therefore, having partners higher in balanced emotion regulation may not always be beneficial.

Though individuals' own eating habits were not significantly associated with their eating for emotion regulation, their *partner's* typical junk food eating habits were marginally associated. The more junk food an individual's partner typically consumed, the more frequently the individual used eating for emotion regulation purposes (H15A).

This effect, however, was present only for individuals who reported eating for emotion regulation, highlighting an important distinction between the full sample and the limited sample. This effect understandably diminished when including those who did not eat for emotion regulation. If participants did not eat to manage their feelings, their partner's eating habits should not affect how frequently they did so.

Among individuals who did eat for emotion regulation purposes, having a partner who ate more junk food may have provided easy access to these foods given that romantic partners often share food and routines around eating (Meyler et al., 2007). Because people tend to crave sweet, fat, and/or salty foods when they are upset, having junk food readily available may allow people to eat for emotion regulation more often. It may also alter social norms about eating junk food. Even if one usually avoids junk food, simply seeing one's partner eating it regularly may convince one to indulge, especially when feeling stressed.

How often an individual used exercise to cope was not significantly predicted by their partner's characteristics or any interactions between their own and their partner's characteristics (H13B, H14B, H15B, H16). Partners may be less likely to share routines and equipment for exercise than routines and food for eating, limiting their influence on each other's physical activity (Burke et al., 2004; Keller et al., 2020). Whereas eating can be a communal experience, exercise may be more individual.

Measurement of Health Behavior for Emotion Regulation

One of the goals of this dissertation was to distinguish typical eating and exercise from eating and exercise for coping, and to examine how these variables relate to balanced emotion regulation. I found that how often individuals ate for emotion

regulation was more related to their balanced emotion regulation, whereas how often individuals exercised for emotion regulation was more related to their typical exercise. In no sample was participants' balanced emotion regulation related to their typical junk food intake or exercise, though. This was true for both genders and both operationalizations of emotion regulation. This lack of association highlights the need to study health behavior *for* emotion regulation.

Furthermore, in the current study, individuals reported significantly altering (and usually increasing) their eating and exercise when they engaged in them to alleviate their negative affect. Their eating and exercise when used for this purpose may thus be more beneficial or detrimental to their health outcomes than their typical junk food intake and exercise are. It may therefore have a different impact on their health, especially if they use it frequently to manage their emotions. Researchers should therefore separate health behavior for emotion regulation from health behavior individuals engage in for other reasons and examine how health behavior for emotion regulation uniquely contributes to health outcomes.

Self-Reported Versus Behavioral Measures of Emotion Regulation

Participants' self-reported balanced emotion regulation was much more associated with their outcomes in this study than was their behavioral balanced emotion regulation. Outcomes were measured by self-report as well, so the common method may have been responsible for the greater connection. Individuals' scores on self-reported balanced emotion regulation and behaviorally coded balanced emotion regulation were only weakly positively correlated. This weak association is not unexpected as most self-reported and behavioral measurements of the same phenomena are not strongly linked

(Baumeister et al., 2007; Dang et al., 2020). A common explanation for this discrepancy is that individuals are motivated to be viewed positively by themselves and others, leading to biased responses on self-report measures that require self-awareness and honesty to be accurate (Furr & Funder, 2009). Such reasoning implies that behavior is the better indicator of the psychological variable of interest. While this implication may be true, emotion regulation is difficult to study behaviorally because observers cannot directly see it. Much of it occurs in individuals' heads. As individuals are the foremost experts on themselves, self-report measures may more accurately capture facets of emotion regulation that observers cannot access (Sperry, 1993).

Furthermore, emotion regulation is multi-faceted, and one definitive measure of it does not exist. Measures of behavioral emotion regulation are especially lacking. For example, many studies include randomly assigning participants to use different emotion regulation strategies (e.g., reappraise what you see while watching a disturbing film clip) rather than measuring behavior (e.g., Evers et al., 2010). The situation requiring emotion regulation in this study was designed to be more realistic, as romantic partners often discuss and attempt to resolve relationship problems. However, in it, participants employed both intrapersonal and interpersonal emotion regulation. In other words, partners needed to regulate their own feelings as well as each other's. Whether these two types should be measured separately is an empirical question, but interpersonal emotion regulation may better predict interpersonal outcomes, such as relationship satisfaction, than intrapersonal outcomes, such as eating and exercising to manage negative feelings.

Finally, behavioral observation data is more difficult to collect than self-report, survey data, requiring more equipment, time, and effort (Baumeister et al., 2007).

Because it is harder to collect, researchers usually only capture a snapshot or "thin slice" of participants' lives, which may not be representative of how they behave as a whole. In other words, researchers are capturing state-level data. Meanwhile, self-reports allow researchers to ask about participants' tendencies across situations, producing more trait-level, context-free data. Whether or not emotion regulation is more accurate with a specific context in mind is debatable. Some self-report measures are more accurate with context narrowed (e.g., nutrition diary), but people are regulating emotions many times a day, during different situations. Thus, emotion regulation in one context may not generalize to individuals' emotion regulation as a whole.

Limitations

This study was not without limitations. It was not originally designed to test the specific questions asked in this dissertation and, thus, when and how some variables were collected was not ideal. First, the data from this study were cross-sectional in nature. Participants' self-reported emotion regulation, typical health behavior, and health behavior for emotion regulation were measured on the same background surveys before participants discussed a conflict in their relationship, from which their behavioral emotion regulation was coded. Although it stands to reason that individuals' overall emotion regulation abilities should predict how they use health behavior for emotion regulation purposes, rather than vice versa, the reverse causal pathway cannot be eliminated.

Another issue was that typical eating and change in typical eating when eating for emotion regulation were measured differently. For change in typical eating, participants were asked to what extent they increased or decreased their usual intake. However, this

question did not specify the intake of any particular kind of food, and typical eating was operationalized by junk food consumption. Though the literature suggests that people usually turn to junk food when stressed (Cardi et al., 2015), and that people consume more calories when eating more of these sweet, salty, and fatty foods (CDC, 2021), I cannot definitively say that participants eating more than usual when eating to manage their feelings were eating more junk food.

Furthermore, the measurement of typical health behavior could have been improved. Participants self-reported their usual eating and exercise behavior, which may not be accurate (Poslusna et al., 2009; Sylvia et al., 2014). It is also possible that participants included their eating/exercise for emotion regulation in their reports of their typical health behavior, particularly if they engaged in it frequently or were not conscious of their motivations for engaging in it (Sheeran et al., 2013). Finally, participants were not asked to specify the intensity at which they typically exercised or exercised for emotion regulation. Intensity would be important to include in future work because researchers are currently debating whether exercise must be challenging and aerobic to provide full stress reduction benefits, or whether less strenuous exercise, such as yoga, is equally effective (Edwards & Loprinzi, 2019).

In future studies, participants could complete food and exercise diaries, recording intake/activity at the time of engaging in the health behavior to avoid errors in remembering. They could also respond to more thorough dietary recall or food frequency measures about fewer types of foods, if, for example, only junk food consumption was of interest (Thompson & Subar, 2017). Devices such as accelerometers and heart-rate monitors could also be used to capture behavioral measurements of participants' exercise

habits (Sylvia et al., 2014). Though all measures of eating and exercise have their pros and cons, researchers should carefully select those that provide the most accuracy while most reducing participant burden.

Limited Samples

Needing to utilize both full and limited samples was not ideal for several reasons. Participants who reported never eating and/or exercising for emotion regulation were not asked further questions about these behaviors. Therefore, they had no data for how much they changed their health behavior when using it for emotion regulation. This absence reduced the sample size for analyses with change in eating/exercise as the outcome, including partner analyses. To maximize my sample size for partner analyses, I only examined frequency as the dependent variable. Consequently, I tested my hypotheses in both full samples and limited samples, which increased the number of analyses. Though the descriptive statistics of all samples were similar (see Tables 2, 3, 4), because different samples may have contained different people, making comparisons and drawing conclusions across analyses was more difficult.

Fewer significant effects were detected in analyses using the limited samples (e.g., H11, H14A, H15A). This difference may be the result of eliminating participants who reported never eating/exercising for emotion regulation to form the limited samples and therefore eliminating frequency scores of zero. Hence, the outcome of frequency of eating/exercise for emotion regulation had a narrower range for analyses in the limited sample than in the full sample, potentially making finding significant effects more difficult.

Excluding participants from the samples based on their frequency scores also eliminated their scores on other variables that served as predictors for other outcomes. For example, eliminating those who reported never eating to manage their feelings may have also eliminated the highest scorers in balanced emotion regulation as the two variables are negatively correlated. In following analyses examining whether balanced emotion regulation predicted how participants changed their typical eating when using it cope, then, the range of the *predictor* variable was narrower than it was in the full sample.

I therefore recommend that researchers examining similar topics ensure that participants complete all items, that variables are measured in the appropriate order to align with analyses, and that assessments of health behavior for emotion regulation and typical health behavior are improved.

Future Directions

The results of this study inspire new research questions that could be explored in future studies. For example, individuals engage in oft-studied emotion regulation strategies such as suppression and rumination for similar reasons, and these strategies lead to similar results. But do those who suppress and those who ruminate use health behaviors for emotion regulation in the same ways? Do impulse control issues predict the use of specific health behaviors for coping, such as substance use, over others (Cloitre et al., 2019)? Whether different emotion regulation strategies or difficulties lead to different patterns of engagement in health behavior for coping is unknown. Studies have shown that types of lower balanced emotion regulation are associated with eating more and/or emotional eating (e.g., Clancy et al., 2016; Evers et al., 2010; Spoor et al., 2007) but have not compared multiple types of dysregulation in the same study.

As mentioned, more research investigates down-regulating negative emotions than up-regulating them, or down-regulating or up-regulating positive emotions. Yet, people manage their emotions in these ways as well (see Gross, 2014). Furthermore, they likely use health behavior to do so. Studying the use of health behaviors to increase positive emotion should be particularly promising. For example, like when experiencing negative emotions, experiencing positive emotions leads to increased food consumption (Bongers er al., 2013; see Evers et al., 2018 for a meta-analysis). Unlike eating when depressed, anxious, or bored, though, eating when happy may not be associated with emotion dysregulation (Braden et al., 2018). Exercise has also been shown to increase positive emotions, particularly active ones (Reed & Ones, 2006; Hyde et al., 2011). This is true for other health behaviors, too. Most research on alcohol consumption and emotion, for example, focuses on drinking to cope with negative feelings, but evidence shows that people also imbibe to enhance positive emotions, particularly in social settings (Cooper et al., 1995; Sayette et al., 2019).

In this dissertation and many other studies, emotions have been described as positive or negative, but emotions are much more than their valence. Examining how more specific emotions affect health may bring new insights (DeSteno et al., 2013), and one avenue for future study may be how people regulate specific emotions using health behaviors. For example, some work shows that boredom may encourage more eating, while sadness is associated with a lack of desire to eat (Macht, 2008). This question could be explored in the domain of exercise, too. Might anger inspire more physical activity than sadness, for instance, because it is a more activating, approach-oriented emotion (Carver & Harmon-Jones, 2009; Russell, 1980)? Some consumer research supports this

notion. For instance, a study by Rucker and Petty (2004) showed that participants induced to be angry were more likely to choose physically active vacations over inactive ones, whereas those induced to be sad were more likely to choose inactive vacations Hence, future work should examine how people use health behavior to regulate their emotions based on which specific emotions they are experiencing.

While this study did not identify many significant partner effects, researchers could employ longitudinal studies to examine romantic partners' influence on each other over time. For example, using a daily diary design, they could assess how one partner affects the other's use of health behavior for emotion regulation by adding or removing stress from their life (Bodenmann, 2005). Using a longitudinal study with longer intervals between measurements, researchers could also determine how one partner's health behavior, over time, affects the other's everyday health behavior and use of health behavior for emotion regulation (e.g., Jackson et al., 2015). For instance, if having a partner who exercises leads an individual to begin exercising, the results of this study suggest that they could then add this healthy behavior to their repertoire of ways to cope with negative emotion.

Finally, researchers should also study the effects of health behavior for emotion regulation on health outcomes over time. When doing so, health behavior for emotion regulation should be measured separately from typical health behavior. Furthermore, researchers should inquire about multiple domains of health behavior for emotion regulation. This includes health-compromising behaviors, such as substance use, but also health-promoting behaviors, such as exercise and sleep. Not only are health-promoting behaviors for this purpose understudied yet potentially effective at down-regulation, but

also individuals may use a balance of health behaviors to cope. For example, while eating more junk food to manage one's feelings may lead to worse health outcomes over time, this effect may be diminished for individuals who also use exercise for emotion regulation (Herren et al., 2021). Including a combination of health-promoting behaviors and health-compromising behaviors may thus clarify when and for whom health behaviors affect health outcomes.

In sum, future research on health behavior for emotion regulation would benefit from examining the impact of using specific emotion regulation strategies/competencies and feeling specific emotions on individuals' use of health behavior to cope. Researchers should also consider that health-promoting behaviors, such as exercise, can be used for emotion regulation in addition to health-compromising ones, and that health behavior can be used to up-regulate positive emotions, in addition to down-regulating negative ones. This field would also benefit from longitudinal studies to investigate romantic partners' influence on each other as well as the effects of health behavior for emotion regulation on long-term health outcomes.

Conclusion

Taken together, the findings of this study suggest that individuals acknowledge using eating and exercise for emotion regulation, and when they do so, they eat and exercise differently than they normally do. Those with lower self-reported balanced emotion regulation increased their eating by the same amount as those higher in self-reported balanced emotion regulation, but reported eating for emotion regulation more frequently. This effect was robust though more prominent in women than in men.

Individuals' typical junk food intake and its interaction with emotion regulation did not consistently predict how individuals ate to cope.

Balanced emotion regulation did not predict exercise for emotion regulation as a main effect or in any interactions. However, individuals higher in self-reported balanced emotion regulation used exercise significantly more often than they used eating to manage their feelings. Individuals' usual physical activity was a reliable predictor of their exercise for emotion regulation, with more active individuals using exercising for emotion regulation more frequently than less active individuals. They also increased their exercise more when using it for coping, especially if they were men. Individuals' partners tendencies affected their eating more than their exercise, but these effects were only present in some analyses.

The notable differences in the predictors of eating versus exercise for emotion regulation suggest different directions for interventions in these health domains. In efforts to decrease eating for emotion regulation, researchers could focus on improving balanced emotion regulation, rather than self-control or food choice, for example. To increase exercise for emotion regulation, researchers could encourage individuals who occasionally exercise to attend to the emotional benefits they gain from it. Doing so could promote individuals to add physical activity to their inventory of emotion regulation strategies. As exercise has been shown to improve emotion regulation (e.g., Zhang et al., 2019), it may even lead to less eating for emotion regulation downstream.

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Table 1

Means, Standard Deviations, and Correlations of Behavioral Emotion Regulation and Variables in Self-Reported Emotion Regulation Composite

Variable	Mean	*SD*	1	2	3	4	5	6
1. Behavioral Emotion Regulation	4.14	0.75						
2. Reappraisal	4.86	1.13	.08					
3. Suppression (R)	4.68	1.37	-.05	-.01				
4. Rumination (R)	2.68	0.86	.13*	.21**	.01			
5. Mindfulness	3.24	0.47	.15*	.21**	.17**	.53**		
6. DERS (R)	3.75	0.52	.19**	.30**	.14*	.53**	.62**	
7. Self-Reported Emotion Regulation Composite	0.03	0.63	.15**	.53**	.41**	.71**	.78**	.80**

Note. The six emotion regulation measures are reported in their original scales. The self-reported emotion regulation composite was formed from the standardized scores of measures 2-6. *SD* = standard deviation. (R) indicates that the scale was reverse coded, so that higher scores represent higher balanced emotion regulation. * = $p < .05$. ** = $p < .01$.

Table 2
Mean, Standard Deviations, and Correlations for the Full Sample

n = 318	***Mean***	***SD***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1. Self-Reported Balanced ER	0.03	0.63									
2. Behavioral Balanced ER	4.14	0.75	.15**								
3. Typical Eating (of Junk Food)	1.83	1.02	-.09	.02							
4. Eating for ER – Frequency	1.90	1.65	-.19**	-.01	.04						
5. Eating for ER – Change in Eating	0.64	1.07	-.07	.00	.05	.29**					
6. Eating for ER – Deviation from Typical Eating	1.12	0.55	-.17*	.03	.03	.29**	.16*				
7. Typical Exercise	3.22	1.73	.01	.00	-.05	-.10	-.07	.06			
8. Exercising for ER – Frequency	1.99	1.77	.02	.06	-.15*	.02	.04	.02	.25**		
9. Exercising for ER – Change in Exercise	0.89	0.84	.06	.09	-.10	.07	.04	-.02	.08	.42**	
10. Exercising for ER – Deviation from Typical Exercise	1.06	0.62	-.02	-.01	-.09	.09	.01	.05	.06	.38**	.62**

Note. ER = emotion regulation. *SD* = standard deviation. ** p < .01, * p < .05

Table 3

Means, Standard Deviations, and Correlations for the Limited Sample of Participants that Reported Eating for Emotion Regulation

n = 182	***Mean***	***SD***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1. Self-Reported Balanced ER	-0.04	0.63									
2. Behavioral Balanced ER	4.14	0.75	.10								
3. Typical Eating (of Junk Food)	1.84	1.00	-.02	.14							
4. Eating for ER – Frequency	3.05	0.91	-.19*	-.01	.09						
5. Eating for ER – Change in Eating	0.64	1.07	-.07	.00	.05	.29**					
6. Eating for ER – Deviation from Typical Eating	1.12	0.55	-.17*	.03	.03	.29**	.16*				
7. Typical Exercise	3.11	1.71	-.03	.05	-.04	-.09	-.07	.06			
8. Exercising for ER – Frequency	2.02	1.77	.03	.09	-.20**	.00	.04	.02	.24**		
9. Exercising for ER – Change in Exercise	0.96	0.86	.06	.16	.01	-.06	.04	-.02	.09	.37**	
10. Exercising for ER – Deviation from Typical Exercise	1.13	0.60	.04	.03	-.03	-.14	.01	.05	.01	.36**	.61**

Note. This sample excludes participants who reported that they never used eating for emotion regulation. ER = emotion regulation. *SD* = standard deviation. ** $p < .01$, * $p < .05$

Table 4

Means, Standard Deviations, and Correlations for the Limited Sample of Participants that Reported Exercising for Emotion Regulation

n = 177	***Mean***	***SD***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1. Self-Reported Balanced ER	0.03	0.64									
2. Behavioral Balanced ER	4.16	0.78	.19*								
3. Typical Eating (of Junk Food)	1.72	1.00	-.10	.03							
4. Eating for ER – Frequency	1.98	1.66	-.17*	-.04	.01						
5. Eating for ER – Change in Eating	0.69	1.07	-.08	-.06	.06	.26**					
6. Eating for ER – Deviation from Typical Eating	1.13	0.57	-.17	.04	.03	.29**	.23*				
7. Typical Exercise	3.48	1.77	-.10	-.01	.06	-.08	-.03	.03			
8. Exercising for ER – Frequency	3.27	0.97	.05	.07	-.07	-.10	-.04	-.03	.22**		
9. Exercising for ER – Change in Exercise	0.90	0.82	.05	.10	-.09	.05	.04	-.02	.11	.42**	
10. Exercising for ER – Deviation from Typical Exercise	1.05	0.61	-.01	-.01	-.10	.11	.01	.05	.05	.38**	.68**

Note. This sample excludes participants who reported that they never used exercise for emotion regulation. ER = emotion regulation. *SD* = standard deviation. ** $p < .01$, * $p < .05$

Table 5

Comparisons between Women's and Men's Scores in Full and Limited Samples

	Full Sample						Limited Sample Eating for ER						Limited Sample Exercising for ER					
	Women		Men				Women		Men				Women		Men			
Variable	***M***	***SD***	***M***	***SD***	***df***	***t***	***M***	***SD***	***M***	***SD***	***df***	***t***	***M***	***SD***	***M***	***SD***	***df***	***t***
Self-Reported Balanced ER	0.05	0.65	0.01	0.61	145		0.01	0.65	0.00	0.63	132		0.02	0.66	0.01	0.61	119	
Behavioral Balanced ER	4.11	0.80	4.17	0.69	143		4.10	0.82	4.20	0.69	130		4.17	0.82	4.18	0.71	117	
Typical Eating (of Junk Food)	1.69	1.01	1.97	1.02	145	*	1.73	1.02	1.96	1.03	132	†	1.67	1.00	1.94	1.01	119	*
Eating for ER – Frequency	2.41	1.53	1.39	1.60	145	**	2.65	1.39	1.53	1.62	132	**	2.46	1.54	1.48	1.63	119	**
Eating for ER – Change in Eating	0.61	1.17	0.70	0.88	48		0.61	1.17	0.70	0.88	48		0.60	1.21	0.76	0.73	40	
Typical Exercise	2.96	1.67	3.48	1.75	145	**	2.91	1.69	3.39	1.73	132	*	3.03	1.70	3.58	1.73	119	*
Exercising for ER – Frequency	1.86	1.72	2.12	1.82	144		1.90	1.71	2.15	1.82	132		2.27	1.63	2.58	1.68	118	
Exercising for ER – Change in Exercise	0.84	0.79	0.93	0.89	57		0.89	0.72	0.98	0.89	53		0.84	0.79	0.93	0.89	57	

Note. ER = emotion regulation. *M* = mean. *SD* = standard deviation. Significance of *t* value in t-test comparing women's and men's scores: ** p < .01, * p < .05, † p < .10

Table 6

Correlations Between Women's Scores, Men's Scores, and Partners' Scores

		Women								Men						
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Women	**1.** Self-Reported Balanced ER															
	2. Behavioral Balanced ER	.20*														
	3. Typical Eating (of Junk Food)	-.13	-.01													
	4. Eating for ER – Frequency	-.20*	-.11	.19*												
	5. Eating for ER – Change in Eating	-.06	-.07	.06	.24*											
	6. Typical Exercise	.04	.02	-.09	-.08	-.08										
	7. Exercise for ER – Frequency	.11	.05	-.24**	-.02	.01	.19*									
	8. Exercise for ER – Change in Exercise	.10	.08	.05	.08	.10	-.17	.39**								
Men	**9.** Self-Reported Balanced ER	-.01	.02	.02	.04	.04	-.07	.12	-.06							
	10. Behavioral Balanced ER	-.02	.46**	.01	.03	-.08	-.03	.06	-.01	.10						
	11. Typical Eating (of Junk Food)	-.05	.04	.10	.08	.00	-.05	-.11	.02	-.04	.03					
	12. Eating for ER – Frequency	-.04	.13	.03	-.10	.13	-.02	-.01	.14	-.22**	.14	-.02				
	13. Eating for ER – Change in Eating	-.09	.12	-.05	.06	.19	-.03	.22	.05	-.07	.19	.03	.41**			
	14. Typical Exercise	.03	.00	-.16*	-.02	.03	.06	.11	.07	.00	-.03	-.05	-.05	-.07		
	15. Exercise for ER – Frequency	-.04	.03	-.06	.02	-.20*	-.02	.12	.01	-.05	.06	-.09	.10	.09	.30**	
	16. Exercise for ER – Change in Exercise	.03	.08	.02	-.16	.01	-.12	.12	.08	.03	.10	-.23*	.11	-.08	.26*	.44**

Note. ER = emotion regulation. ** $p < .01$, * $p < .05$

Table 7

Effects of Balanced Emotion Regulation and Typical Junk Food Consumption on Frequency of Eating for Emotion Regulation (H9)

	Self-Reported Balanced Emotion Regulation								
	Full Sample *df* = 286					**Limited Sample** *df* = 178			
	b	***SE***	***t***	***p***		***b***	***SE***	***t***	***p***
Intercept	1.94	0.09	22.64	< .001	Intercept	3.04	0.07	45.01	< .001
ER	-0.45	0.14	-3.11	.002	ER	-0.26	0.11	-2.45	.015
Typical eating	0.10	0.09	1.15	.252	Typical eating	0.08	0.07	1.17	.245
Gender	0.54	0.09	5.72	< .001	--				
Typical eating x Gender	0.16	0.09	1.77	.077	--				
ER x Typical eating	0.28	0.15	1.81	.072	ER x Typical eating	0.06	0.12	0.55	.583
	Behavioral Balanced Emotion Regulation								
	Full Sample *df* = 282					**Limited Sample** *df* = 174			
	b	***SE***	***t***	***p***		***b***	***SE***	***t***	***p***
Intercept	1.90	0.09	21.84	< .001	Intercept	3.03	0.07	41.75	< .001
ER	0.07	0.12	0.55	.583	ER	0.09	0.11	0.86	.391
Typical eating	0.15	0.09	1.63	.104	Typical eating	0.08	0.07	1.21	.228
Gender	0.55	0.10	5.62	< .001	Gender	0.11	0.07	1.61	.109
ER x Gender	-0.25	0.13	-1.92	.056	ER x Gender	-0.20	0.10	-1.90	.060
ER x Typical eating	0.15	0.12	1.31	.191	ER x Typical eating	-0.24	0.09	-2.65	.009

Note. ER = balanced emotion regulation. *df* = degrees of freedom. *SE* = standard error. Typical eating represents the typical eating of junk food.

Table 8

Effects of Balanced Emotion Regulation and Typical Exercise on Change in Exercise for Emotion Regulation in the Limited Sample (H12)

Self-Reported Balanced Emotion Regulation *df* = 172	***b***	***SE***	***t***	***p***
Intercept	0.85	0.06	13.17	< .001
Typical Exercise	0.03	0.04	0.70	.484
Gender	-0.02	0.06	-0.33	.742
ER	0.10	0.10	1.00	.321
Typical Exercise x Gender	-0.10	0.04	-2.83	.005
Typical Exercise x ER	-0.03	0.05	-0.63	.529
Behavioral Balanced Emotion Regulation *df* = 169	***b***	***SE***	***t***	***p***
Intercept	0.85	0.07	12.91	< .001
Typical Exercise	0.02	0.04	0.59	.553
Gender	-0.02	0.06	-0.30	.763
ER	0.10	0.08	1.24	.218
Typical Exercise x Gender	-0.10	0.04	-2.84	.005
Typical Exercise x ER	0.06	0.05	1.21	.230

Note. ER = balanced emotion regulation. *df* = degrees of freedom. *SE* = standard error.

Table 9

Summary of Results for Hypotheses 3-12 (Actor Effects)

		Self-Reported Emotion Regulation					
		Predictor Variables – Full Sample			Predictor Variables – Limited Sample		
	Dependent Variable	Emotion Regulation	Typical Health Behavior	Interaction	Emotion Regulation	Typical Health Behavior	Interaction
Eating	Deviation from Typical Eating				✓ H3A		
	Frequency	✓ H4A		× H9	✓ H4A		× H9
	Change in Eating				~ H5		× H10
Exercis	Deviation from Typical Exercise				× H3B		
	Frequency	× H4B	✓ H7	~ H11	× H4B	✓ H7	× H11
	Change in Exercise				~ H6	✓ H8*	× H12

		Behavioral Emotion Regulation					
		Predictor Variables – Full Sample			Predictor Variables – Limited Sample		
	Dependent Variable	Emotion Regulation	Typical Health Behavior	Interaction	Emotion Regulation	Typical Health Behavior	Interaction
Eating	Deviation from Typical Eating				× H3A		
	Frequency	× H4A		× H9	× H4A		× H9
	Change in Eating			× H10	~ H5		
Exercis	Deviation from Typical Exercise				× H3B		
	Frequency	× H4B	✓ H7	× H11	× H4B	✓ H7	× H11
	Change in Exercise				~ H6	✓ H8*	× H12

Note. ✓ = Hypothesis supported. × = Hypothesis not supported. ~ = Hypothesis partially supported. * Effect further moderated by gender. This chart does not include significant effects that were not predicted in the hypotheses.

Table 10

Effects of Partners' Self-Reported Balanced Emotion Regulation on Frequency of Eating for Emotion Regulation (H13A)

	Self-Reported Balanced Emotion Regulation								
	Full Sample *df* = 288					**Limited Sample** *df* = 177			
	b	***SE***	***t***	***p***		***b***	***SE***	***t***	***p***
Intercept	1.90	0.08	22.38	< .001	Intercept	3.01	0.07	43.17	< .001
ER	-0.52	0.14	-3.62	< .001	ER	-0.27	0.11	-2.56	.011
Partner's ER	-0.01	0.14	-0.07	.947	Partner's ER	-0.03	0.10	-0.28	.779
Gender	0.52	0.09	5.50	< .001	Gender	0.10	0.07	1.52	.130
--					Partner's ER x Gender	0.21	0.10	2.07	.040
	Behavioral Balanced Emotion Regulation								
	Full Sample *df* = 283					**Limited Sample** *df* = 177			
	b	***SE***	***t***	***p***		***b***	***SE***	***t***	***p***
Intercept	1.90	0.09	21.73	< .001	Intercept	3.06	0.07	43.44	< .001
ER	-0.04	0.14	-0.31	.757	ER	-0.02	0.10	-0.16	.874
Partner's ER	0.20	0.14	1.44	.151	Partner's ER	0.00	0.10	-0.03	.979
Gender	0.51	0.10	5.35	< .001	--				
ER x Gender	-0.25	0.13	-2.01	.046	--				

Note. ER = balanced emotion regulation. *df* = degrees of freedom. *SE* = standard error

Table 11

Effect of the Interaction of Individuals' and Partners' Self-Reported Balanced Emotion Regulation on Frequency of Eating for Emotion Regulation (H14A)

	Self-Reported Balanced Emotion Regulation								
	Full Sample *df* = 284					**Limited Sample** *df* = 176			
	b	***SE***	***t***	***p***		***b***	***SE***	***t***	***p***
Intercept	1.90	0.09	22.23	< .001	Intercept	3.02	0.07	43.54	< .001
ER	-0.55	0.14	-3.79	.000	ER	-0.26	0.10	-2.46	.015
Gender	0.52	0.09	5.52	.000	Gender	0.11	0.07	1.64	.104
Partner's ER	0.01	0.14	0.07	.942	Partner's ER	-0.01	0.10	-0.08	.936
ER x Gender	0.02	0.14	0.17	.868	--				
Partner's ER x Gender	0.09	0.14	0.64	.522	Partner's ER x Gender	0.18	0.10	1.72	.087
ER x Partner's ER	-0.09	0.21	-0.42	.675	ER x Partner's ER	0.27	0.16	1.69	.094
ER x Gender x Partner's ER	-0.41	0.24	-1.74	.083	--				
	Behavioral Balanced Emotion Regulation								
	Full Sample *df* = 282					**Limited Sample** *df* = 176			
	b	***SE***	***t***	***p***		***b***	***SE***	***t***	***p***
Intercept	1.97	0.10	20.50	< .001	Intercept	3.08	0.08	40.48	< .001
ER	-0.05	0.14	-0.33	.741	ER	-0.02	0.10	-0.16	.872
Gender	0.51	0.10	5.35	.000	--				
Partner's ER	0.20	0.14	1.43	.155	Partner's ER	0.00	0.10	0.03	.978
ER x Gender	-0.25	0.13	-1.97	.050	--				
ER x Partner's ER	-0.25	0.16	-1.59	.113	ER x Partner's ER	-0.07	0.13	-0.55	.581

Note. ER = balanced emotion regulation. *df* = degrees of freedom. *SE* = standard error.

Table 12

Effect of Partners' Typical Junk Food Consumption on Individuals' Frequency of Eating for Emotion Regulation (H15A)

	Self-Reported Balanced Emotion Regulation								
	Full Sample *df* = 287					**Limited Sample** *df* = 178			
	b	***SE***	***t***	***p***		***b***	***SE***	***t***	***p***
Intercept	1.90	0.08	22.49	< .001	Intercept	3.03	0.07	45.12	< .001
Gender	0.53	0.10	5.43	.000	--				
ER	-0.50	0.14	-3.51	.001	ER	-0.25	0.10	-2.43	.016
Typical Eating	0.10	0.09	1.15	.250	Typical Eating	0.06	0.07	0.93	.355
Partner's Typical Eating	0.06	0.09	0.73	.468	Partner's Typical Eating	0.11	0.06	1.67	.096
	Behavioral Balanced Emotion Regulation								
	Full Sample *df* = 282					**Limited Sample** *df* = 174			
	b	***SE***	***t***	***p***		***b***	***SE***	***t***	***p***
Intercept	1.90	0.09	21.78	< .001	Intercept	3.01	0.07	41.65	< .001
Typical Eating	0.13	0.09	1.43	.153	Typical Eating	0.07	0.07	1.02	.311
ER	0.06	0.12	0.49	.623	ER	0.09	0.11	0.83	.409
Gender	0.53	0.10	5.41	.000	Gender	0.09	0.07	1.27	.204
Partner's Typical Eating	0.06	0.09	0.64	.522	Partner's Typical Eating	0.11	0.07	1.68	.095
ER x Gender	-0.27	0.13	-2.10	.036	ER x Gender	-0.19	0.11	-1.78	.076

Note. ER = balanced emotion regulation. *df* = degrees of freedom. *SE* = standard error. Typical eating represents the typical eating of junk food.

Table 13

The Effect of Partners' Typical Exercise on Frequency of Exercise for Emotion Regulation (H15B)

	Self-Reported Balanced Emotion Regulation								
	Full Sample *df* = 287					**Limited Sample** *df* = 171			
	b	***SE***	***t***	***p***		***b***	***SE***	***t***	***p***
Intercept	1.99	0.11	18.76	< .001	Intercept	3.22	0.07	44.77	< .001
Typical Exercise	0.26	0.06	4.41	< .001	Typical Exercise	0.11	0.04	2.68	.008
ER	0.05	0.16	0.33	.743	ER	0.11	0.11	0.96	.338
--					Gender	-0.08	0.07	-1.04	.299
Partner's Typical Exercise	0.03	0.06	0.45	.651	Partner's Typical Exercise	-0.01	0.04	-0.26	.797
--					Typical Exercise x Gender	-0.09	0.04	-2.20	.029
	Behavioral Balanced Emotion Regulation								
	Full Sample *df* = 283					**Limited Sample** *df* = 168			
	b	***SE***	***t***	***p***		***b***	***SE***	***t***	***p***
Intercept	1.99	0.11	18.71	< .001	Intercept	3.22	0.07	44.04	< .001
Typical Exercise	0.26	0.06	4.49	< .001	Typical Exercise	0.11	0.04	2.69	.008
ER	0.13	0.14	0.95	.342	ER	0.10	0.09	1.11	.267
Partner's Typical Exercise	0.03	0.06	0.55	.585	Partner's Typical Exercise	-0.01	0.04	-0.14	.891
--					Gender	-0.06	0.07	-0.81	.421
--					Typical Exercise x Gender	-0.09	0.04	-2.16	.032

Note. ER = balanced emotion regulation. *df* = degrees of freedom. *SE* = standard error.

Table 14

The Effect of the Interaction of Individuals' Typical Exercise and Partner's Balanced Emotion Regulation on Frequency of Exercise for Emotion Regulation (H16)

	Self-Reported Balanced Emotion Regulation								
	Full Sample *df* = 286					**Limited Sample** *df* = 170			
	b	***SE***	***t***	***p***		***b***	***SE***	***t***	***p***
Intercept	1.99	0.11	18.73	< .001	Intercept	3.22	0.07	44.78	< .001
ER	0.07	0.16	0.45	.651	ER	0.10	0.11	0.90	.370
Typical Exercise	0.26	0.06	4.38	.000	Typical Exercise	0.11	0.04	2.70	.008
--					Gender	-0.08	0.07	-1.11	.268
Partner's ER	0.13	0.16	0.81	.419	Partner's ER	0.07	0.12	0.57	.567
--					Typical Exercise x Gender	-0.09	0.04	-2.12	.035
Typical Exercise x Partner's ER	-0.03	0.09	-0.38	.705	Typical Exercise x Partner's ER	0.01	0.06	0.24	.814
	Behavioral Balanced Emotion Regulation								
	Full Sample *df* = 282					**Limited Sample** *df* = 167			
	b	***SE***	***t***	***p***		***b***	***SE***	***t***	***p***
Intercept	1.99	0.11	18.77	< .001	Intercept	3.22	0.07	44.12	< .001
ER	0.10	0.15	0.70	.487	ER	0.15	0.10	1.42	.158
Typical Exercise	0.27	0.06	4.57	.000	Typical Exercise	0.11	0.04	2.65	.009
Partner's ER	0.06	0.15	0.37	.709	Partner's ER	-0.09	0.10	-0.88	.380
--					Gender	-0.06	0.07	-0.79	.431
--					Typical Exercise x Gender	-0.09	0.04	-2.09	.038
Typical Exercise x Partner's ER	-0.11	0.08	-1.33	.183	Typical Exercise x Partner's ER	-0.02	0.05	-0.42	.675

Note. ER = balanced emotion regulation. *df* = degrees of freedom. *SE* = standard error

Table 15

Comparisons between Eating and Exercise for Individuals Higher in Self-reported or Behavioral Balanced Emotion Regulation

Higher in Self-Reported Balanced Emotion Regulation (n = 146)								
Eating Variable	***Mean***	***SD***	**Exercise Variable**	***Mean***	***SD***	***t***	***df***	***p***
Typical eating– Standardized	-0.09	1.04	Typical exercise – Standardized	0.02	0.98	-0.98	145	.330
Eating for ER – frequency	1.60	1.63	Exercise for ER – frequency	1.99	1.79	-1.98	145	.049
Limited Sample	2.95	0.95	Limited Sample	3.34	0.93	-1.78	46	.081
Eating for ER – Change in Eating	0.67	0.98	Exercise for ER – Change in Exercise	0.99	0.72	-2.30	46	.026
Eating for ER – |Change in Eating|	1.05	0.55	Exercise for ER – Deviation from Typical Exercise	1.03	0.66	-0.80	46	.429
Eating for ER – Effectiveness	3.09	1.30	Exercise for ER – Effectiveness	5.14	0.75	-9.55	40	< .001
Higher in Behavioral Balanced Emotion Regulation (n = 155)[4]								
Eating Variable	***Mean***	***SD***	**Exercise Variable**	***Mean***	***SD***	***t***	***df***	***p***
Typical eating – Standardized	0.03	0.99	Typical exercise – Standardized	0.03	1.02	0.41	132	.679
Eating for ER – frequency	1.94	1.64	Exercise for ER – frequency	2.05	1.81	-0.53	153	.594
Limited Sample	3.09	0.83	Limited Sample	3.36	0.97	-1.48	59	.145
Eating for ER – Change in Eating	0.62	1.10	Exercise for ER – Change in Exercise	0.94	0.82	-2.08	59	.042
Eating for ER – |Change in Eating|	1.15	0.51	Exercise for ER – |Change in Exercise|	1.06	0.65	0.65	59	.521
Eating for ER – Effectiveness	3.07	1.28	Exercise for ER – Effectiveness	5.23	0.71	-10.48	52	< .001

Note. ER = emotion regulation, *SD* = standard deviation, *df* = degrees of freedom. Typical eating represents the typical eating of junk food.

[4] When behavioral balanced emotion regulation was split by the median, participants with the median score were placed in the higher group. Thus, this group included more people. When participants with the median score were placed in the lower group instead, the comparisons did not change.

Table 16

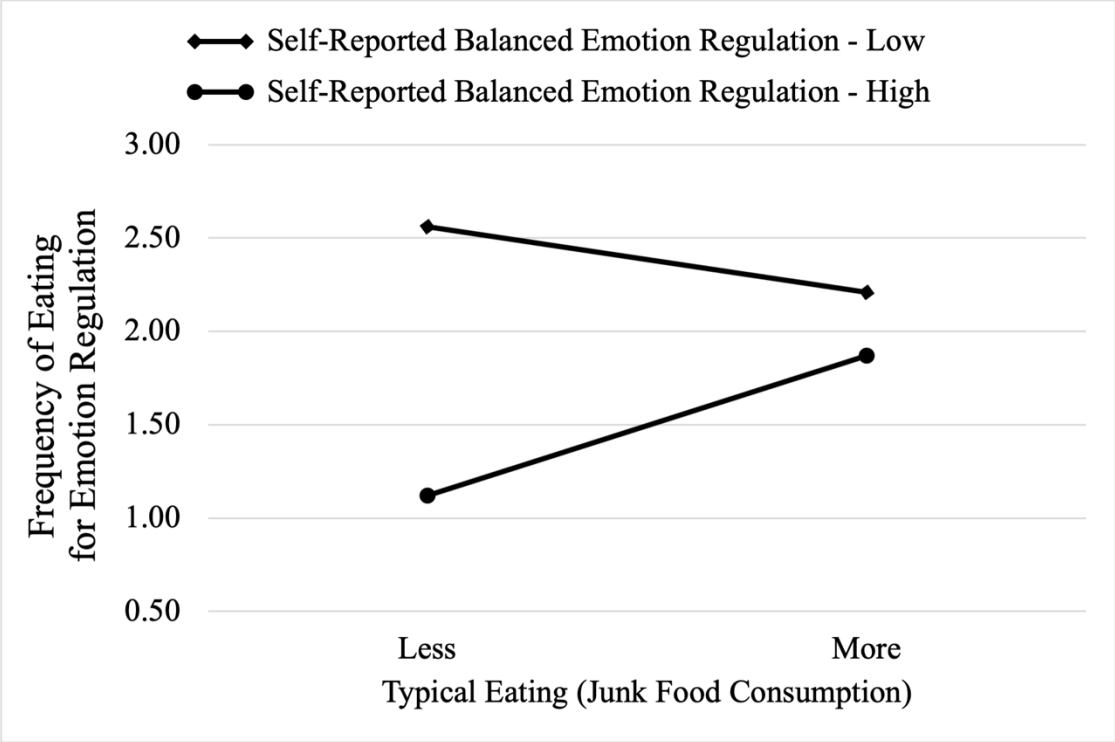
Comparisons between Eating and Exercise for Individuals Lower in Self-Reported or Behavioral Balanced Emotion Regulation

Lower in Self-Reported Balanced Emotion Regulation (n = 146)								
Eating Variable	***Mean***	***SD***	**Exercise Variable**	***Mean***	***SD***	***t***	***df***	***p***
Typical eating– Standardized	0.09	0.96	Typical exercise – Standardized	-0.02	1.02	0.98	145	.326
Eating for ER – frequency	2.21	1.61	Exercise for ER – frequency	1.99	1.75	1.21	144	.227
Limited Sample	3.13	0.88	Limited Sample	3.20	1.02	0.26	66	.798
Eating for ER – Change in Eating	0.62	1.13	Exercise for ER – Change in Exercise	0.79	0.94	-0.82	66	.413
Eating for ER – |Change in Eating|	1.17	0.54	Exercise for ER – |Change in Exercise|	1.08	0.58	0.84	66	.402
Eating for ER – Effectiveness	3.12	1.34	Exercise for ER – Effectiveness	5.16	0.78	-10.03	58	< .001
Lower in Behavioral Balanced Emotion Regulation (n = 133)								
Eating Variable	***Mean***	***SD***	**Exercise Variable**	***Mean***	***SD***	***t***	***df***	***p***
Typical eating – Standardized	-0.01	1.02	Typical exercise – Standardized	-0.06	0.98	0.41	132	.679
Eating for ER – frequency	1.88	1.67	Exercise for ER – frequency	1.91	1.73	-0.14	132	.885
Limited Sample	3.01	1.01	Limited Sample	3.17	0.98	0.00	51	1.00
Eating for ER – Change in Eating	0.66	1.03	Exercise for ER – Change in Exercise	0.82	0.88	-0.84	51	.404
Eating for ER – |Change in Eating|	1.07	0.58	Exercise for ER – |Change in Exercise|	1.05	0.59	-0.68	51	.498
Eating for ER – Effectiveness	3.15	1.39	Exercise for ER – Effectiveness	5.06	0.82	-8.79	45	< .001

Note. ER = emotion regulation, *SD* = standard deviation, *df* = degrees of freedom. Typical eating represents the typical eating of junk food.

Figure 1

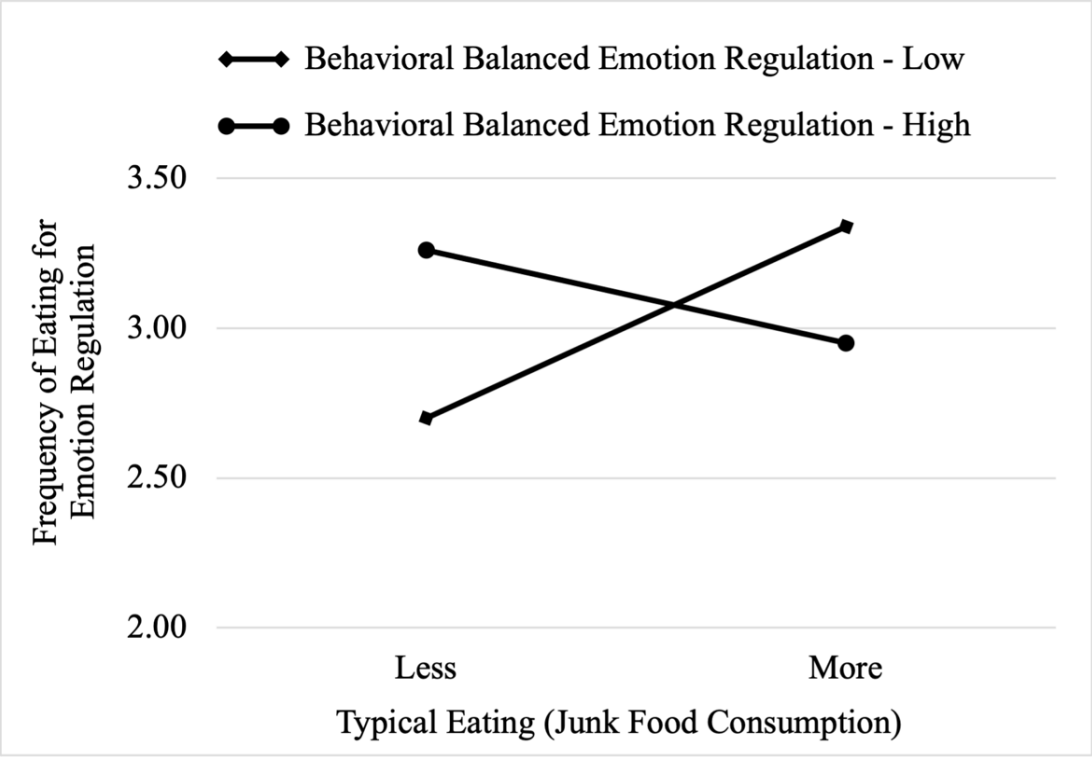
The Effect of the Interaction of Self-Reported Balanced Emotion Regulation and Typical Junk Food Consumption on The Frequency of Eating for Emotion Regulation in the Full Sample (H9)



Note. Low/less groups represent one standard deviation below the mean. High/more groups represent one standard deviation above the mean.

Figure 2

The Effect of the Interaction of Behavioral Balanced Emotion Regulation and Typical Junk Food Consumption on The Frequency of Eating for Emotion Regulation in the Limited Sample (H9)



Note. Low/less groups represent one standard deviation below the mean. High/more groups represent one standard deviation above the mean.

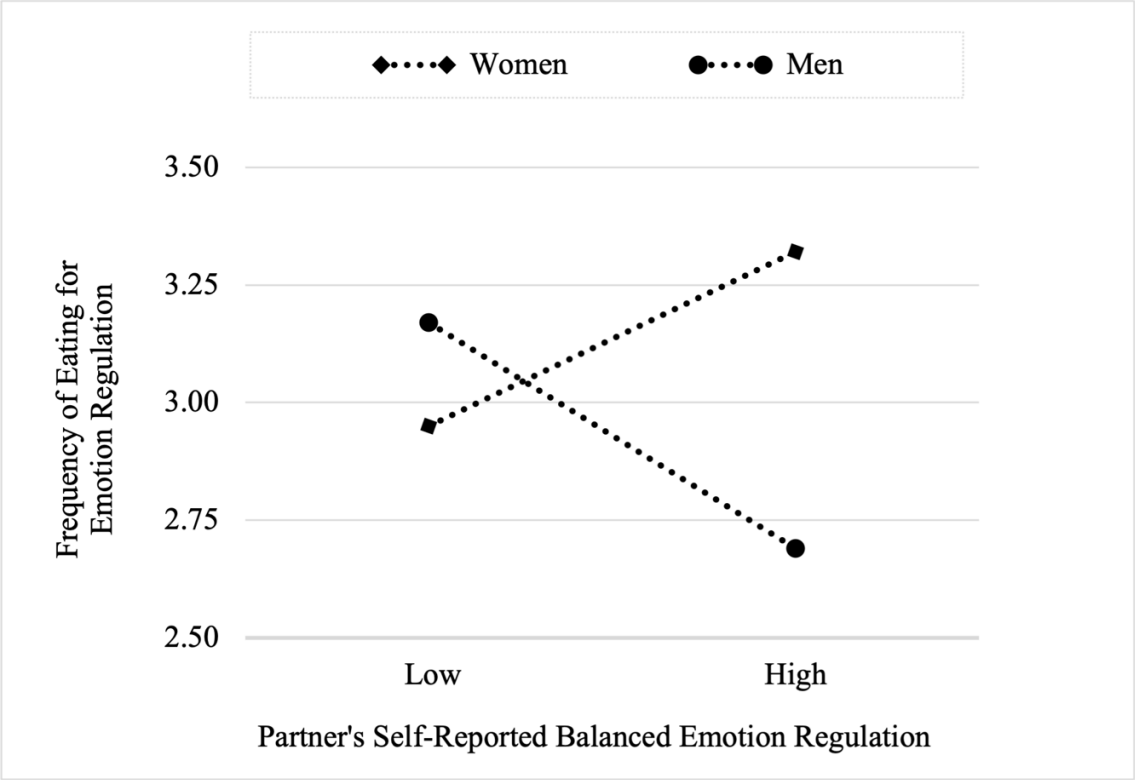
Figure 3

Effects of Balanced Emotion Regulation and Typical Exercise on Frequency of Exercise for Emotion Regulation in the Full Sample (H11)

Note. Low/less groups represent one standard deviation below the mean. High/more groups represent one standard deviation above the mean.

Figure 4

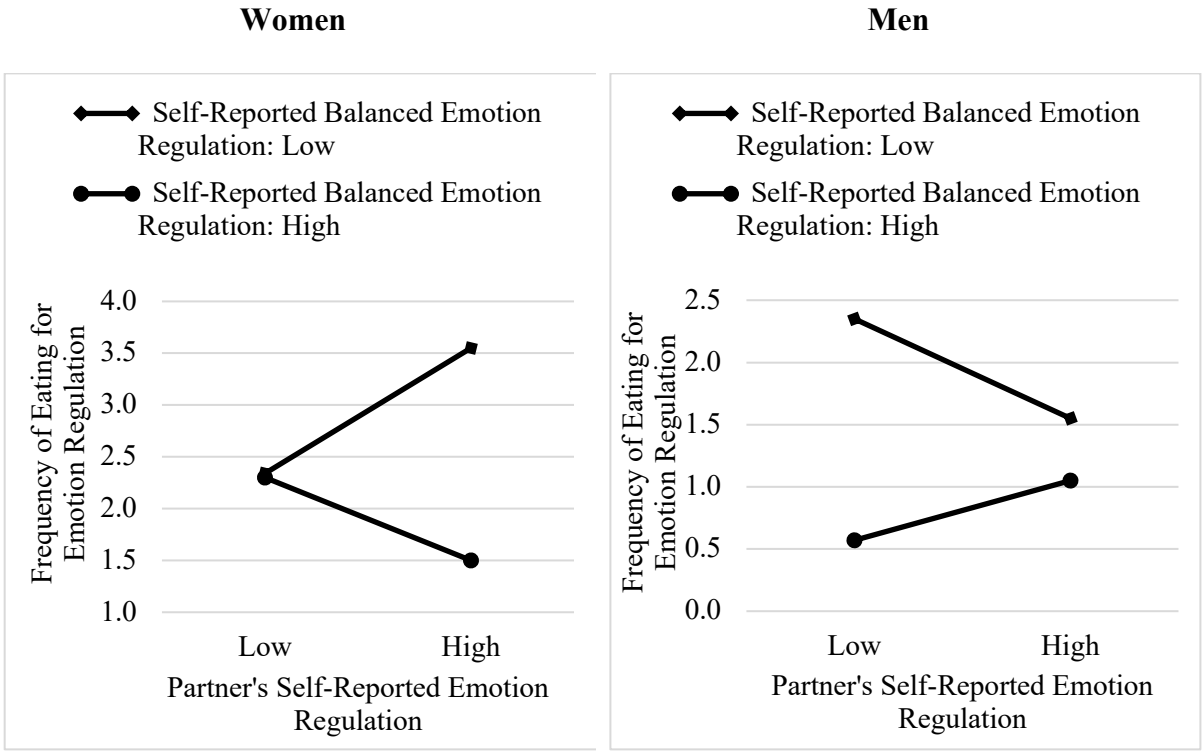
Effects of Partners' Self-Reported Balanced Emotion Regulation on Frequency of Eating for Emotion Regulation in the Limited Sample (H13A)



Note. Low groups represent one standard deviation below the mean. High groups represent one standard deviation above the mean.

Figure 5

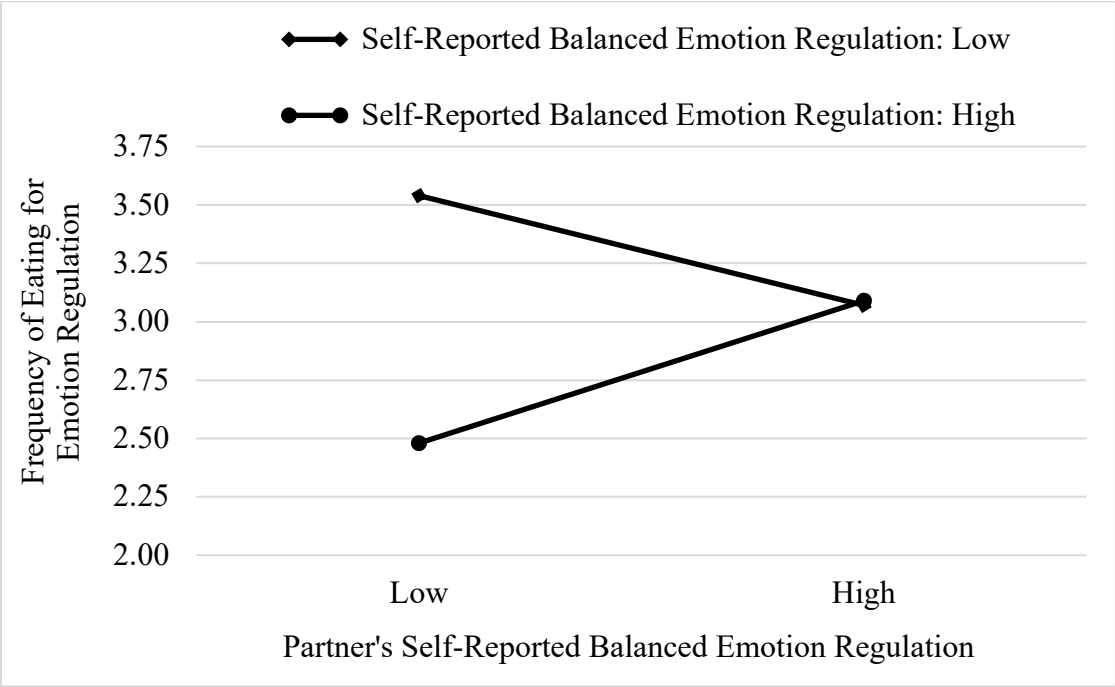
Effect of the Interaction of Individuals' and Partners' Self-Reported Balanced Emotion Regulation on Frequency of Eating for Emotion Regulation in the Full Sample, by Gender (H14A)



Note. Low groups represent one standard deviation below the mean. High groups represent one standard deviation above the mean.

Figure 6

Effect of the Interaction of Individuals' and Partners' Self-Reported Balanced Emotion Regulation on Frequency of Eating for Emotion Regulation in the Limited Sample (H14A)



Note. Low groups represent one standard deviation below the mean. High groups represent one standard deviation above the mean.

Appendix A

Behavioral Coding Scheme by Overall and Girme (2014)

Balanced Emotion

Open and self-assured *expression and acknowledgement* of emotions and feelings without being afraid of conflict or allowing the emotion to take over the interaction. The person is inherently comfortable with their own and their partner's emotions.

- open expression and acknowledgement of own emotions, without negative emotions overwhelming or disabling the person, dominating or interrupting the flow of the discussion, or interfering with the connection between the couple
- comfortable with each other's emotions, including not being threatened or phased by the partner's negative emotions
- responsive to any negative emotions partner expresses or seems to be feeling, but not overly responsive (i.e., recognizes partner's emotions, expresses care and provide comfort if needed, but keeps the discussion moving)
- seizing opportunities to understand each other's negative emotions and feelings, being willing to seek and receive emotional support or comfort, and encourage (but not coerce) the partner to do the same

Appendix B

Emotion Regulation Questionnaire by Gross and John (2003)

We would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem similar to one another, they differ in important ways. For each item, please answer using the following scale:

		Strongly Disagree			Neutral			Strongly Agree
1.	When I want to feel more *positive* emotion (such as joy or amusement), I *change what I'm thinking about*.	❍	❍	❍	❍	❍	❍	❍
2.	I keep my emotions to myself.	❍	❍	❍	❍	❍	❍	❍
3.	When I want to feel less *negative* emotion (such as sadness or anger), I *change what I'm thinking about*.	❍	❍	❍	❍	❍	❍	❍
4.	When I am feeling *positive* emotions, I am careful not to express them.	❍	❍	❍	❍	❍	❍	❍
5.	When I'm faced with a stressful situation, I make myself *think about it* in a way that helps me stay calm.	❍	❍	❍	❍	❍	❍	❍
6.	I control my emotions by *not expressing them*.	❍	❍	❍	❍	❍	❍	❍
7.	When I want to feel more *positive* emotion, I *change the way I'm thinking* about the situation.	❍	❍	❍	❍	❍	❍	❍

8. I control my emotions by *changing the way I think* about the situation I'm in.	❍	❍	❍	❍	❍	❍	❍
9. When I am feeling *negative* emotions, I make sure not to express them.	❍	❍	❍	❍	❍	❍	❍
10. When I want to feel less *negative* emotion, I *change the way I'm thinking* about the situation.	❍	❍	❍	❍	❍	❍	❍

Cognitive Reappraisal items: 1, 3, 5, 7, 8, 10 Expressive Suppression items: 2, 4, 6, 9

Appendix C

Rumination – Short Form by Trapnell (1997)

For each of the following statements, please indicate your level of agreement or disagreement by choosing one of the scale categories to the right of each statement.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	1	**2**	**3**	**4**	**5**
1. My attention is often focused on aspects of myself I wish I'd stop thinking about	❍	❍	❍	❍	❍
1. Sometimes it is hard for me to shut off thoughts about myself	❍	❍	❍	❍	❍
2. I tend to "ruminate" or dwell over things that happen to me for a really long time afterward	❍	❍	❍	❍	❍
3. I don't waste time re-thinking things that are over and done with (R)	❍	❍	❍	❍	❍
4. I never ruminate or dwell on myself for very long (R)	❍	❍	❍	❍	❍
5. It is easy for me to put unwanted thoughts out of my mind (R)	❍	❍	❍	❍	❍

(R) indicates reverse-coded

Appendix D

Five Facet Mindfulness Questionnaire – Short Form by Bohlmeijer et al. (2011)

Please rate each of the following statements using the scale provided. Choose the number that best describes your own opinion of what is generally true for you.

Never or very rarely true	Not often true	Sometimes true, sometimes not true	Often true	Very often or always true
1	2	3	4	5

	1	**2**	**3**	**4**	**5**
1. I'm good at finding the words to describe my feelings	❍	❍	❍	❍	❍
2. I can easily put my beliefs, opinions, and expectations into words	❍	❍	❍	❍	❍
3. I watch my feelings without getting carried away by them	❍	❍	❍	❍	❍
4. I tell myself that I shouldn't be feeling the way I'm feeling	❍	❍	❍	❍	❍
5. It's hard for me to find the words to describe what I'm thinking	❍	❍	❍	❍	❍
6. I pay attention to physical experiences, such as the wind in my hair or sun on my face	❍	❍	❍	❍	❍
7. I make judgments about whether my thoughts are good or bad.	❍	❍	❍	❍	❍
8. I find it difficult to stay focused on what's happening in the present moment	❍	❍	❍	❍	❍

9. When I have distressing thoughts or images, I don't let myself be carried away by them	❍	❍	❍	❍	❍
10. Generally, I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing	❍	❍	❍	❍	❍
11. When I feel something in my body, it's hard for me to find the right words to describe it	❍	❍	❍	❍	❍
12. It seems I am "running on automatic" without much awareness of what I'm doing	❍	❍	❍	❍	❍
13. When I have distressing thoughts or images, I feel calm soon after	❍	❍	❍	❍	❍
14. I tell myself I shouldn't be thinking the way I'm thinking	❍	❍	❍	❍	❍
15. I notice the smells and aromas of things	❍	❍	❍	❍	❍
16. Even when I'm feeling terribly upset, I can find a way to put it into words	❍	❍	❍	❍	❍
17. I rush through activities without being really attentive to them	❍	❍	❍	❍	❍
18. Usually when I have distressing thoughts or images I can just notice them without reacting	❍	❍	❍	❍	❍
19. I think some of my emotions are bad or inappropriate and I shouldn't feel them	❍	❍	❍	❍	❍
20. I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow	❍	❍	❍	❍	❍
21. When I have distressing thoughts or images, I just notice them and let them go	❍	❍	❍	❍	❍

22. I do jobs or tasks automatically without being aware of what I'm doing	❍	❍	❍	❍	❍
23. I find myself doing things without paying attention	❍	❍	❍	❍	❍
24. I disapprove of myself when I have illogical ideas	❍	❍	❍	❍	❍

Scoring

R indicates reverse-coded

Non-react items: 3, 9, 13, 21
Observe items: 6, 10, 15, 20
Act with awareness items: 12R, 17R, 22R, 23R
Describe items: 1, 2, 5R, 11R, 16
Non-judge items: 4R, 7R, 14R, 19R, 24R

Appendix E

Difficulties in Emotion Regulation by Gratz and Roemer (2004)

Please indicate how often the following 36 statements apply to you by selecting the appropriate number from the scale below (1 – 5).

Almost Never	Sometimes	About Half the Time	Most of the Time	Almost Always
(0-10%)	(11-35%)	(36-65%)	(66-90%)	(91-100%)
1	2	3	4	5

		1	**2**	**3**	**4**	**5**
1.	I am clear about my feelings.	❍	❍	❍	❍	❍
2.	I pay attention to how I feel.	❍	❍	❍	❍	❍
3.	I experience my emotions as overwhelming and out of control.	❍	❍	❍	❍	❍
4.	I have no idea how I am feeling.	❍	❍	❍	❍	❍
5.	I have difficulty making sense out of my feelings.	❍	❍	❍	❍	❍
6.	I am attentive to my feelings.	❍	❍	❍	❍	❍
7.	I know exactly how I am feeling.	❍	❍	❍	❍	❍
8.	I care about what I am feeling.	❍	❍	❍	❍	❍
9.	I am confused about how I feel.	❍	❍	❍	❍	❍
10.	When I'm upset, I acknowledge my emotions.	❍	❍	❍	❍	❍

11. When I'm upset, I become angry with myself for feeling that way.	❍	❍	❍	❍	❍
12. When I'm upset, I become embarrassed for feeling that way	❍	❍	❍	❍	❍
13. When I'm upset, I have difficulty getting work done.	❍	❍	❍	❍	❍
14. When I'm upset, I become out of control.	❍	❍	❍	❍	❍
15. When I'm upset, I believe that I will remain that way for a long time.	❍	❍	❍	❍	❍
16. When I'm upset, I believe that I'll end up feeling very depressed.	❍	❍	❍	❍	❍
17. When I'm upset, I believe that my feelings are valid and important.	❍	❍	❍	❍	❍
18. When I'm upset, I have difficulty focusing on other things.	❍	❍	❍	❍	❍
19. When I'm upset, I feel out of control.	❍	❍	❍	❍	❍
20. When I'm upset, I can still get things done.	❍	❍	❍	❍	❍
21. When I'm upset, I feel ashamed with myself for feeling that way.	❍	❍	❍	❍	❍
22. When I'm upset, I know that I can find a way to eventually feel better.	❍	❍	❍	❍	❍
23. When I'm upset, I feel like I am weak.	❍	❍	❍	❍	❍
24. When I'm upset, I feel like I can remain in control of my behaviors.	❍	❍	❍	❍	❍
25. When I'm upset, I feel guilty for feeling that way.	❍	❍	❍	❍	❍
26. When I'm upset, I have difficulty concentrating.	❍	❍	❍	❍	❍
27. When I'm upset, I have difficulty controlling my behaviors.	❍	❍	❍	❍	❍
28. When I'm upset, I believe that there is nothing I can do to make myself feel better.	❍	❍	❍	❍	❍
29. When I'm upset, I become irritated with myself for feeling that way.	❍	❍	❍	❍	❍

30. When I'm upset, I start to feel very bad about myself.	❍	❍	❍	❍	❍
31. When I'm upset, I believe that wallowing in it is all I can do.	❍	❍	❍	❍	❍
32. When I'm upset, I lose control over my behaviors.	❍	❍	❍	❍	❍
33. When I'm upset, I have difficulty thinking about anything else.	❍	❍	❍	❍	❍
34. When I'm upset, I take time to figure out what I'm really feeling.	❍	❍	❍	❍	❍
35. When I'm upset, it takes me a long time to feel better.	❍	❍	❍	❍	❍
36. When I'm upset, my emotions feel overwhelming.	❍	❍	❍	❍	❍

Scoring

R indicates reverse-coded

Nonacceptance of Emotional Responses items: 25, 21, 12, 11, 29, 23

Difficulty Engaging in Goal Directed Behavior items: 26, 18, 13, 33, 20R

Impulse Control Difficulties items: 32, 27, 14, 19, 3, 24R

Lack of Emotional Awareness items: 6R, 2R, 10R, 17R, 8R, 34R

Limited Access to Emotion Regulation Strategies items: 16, 15, 31, 35, 28, 22R, 36, 30

Lack of Emotional Clarity items: 5, 4, 9, 7R, 1R

Appendix F

Typical Eating Behavior

On a typical day, how many servings of the following do you eat/drink? It may help to think of what you have eaten in the past week. Foods may fall under one than more category. For example, a hamburger could be a fat, meat, and salty food.

	0	**1**	**2**	**3**	**4**	**5 +**
Vegetables	❍	❍	❍	❍	❍	❍
Sweets (soda, energy and sports drinks, fruit juice, desserts, fruit snacks, candy chocolate, syrup, etc.)	❍	❍	❍	❍	❍	❍
Fruit	❍	❍	❍	❍	❍	❍
Fats (fried food, foods cooked with butter/oil, hamburgers, chips, cheese, ice cream, etc.)	❍	❍	❍	❍	❍	❍
Meats	❍	❍	❍	❍	❍	❍
Whole grains or whole bread (whole grain bread, rice, pasta, etc.)	❍	❍	❍	❍	❍	❍
Seafood or plant proteins (beans, nuts, soy, etc.)	❍	❍	❍	❍	❍	❍
Dairy	❍	❍	❍	❍	❍	❍
Salty foods (chips, broths, deli meats, instant noodles, etc.)	❍	❍	❍	❍	❍	❍
Refined carbohydrates (white bread, white rice, refined cereal, refined pasta, snack cakes, etc.)	❍	❍	❍	❍	❍	❍

Appendix G

Eating for Emotion Regulation

Whether on purpose or not, do you ever (even if extremely rarely) use EATING to deal with/feel less stress or negative emotion?

- o Yes
- o No

When you feel stress or negative emotion, how often do you use eating to feel less/deal with it (whether on purpose or not)?

- o Very rarely
- o Rarely
- o Sometimes
- o Often
- o Very often

To deal with/feel less stress or negative emotion, do you eat less or more than you usually do (whether on purpose or not)?

- o Much less
- o Somewhat less
- o About the same
- o Somewhat more
- o Much more

Exercise for Emotion Regulation

Whether on purpose or not, do you ever (even if extremely rarely) use EXERCISE to deal with/feel less stress or negative emotion?

- o Yes
- o No

When you feel stress or negative emotion, how often do you use exercise to feel less/deal with it (whether on purpose or not)?

- o Very rarely
- o Rarely
- o Sometimes
- o Often
- o Very often

To deal with/feel less stress or negative emotion, do you exercise less or more than you usually do (whether on purpose or not)?

- o Much less
- o Somewhat less
- o About the same
- o Somewhat more
- o Much more