Individual Differences in Extrinsic Emotion Regulation

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Abstract

As part of shaping their emotional environment, individuals (regulators) actively attempt to manage the emotions of their social partners (targets) using a range of extrinsic emotion regulation strategies. Regulators may use strategies such as situation modification by making changes to the problem situation, attentional deployment by redirecting the attention of the target, or cognitive change strategies by helping the target see the problem from a different perspective. Regulators could also use response modulation strategies and suggest the target does not show their emotion. Additionally, regulators may give the target advice regarding the problem or use empathic listening strategies. A person's use of different extrinsic regulation strategies has the potential to influence the quality of specific social interactions, and in turn the broader quality of their social relationships. Research on the implementation of different extrinsic emotion regulation strategies is, to date, limited. My original contribution to knowledge regarding extrinsic emotion regulation as outlined in this thesis, focuses on the examination of individual differences in extrinsic emotion regulation strategy preference (with a focus on developmental differences between younger and older adults), flexibility in strategy use, and the consideration of associations between strategy use and the more general experience of positive and negative social exchanges.

Firstly, a cross-sectional questionnaire-based study was used to examine developmental differences in extrinsic emotion regulation strategy endorsement. Few clear developmental differences emerged. Older regulators were less likely to endorse situation modification strategies, which could be interpreted as compensating for age-related decline in cognitive resources. However, older regulators selected similar levels of cognitive change strategies (considered cognitively effortful), to younger regulators. This may indicate that older regulators gain prudence through their experiences over the lifespan and implement strategies that are effective and consistent with their goals. Overall, there was a pattern of slightly lower

endorsement of all extrinsic emotion regulation strategies for older targets compared to younger targets. Older targets may have been perceived as less competent compared to younger targets, and less able to effectively implement extrinsic strategies. Further analysis of the questionnaire data revealed that associations between individual strategy endorsement and the quality of social exchanges varied as a function of age. Situation modification was associated with more frequent positive social exchanges, but only for younger regulators, and cognitive change was associated with positive social exchanges, but only for older regulators.

Across three studies, the concept of flexibility in extrinsic emotion regulation was explored. Initially, a binary (low, high) index from the questionnaire study showed no developmental differences, but an association with more frequent positive social exchanges. In a second questionnaire study, size and breadth of repertoire were calculated and breadth of repertoire was also associated with positive social exchanges. A daily diary study recorded extrinsic emotion regulation attempts in everyday situations over a fourteen-day period and allowed the concept of strategy-situation fit to be examined. The use of situation modification and problem solving strategies in situations perceived as being more controllable (indicating better strategy-situation fit), was associated with less frequent negative social exchanges. These studies examined regulator and target factors (developmental differences), situational factors (controllability), strategy preference, flexibility and associations with broader social outcomes, and provide initial evidence of individual differences in extrinsic regulatory processes.

Declaration

I certify that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Ruth E. Jarman

Signed.....  .....

Date.....15 / 2 / 2021 .....

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Publication

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"Let Me Help You Improve Your Mood – It May Be Good For Me Too": Extrinsic Emotion Regulation Strategy Use, Flexibility and Quality of Social Exchanges, Australian Association of Gerontology Conference, Online, November 2020

Author Note

In this thesis, I have used the pronoun “we” instead of “I” in the chapters presenting the research studies (Chapters 2 – 5). Although, I undertook the primary role in the conceptualisation, data collection, analysis and write up of the three studies, I have received valuable guidance, feedback and statistical advice from my supervisor, Associate Professor Tim Windsor. As such, his contribution is recognised in these chapters and as co-author in the publication included in this thesis (Chapter2). I have used the pronouns “I” and “my” in the introduction (Chapter 1) and general discussion (Chapter 6), primarily when describing the outline of these chapters and conclusions from the studies.

Please note that no editor has been used in the preparation of this thesis.

Chapter 1: Introduction: Individual Differences in Extrinsic Emotion Regulation

When dealing with people, remember you are not dealing with creatures of logic, but with creatures of emotion. - Dale Carnegie

Emotion is central to the human experience. However, we do not simply experience emotion passively. Rather, we actively engage in emotion regulation to influence the experience and expression of emotion. We use emotion regulation strategies to increase, maintain or decrease emotion, both in ourselves and in others (Gross, 1998). While there has been considerable focus on the way individuals regulate their own emotions (*intrinsic* emotion regulation), less is known about how individuals regulate the emotions of their social partners (*extrinsic* emotion regulation) (Nozaki & Mikolajczak, 2020). Regulating the emotions of social partners is an important component in social relationships; facilitating positive social interactions and fostering emotional support (Lopes et al., 2004; Lopes et al., 2011; Niven, Garcia, van der Löwe, Holman, & Mansell, 2015). However, little is known about individual differences in extrinsic emotion regulation and whether preferences for using different specific strategies, or tendencies toward the flexible use of strategies are associated with developmental changes or the quality of social relationships more generally. Thus, the focus of this thesis is to add to the body of knowledge concerned with emotion regulation by examining individual differences in extrinsic emotion regulation. In particular, developmental differences between younger and older adults will be examined, as it has been theorised that adults experience improved socio-emotional well-being as they age, which may be due in part to better regulatory skills (Charles & Carstensen, 2010; Urry & Gross, 2010). Therefore, one aim of this thesis is to examine developmental differences in extrinsic emotion regulation and associations with the quality of

social relationships more broadly.

Extrinsic emotion regulation describes a series of processes through which an individual (referred to as the *regulator*) attempts to influence the emotion of a social partner (referred to as the *target*) by selecting and implementing one or more strategies (Reeck, Ames, & Ochsner, 2016).

This thesis will firstly examine developmental differences in extrinsic emotion regulation. I will consider whether the age of regulators or the age of targets influences individual preferences for the use of different extrinsic emotion regulation strategies, and whether the use of different types of strategies is associated with the self-reported experience of positive and negative social exchanges more generally. Additionally, as extrinsic emotion regulation occurs across a wide range of contexts, I will examine flexibility in the use of extrinsic emotion regulation strategies across different situations (using scenario-based and daily-diary methods) and consider associations of flexibility with social relationship quality.

This introductory chapter will foreshadow the primary aims and empirical contributions of this thesis by (a) providing a review of the extant literature concerned with extrinsic emotion regulation, (b) considering how lifespan developmental differences in socio-emotional functioning could contribute to age differences in extrinsic emotion regulation strategy preference, (c) considering possible associations between individual differences in strategy preference and social relationship quality, and (d) discussing flexibility in extrinsic emotion regulation strategy use and its possible implications for social relationship quality.

Overview of Theory and Research Concerned with Extrinsic Emotion Regulation

Extrinsic emotion regulation research has primarily emerged from models of intrinsic emotion regulation. Although there are similarities, the conceptualisation of extrinsic emotion regulation incorporates the dynamic processes that occur between regulator and target (Nozaki & Mikolajczak, 2020; Reeck et al., 2016). Extrinsic emotion regulation can comprise of a range of regulatory actions and there have been several models proposed in the literature

concerned with categorising strategies used in extrinsic regulation. The following section reviews the principal models and conceptual perspectives regarding the regulation of emotion in social partners.

The Process Model of Emotion Regulation

The process model of emotion regulation (Gross, 1998) has provided a foundation for much of the previous research concerned with emotion regulation. Gross defined emotion as *response tendencies* comprising of behavioural, experiential and physiological responses that are elicited by

emotional cues and situations (Gross, 1998). Such emotional response tendencies can be regulated, that is controlled, amplified or suppressed through deliberate action by oneself or others. For example, being criticised in front of peers may cause an individual to feel embarrassed and angry (experiential), they may feel hot (physiological) and look down at the ground (behavioural), however they may control their own emotion by using emotion regulation strategies, for example by generating a neutral expression in their face, or a social partner may attempt to reduce their negative emotion by changing the topic of conversation. In the process model, emotion regulation is differentiated along three dimensions. The emotion being regulated may be positive (e.g. happiness, joy) or negative (e.g. sadness, anger), the regulation may attempt to increase or decrease the emotion, and the regulation may be intrinsic (regulate own emotions) or extrinsic (regulate emotion of others). Gross (1998) proposes that emotion regulation is driven by emotion regulatory goals.

Usually people have pro-hedonic motivation, that is to increase or maintain pleasant emotion and decrease negative emotion. However, there are times when people have contra-hedonic motives and use emotion regulation to suppress positive emotion or increase negative emotion (Gross, 1998).

According to the process model, emotion generation begins with a situation; attention is focused on aspects of the situation, the situation is appraised, and then an emotional

response is generated (Gross, 1998). The process model (Gross, 1998) proposes five families of emotion regulation strategies, targeting each stage of the emotion generation process; *situation selection*, which refers to choosing which situations to engage in or avoid; *situation modification*, which involves making changes to the emotion-eliciting situation in the service of managing emotions; *attentional deployment*, or choosing to focus attention toward or away from certain aspects of the situation; *cognitive change,* characterised by addressing the meaning given to the

situation or reappraising the situation from a different perspective (often used as a means of down- regulating negative emotion); and *response modulation*, which involves suppressing or amplifying the experience and expression of emotion and physiological responses. Situation selection and modification, attentional deployment and cognitive change are referred to as *antecedent-focused*

strategies as they occur early in the emotion regulation process as emotions are being formed. In comparison, response modulation is a *response-focused* strategy, occurring later in the process when the emotion is being experienced (Gross, 1998). In contrast to the four antecedent-focused strategies, response modulation is often considered a less healthy or adaptive strategy (John & Gross, 2004; Little, Gooty, & Williams, 2016). The regulatory strategies specified in Gross's process model can be used in intrinsic emotion regulation, to modify one's own emotional experience, or in extrinsic emotion regulation, as the mechanisms through which a social partner's emotional experience is changed. Although Gross (1998) applies the process model to both intrinsic and extrinsic emotion regulation, most research based on the process model has focused on intrinsic emotion regulation.

Recently, Reeck et al. (2016) elaborated on the process model as it relates to extrinsic regulation by proposing the Social Regulatory Cycle model. The Social Regulatory Cycle encompasses the experience of both the regulator and the target in a series of processing steps. According to the Social Regulatory Cycle, the regulator *identifies* the target's emotion, *evaluates*

the need for regulation, *selects* a strategy, and *implements* the strategy. The target pays *attention* to the regulator's actions, *appraises* their own coping ability and the possible motive of the regulator, and then *responds* to the regulation attempt. To date, we are not aware of studies that have been conducted explicitly within the Social Regulatory Cycle framework.

A contemporary review by Nozaki and Mikolajczak (2020) building on the extended process model (Gross, 2015) and the work by Reeck et al. (2016), reiterated the importance of the identification, selection and implementation stages of the extrinsic emotion regulation process. The authors highlighted how each stage could be affected by a failure on the part of the regulator. The regulator may identify the target's emotion inaccurately, select an inappropriate strategy or implement a strategy ineffectively. Nozaki and Mikolajczak (2020) also proposed three core features of extrinsic emotion regulation. Firstly, extrinsic emotion regulation is a *goal driven* process, whereby the regulator deliberately attempts to change the emotional experience of a target in comparison to more passive processes such as emotional contagion, where individuals may "catch" and experience the same emotion as others around them (Hatfield, Bensman, Thornton, & Rapson, 2014). Secondly, extrinsic emotion regulation goals may involve *increasing or decreasing* emotion in a target. Thirdly, the regulator must *actively implement* a strategy which may involve verbal and non-verbal elements. This distinguishes extrinsic emotion regulation from the construct of empathy, where a social partner understands and shares in the emotion of others, but does not necessarily seek to actively change the nature of a target's emotional experience.

To reiterate, the emphasis in extrinsic emotion regulation is on the regulator's actions, where a regulator actively implements strategies in an attempt to increase, decrease or maintain emotion in a target. For contextual clarity, examples are provided below that illustrate how extrinsic emotion regulation strategies might play out in actual social exchanges. When using *extrinsic situation selection,* a regulator may direct a target toward or away from certain situations in order to influence their emotion. For example, driving the target to a party to expose

them to a situation likely to produce positive emotions, or encouraging the target to leave an event where an argument has broken out as a means of avoiding negative emotions. Additionally, the regulator may use *extrinsic situation modification* to change the situation in an attempt to improve a target's emotion. For example, turning off a sad television show or clearing up a mess left by an angry partner. The regulator may use *extrinsic attentional deployment* to distract a target from negative aspects of a situation or by drawing a target's attention to positive aspects of a situation. For example, distracting the target's gaze away from a distressing scene or pointing out how many supportive cards and messages the target has received in the wake of a loss. The regulator may use *extrinsic cognitive change* by offering a target an alternative way to look at a situation or problem that is eliciting negative emotions. For example, if the target receives criticism on a written report, the regulator may suggest that the target's boss is trying to help the target improve their work because the boss sees potential in the target. The regulator could also use *extrinsic response modulation,* by suggesting that a target does not express their feelings. This could include telling the target to 'put

on a brave face' or 'keep a stiff upper lip'. The process model and classification of strategies has been the foundation for much of the work on intrinsic emotion regulation and will provide a basis for the classification of extrinsic emotion regulation strategies in the present research.

Interpersonal Affect Regulation

An alternative, related model of emotion regulation has been independently proposed using the term *affect regulation* (Parkinson & Totterdell, 1999), and focusing on intrinsic processes, specifically related to reducing negative emotion. This model of affect regulation was developed further by Niven, Totterdell, and Holman (2009), and applied to extrinsic emotion regulation, using the term *controlled interpersonal affect regulation*. Interpersonal affect regulation is defined as a *goal-driven* process focusing on a change in an *emotional state*, and this process is *deliberately* undertaken and occurs in a *social* context (Niven, 2017). This definition of interpersonal affect regulation has similar core characteristics to the process model

(Gross, 2015; Nozaki & Mikolajczak, 2020), however there are differences in the conceptualisation of strategies. Niven et al. (2009) proposed a classification of strategies with *affect improving* and *affect worsening* strategies. Combining this classification with the intrinsic-extrinsic dimension, four categories of strategies were proposed (intrinsic affect-improving, intrinsic affect-worsening, extrinsic affect- improving, extrinsic affect-worsening). However, within these categories there is no differentiation between individual strategies, for example, listening, giving advice, and using humour are all included in the extrinsic affect-improving category (Niven, Totterdell, Stride, & Holman, 2011), which precludes comparisons between different types of strategies. However, Niven et al.'s particular focus on extrinsic strategies means that their perspective identifies additional strategies that are unique to extrinsic emotion regulation in a way that may add further nuance to the process model perspective. For example, listening to a social partner's problems and offering helpful advice in order to reduce their negative emotion are included in their affect-improving classification (Niven et al., 2009; Niven et al., 2011). Listening empathically and validating the emotions of social partners can provide emotional support and help reduce their stress (Jones, 2011; Lepore, Ragan, & Jones, 2000). Also, giving quality advice regarding a problem in a sympathetic way can be used as a strategy to reduce negative emotion in social partners (Niven et al., 2009). Thus, in the present thesis these strategies defined by the interpersonal affect regulation model are used to augment the process model's strategy classifications.

Interpersonal Emotion Management

Research concerned with regulating the emotions of others has also been approached from an organisational psychology perspective and referred to as *emotion management*. Williams (2007) proposed that the emotion regulation strategies from the process model (Gross, 1998) are commonly used in the workplace in interpersonal interactions. It was suggested that understanding and actively managing others' emotions can be instrumental in building and maintaining trust in inter-organisational settings (Williams, 2007). The interpersonal emotion

management model of Williams (2007), was further developed by Little, Kluemper, Nelson, and Gooty (2012), who developed the Interpersonal Emotion Management Scale measure (IEMS). The IEMS included four categories of strategies consistent with the process model (Gross, 1998); situation modification, attentional deployment, cognitive change and response modulation (Little et al., 2012). Research using the IEMS has been conducted across a range of workplace environments, involving
employer-employee relationships (Little et al., 2016), and employee-customer relationships (Little, Kluemper, Nelson, & Ward, 2013).

Studies using the IEMS have reported differences in the associations of individual extrinsic regulation strategies with measures of workplace relationships, behaviour, and well-being. For example, it was found that when supervisors used situation modification and cognitive change with their employees, this was associated with better supervisor-employee relationship, job satisfaction and helpful behaviours in the workplace. On the other hand, using response modulation, was associated with poorer supervisor-employee relationship, lower job satisfaction and fewer helpful behaviours (Little et al., 2016). Similarly, when customer service representatives attempted to resolve customer complaints by using situation modification or cognitive change strategies, positive associations were found with customer's affect, but there were negative associations when they used response modulation (Little et al., 2013). These studies, based on the process model, help inform the present research on extrinsic emotion regulation strategy use and social relationship quality; however, to date the previous research has been constrained to workplace settings.

Emotional Labour

The management of emotion is also central in the concept of *emotional labour* (Troth, Lawrence, Jordan, & Ashkanasy, 2018). Emotional labour involves the regulation of an individual's own emotion in organisational settings in order to meet certain *display rules* required by their organisation, e.g., sales staff being required to display welcoming smiles to customers (Coté, 2005).

Emotional labour may consist of *deep acting*, which involves an individual changing the emotion they feel (e.g., by changing their perspective on the situation) or *surface acting*, where an individual expresses the required emotion despite not feeling it (e.g., faking a smile) (Coté, 2005; Grandey, 2000). The purpose of displaying positive emotion via emotional labour is to meet required display rules (intrinsic regulation) and to influence the emotion of others (extrinsic regulation), e.g., smiling and complimenting a customer may improve a customer's mood, which in turn may increase the likelihood of making a sale or encouraging repeat business (Coté, 2005). Although emotional labour involves managing emotion in oneself or others, it is in order to fulfil organisational expectations and does not encompass other motives and types of emotion regulation (Totterdell & Holman, 2003).

Emotional Co-regulation

Emotional co-regulation is a specific form of emotion regulation that consists of bidirectional processes that influence the emotional experiences, behaviours and physiological reactions in close dyads (Butler & Randall, 2013). Co-regulation begins to occur from birth, with levels of positive affect linked between parents and their infants (Feldman, 2003). Co-regulation also occurs between adult partners in close relationships typically aimed at restoring emotional and physiological balance in the relationship (Butler & Randall, 2013). The bidirectional nature of emotional co-regulation differentiates these processes from extrinsic emotion regulation where there is a deliberate attempt by one partner to influence emotion in the other partner (unidirectional). Research in co-regulation requires studying both partners in the dyad, which was beyond the scope of this thesis.

The Present Research

To date, research studies based on the process model of emotion regulation have primarily focused on intrinsic processes of regulation (Aldao & Nolen-Hoeksema, 2013; Eldesouky & English, 2018; John & Gross, 2004; Sheppes, Catran, & Meiran, 2009). Some studies have examined the interpersonal aspect of the process model, for example in the field of sport (Campo

et al., 2017), in relation to emotional competence (Nozaki, 2015), and as it applies to group-based emotions (Goldenberg, Halperin, van Zomeren, & Gross, 2016). However, the use of extrinsic emotion regulation strategies as proposed by the process model have not been extensively studied in everyday situations. Additionally, extrinsic emotion regulation has been examined from the interpersonal affect regulation perspective, however this approach uses a different classification of strategies compared to research based on the process model (Niven et al., 2009). Research from the interpersonal emotion management perspective has examined the use of process model strategies in extrinsic emotion regulation, however only in the context of workplace environments (Little et al., 2016; Little et al., 2013).

Using the process model (Gross, 1998, 2015) as a foundation, and building on the Social Regulatory Cycle model proposed by Reeck et al. (2016), this thesis will add to the growing research field concerned with extrinsic emotion regulation by examining individual differences in extrinsic emotion regulation in everyday social situations. Concepts from interpersonal affect regulation (Niven et al., 2011) and interpersonal emotion management (Little et al., 2012) will also be incorporated in this work. In the current research, the individual strategies as proposed by the process model (Gross, 1998), specifically, situation modification, attentional deployment, cognitive change and response modulation will be examined. Where relevant, problem solving (giving advice, suggestions to the target) and empathic listening will also be considered. Through systematically examining individuals' use of a range of extrinsic emotion regulation strategies, it will be possible to capture individual differences in strategy preference, and to consider (a) whether individual differences in strategy preference may be a result of normative developmental changes, and (b) whether individual differences in strategy preference are associated with the experience of positive and negative social exchanges more generally.

Developmental Differences in Extrinsic Emotion Regulation

Despite age-related declines in physical and cognitive functioning, many older adults report high levels of emotional well-being (Charles & Carstensen, 2010). As individuals grow

older, they increasingly prioritise their affective well-being and utilise strategies to meet their emotional goals (Carstensen, Mikels, & Mather, 2006). Socioemotional selectivity theory proposes that older adults maintain positive emotional environments by selectively engaging in positive experiences and avoiding negative experiences, prioritising meaningful activities and interacting with close supportive social partners (Carstensen, Isaacowitz, & Charles, 1999). Thus, when examining extrinsic emotion regulation, taking a lifespan developmental perspective may provide a valuable lens through which to study how and why people differ in their use of extrinsic emotion regulation.

It is anticipated that there may be developmental differences in preferences for using different extrinsic emotion regulation strategies. In the field of *intrinsic* emotion regulation, developmental differences have been highlighted, with a number of studies showing that older adults use different intrinsic emotion regulation strategies to younger adults (Blanchard-Fields, Stein, & Watson, 2004; Brummer, Stopa, & Bucks, 2014; Gross et al., 1997; Hofer, Burkhard, & Allemand, 2015; Livingstone & Isaacowitz, 2015; Urry & Gross, 2010). Additionally, there are differences in the way older adults are treated in social interactions, with older adults eliciting different behavioural reactions from their social partners, compared to younger adults (Fingerman, Miller, & Charles, 2008; Miller, Charles, & Fingerman, 2009). Therefore, I will consider whether the age of the regulator and the age of the target are related to preferences for different types of extrinsic emotion regulation strategies.

Developmental Differences Associated with Age of Regulator

Both lifespan developmental theory and previous empirical research point to the possibility that a regulator's age may influence their selection of strategies when regulating another's emotions. There is evidence for changes over the lifespan in the way individuals engage in *intrinsic* emotion regulation, with older adults thought to be generally better at regulating their own emotions and implementing different intrinsic emotion regulation strategies relative to younger adults (Blanchard-Fields et al., 2004; Brummer et al., 2014; Gross et al.,

1997; Hofer et al., 2015; Livingstone & Isaacowitz, 2015; Urry & Gross, 2010). These age differences have been attributed to various developmental processes including increased motivation to promote a positive emotional climate with advancing age (Carstensen, Fung, & Charles, 2003), and the selection of strategies that provide a better fit with resources that are subject to ageing-related changes such as cognitive ability and social support (Opitz, Gross, & Urry, 2012; Urry & Gross, 2010).

There are two primary reasons for anticipating age differences in preferences for *extrinsic* emotion regulation strategies. The first focuses on developmental differences concerned with motivation. Socioemotional selectivity theory proposes that how individuals perceive their future time, influences their focus and determines their priorities around social goals (Carstensen et al., 1999). Social goals generally fall into two categories; knowledge acquisition and emotion regulation. Among younger adults, future time remaining is seen as expansive and open-ended and their focus is on acquiring knowledge and resources that will benefit their future. Younger adults prioritise knowledge acquisition goals, which may include gathering new information, furthering their careers and seeking social acceptance (Carstensen et al., 1999; Lang & Carstensen, 2002).

In contrast, ageing brings with it a growing salience of limits to time remaining, which in turn results in changing motivational priorities. Older adults prioritise present-focused social goals which increases the emphasis on subjective emotional states. Older adults are therefore more motivated to seek out positive emotional environments and meaningful emotional interactions, and to avoid negative emotional experiences (Carstensen et al., 2003; Carstensen et al., 1999; Lang & Carstensen, 2002). One way older adults pursue their emotion regulation goals, is through engaging with social partners that facilitate positive emotional experiences. Older adults tend to have smaller, but more supportive social circles, consisting of well-known and familiar friends and family (Carstensen, 1992; Carstensen et al., 1999; Wrzus, Hänel, Wagner, & Neyer, 2013). Choosing to interact with cherished social partners, provides a positive emotional

environment and can enhance older adults' emotional experiences through emotional contagion (Hatfield et al., 2014).

Correspondingly, avoiding social partners who are a frequent source of stress may also help older adults to avoid negative emotion. Similar to conflict resolution, where mediators can "catch" negative emotion from those involved in disputes (Jones & Bodtker, 2001), regulators may be negatively impacted by targets' negative emotion. Thus, as older adults are motivated to avoid negative emotion, they may be more likely than younger adults to routinely attempt to reduce negative emotion in others around them, particularly when others' negative emotions are inconsistent with their own hedonic goals.

Numerous studies have produced findings consistent with socio-emotional selectivity theory, and the notion that emotion regulation goals change with ageing. For example, Riediger, Schmiedek, Wagner, and Lindenberger (2009) found that older adults were more likely to have pro- hedonic motivation, that is the desire to maintain positive emotion and decrease negative emotion, and less likely to have contra-hedonic motivation (maintain or increase negative emotion), than younger adults. Most of the time, individuals have pro-hedonic motives in emotion regulation, seeking a pleasant emotional state (Riediger et al., 2009; Tamir, 2015). However, there are occasions when individuals may have instrumental motives that are consistent with maintaining or increasing negative emotion if this serves a purpose (Tamir, 2015). Younger adults, who see time as more open ended, are more likely to tolerate negative emotion, if it serves their goals (e.g., the desire to 'maintain the rage' in a conflict situation, or a willingness to tolerate boredom in the service of study), than older adults (Riediger et al., 2009). Thus, older regulators may be more

likely than younger regulators, to pursue goals in the service of pro-hedonic motivation and to use extrinsic emotion regulation as a means of supporting their own and others' hedonic goals.

A second reason for anticipating age differences in preferences for extrinsic emotion regulation strategies is based on perspectives of resource conservation and self-regulation, and

grounded in the Selection, Optimisation and Compensation with Emotion Regulation (SOC-ER) framework. The SOC-ER framework proposes that emotion regulation strategies are selected according to available external and internal resources (Opitz et al., 2012; Urry & Gross, 2010). External resources include social partners that provide support, encourage paying attention to positive aspects of a situation or offer alternative perspectives on problems (Opitz et al., 2012). For example, older adults may prioritise relationships with social partners who optimize their emotional experience and compensate for declining cognitive and physical resources (Carstensen et al., 1999) through support provision. Internal resources include cognitive abilities such as working memory, cognitive control, capacity to change perspective, and control over facial expression (Opitz et al., 2012). As individuals age, many experience a decline in some cognitive abilities, including encoding information, processing speed, and working memory (Hedden & Gabrieli, 2004). These cognitive abilities, referred to as fluid cognitive abilities, are considered to be important in the successful use of certain emotion regulation strategies that rely on cognitive skills (e.g. cognitive reappraisal) (Opitz, Lee, Gross, & Urry, 2014). As well as experiencing a decline in cognitive functioning with age, the perceived effort and costs of engaging in cognitively demanding tasks also increases (Hess, 2014). Consequently, older adults are less motivated to engage in cognitively effortful activities, due to anticipated physical and psychological fatigue (Hess, 2014; Hess, Smith, & Sharifian, 2016). As older adults are more selective in the cognitively demanding activities they engage in, they may also prefer to avoid cognitively effortful strategies to a greater degree than younger adults. If older adults need to compensate for declining cognitive resources, and favour less cognitively taxing *intrinsic* emotion regulation strategies as suggested by Urry and Gross (2010), we might also expect older adults to favour less cognitively taxing *extrinsic* emotion regulation strategies relative to younger adults.

While there is some research on the level of effort needed to employ different strategies of intrinsic emotion regulation (Richards & Gross, 1999, 2000; Troy, Shallcross, Brunner,

Friedman, & Jones, 2018), and on the overall costs of regulating emotion in others (Martínez-Íñigo, Poerio, & Totterdell, 2013), there is no research to our knowledge that has directly examined the levels of
effort required for employing different extrinsic emotion regulation strategies. As this is still an emerging field, our research is exploratory in nature and is in part informed by the existing knowledge base available in the intrinsic emotion regulation literature. There is some evidence to support similarities between intrinsic and extrinsic emotion regulation. In neuroimaging studies, it has been observed that when individuals engage in extrinsic emotion regulation, similar brain areas are activated as in intrinsic emotion regulation, with additional areas linked to empathy also activated (Hallam et al., 2014). Additionally, a high correlation (r = .68) was found between the self-reported use of intrinsic emotion regulation to improve one's own affect and the use of extrinsic emotion regulation to improve others' affect (Niven et al., 2011). These findings provide some indirect evidence to suggest that individuals who more habitually use intrinsic regulatory strategies that are relatively less cognitively taxing (e.g., redirecting attention rather than reappraising a complex problem) might also prefer extrinsic strategies that require less investment of cognitive resources (e.g., redirecting a distressed target's attention rather than talking through ways of reappraising a distressing situation).

Developmental Differences Associated with Age of Target

The age of the target may also influence extrinsic emotion regulatory processes. It is anticipated that regulators of all ages may select and implement different extrinsic emotion regulation strategies for older targets relative to younger targets. When targets are older, rather than younger, they may elicit different behaviours from regulators. According to the social input model, as individuals age, their social partners may become increasingly aware of limits to time remaining in the relationship (Fingerman et al., 2008). As described by socioemotional selectivity theory (Carstensen et al., 1999), when time is perceived as limited, individuals prioritise positive emotional goals, and this extends to treating older adults more kindly when it is perceived that

the time remaining to interact with these social partners is becoming limited (Fingerman et al., 2008).

Consequentially, in social interactions, older adults experience preferential treatment compared to younger adults, with older adults typically less likely to be confronted and more likely to be forgiven for social transgressions (Fingerman et al., 2008; Miller et al., 2009). This preferential treatment by social partners, is posited to be one underlying reason for older adults' relatively more positive social environments, together with older adults' own actions of avoiding negative situations and optimising positive experiences (Luong, Charles, & Fingerman, 2010).

Additionally, older targets may be treated differently to younger targets due to stereotypes about older adults being less competent. Stereotypes concerning older adults are often mixed, with older adults seen as both warm (friendly, good-natured) and low in competence (less capable and intelligent) which can evoke sympathy and pity from their social partners (Cuddy, Norton, & Fiske, 2005; Fiske, Cuddy, Glick, & Xu, 2002). Being seen as warm but less competent leads to different treatment for older adults, for example, more discrimination and exclusion in the workplace (Krings, Sczesny, & Kluge, 2011). Also, older adults are viewed as being less emotionally resilient (flexible, well balanced, able to regulate own emotions), in workplace settings, particularly by younger adults (Rauschenbach, Göritz, & Hertel, 2012).

Thus, drawing on the tenets of the social input model, it seems plausible that processes of socio-emotional selectivity and age stereotypes may influence the extrinsic emotion regulation strategies used by regulators when targets are older. If older targets are perceived as less competent (Cuddy et al., 2005) and less emotionally resilient (Rauschenbach et al., 2012), regulators may select different strategies than they would for younger targets. For example, regulators may use more attentional deployment strategies for older targets. Using attentional deployment to draw an older regulator's attention away from negative aspects and toward positive aspects of a situation may be perceived as a less effortful strategy for older targets to implement (and more consistent with an older target's available cognitive resources) than other

more complex strategies. In contrast, cognitive change strategies, for example suggesting the target take another perspective on a problem, may be seen as requiring more cognitive effort on the part of the target. Reappraising a situation requires higher levels of cognitive effort compared to using attentional deployment strategies, as has been shown in intrinsic emotion regulation literature (Martins, Sheppes, Gross, & Mather, 2016; Sheppes et al., 2009; Strauss, Ossenfort, & Whearty, 2016). Thus, if older targets are seen as being less cognitively able, regulators may be less inclined to use cognitive change strategies when attempting to regulate older targets' emotions.

Associations of Extrinsic Emotion Regulation Strategy Use and Social Exchanges

Research in extrinsic emotion regulation is relatively scarce compared to intrinsic emotion regulation (Nozaki & Mikolajczak, 2020), and little is known regarding how the more or less habitual use of specific extrinsic regulation strategies might relate to social competencies and in turn the quality of social relationships more broadly. As extrinsic emotion regulation processes are centrally important to the way that people relate and interact (Lopes et al., 2011), it is possible that the use of specific extrinsic emotion regulation strategies may have different implications for social relationships.

In the context of *intrinsic* emotion regulation, some strategies have been considered to be generally more adaptive than others. Intrinsic cognitive change strategies (changing the perceived meaning of a situation) are considered adaptive strategies to implement in order to reduce negative emotion, with beneficial affective, cognitive and social outcomes (Aldao, Jazaieri, Goldin, & Gross, 2014; Aldao, Nolen-Hoeksema, & Schweizer, 2010; Gross & John, 2003; John & Gross, 2004). On the other hand, the use of intrinsic response modulation to suppress negative emotion, is considered to be maladaptive, with negative consequences for an individual's affective, cognitive and physiological well-being (Aldao et al., 2014; Aldao et al., 2010; Gross & John, 2003; John & Gross, 2004).

In *extrinsic* emotion regulation research, the associations of specific strategies and the

quality of social relationships has been examined predominantly in workplace settings. Extrinsic situation modification and extrinsic cognitive change strategies were associated with positive outcomes for employees when implemented by supervisors in a range of organisations (Little et al., 2016). It was proposed that when supervisors used these strategies, employees felt that their supervisor was interested in their performance and well-being, and this consequently improved the supervisor-employee relationship and the employees' job satisfaction (Little et al., 2016). On the other hand, when supervisors used response modulation strategies, there were negative effects on the supervisor-employee relationship and job satisfaction. By suggesting that their employees suppress their negative emotion, supervisors may have signalled a lack of interest in helping employees manage negative situations, and consequentially negatively influenced their workplace relationships (Little et al., 2016).

Similar results were found in a study where customer service representatives responded to customer complaints over the phone. The implementation of situation modification or cognitive change strategies when addressing customer complaints reduced the ratings of negative emotion in customers by the end of the phone conversation. In contrast, the use of response modulation strategies increased the customers' negative emotion (Little et al., 2013). When customer service representatives simply told the customers to "calm down" without addressing the problem, this was not effective for customers who were seeking a resolution. Similarly, using attentional deployment to refocus customers' attention also failed to meet customers' expectations and resulted in increases in their negative emotion (Little et al., 2013). However, in contrast to workplace settings, the use of attentional deployment strategies in social interactions more broadly may have a role to play in down-regulating negative emotion, particularly when a problem is low in perceived controllability. Experimental studies suggest that use of attentional deployment can be an effective intrinsic regulation strategy, and is one preferred by older relative to younger adults (Isaacowitz, Toner, Goren, & Wilson, 2008).

Taken together, the existing evidence suggests that regulators who show tendencies toward

using extrinsic regulation strategies considered to be adaptive, might also in general sustain better quality relationships. Targets are likely to respond positively when regulators use situation modification strategies to constructively address a problem being experienced by a target. Similarly, social partners may respond positively to regulators who implement attentional deployment or cognitive change strategies, especially if the problem is out of the target's control and cannot be easily resolved. When negative emotion is effectively reduced in a target, this positive change may be attributed by the target to the social interaction with the regulator, promoting gratitude and increasing the perceived importance and value of this relationship, as described by social exchange theory (Lawler & Thye, 2006). When the target experiences positive emotion within this social relationship, they are likely to seek further interactions with the regulator and reciprocate with behaviour that promotes a positive emotional climate (Lawler, 2001). Therefore, the judicious use of effective extrinsic regulation strategies (situation modification, cognitive change, attentional deployment) may be associated with positive social exchanges more generally.

In contrast, the use of response modulation may be associated with more negative outcomes for social relationships. Response modulation is considered an "unhealthy" strategy in *intrinsic* emotion regulation, as it is less effective for down-regulating negative emotion in the self than other strategies, and has been associated with poorer interpersonal functioning, such as decreased closeness, reduced sharing and lower social support (Gross & John, 2003). Similarly, as shown by research in organisational settings, using extrinsic response modulation increases, rather than decreases, negative emotion in targets (Little et al., 2013) and causes targets to perceive relationships in a more negative light (Little et al., 2016). As using response modulation does not attempt to address the source of negative emotions directly, such strategies can be perceived as conveying a lack of interest and empathy on the part of the regulator. If targets interpret the regulators' use of response modulation in a negative light, they may be more inclined to respond in a negative manner by reciprocating with negative social exchanges (Chen,

Chen, & Portnoy, 2009) or avoiding further interactions with these regulators (Lawler & Thye, 2006). Therefore, regulators who more habitually encourage targets to supress their emotions may more frequently experience negative social exchanges, such as unsympathetic behaviour or neglect from their social partners.

Recognising Context: Flexibility in Extrinsic Emotion Regulation

Studies of intrinsic emotion regulation have revealed individual differences in the extent to which people report habitually using different key strategies from the process model (Gross & John, 2003; John & Gross, 2004). It is anticipated that regulators also differ in their preferences for the use of specific extrinsic emotion regulation strategies. However, there may also be important individual differences in how *flexible* regulators are in the selection and implementation of extrinsic emotion regulation strategies across a range of situations. In a variety of domains, psychological flexibility, or the ability to adapt to different situations, is increasingly considered to be essential to psychological well-being (Kashdan & Rottenberg, 2010). As extrinsic emotion regulation occurs across a wide variety of social situations and with various social partners, the ability to flexibly select and implement different strategies may increase the likelihood of such regulatory efforts being effective. Flexibility in emotion regulation can be operationalised in terms of (1) *how many* strategies a regulator may implement (*size of repertoire*), (2) an individual's tendency to implement a range of *different types* of strategies (*breadth of repertoire*), or (3) the *match* between the demands of a situation and the types of strategies used (*strategy-situation fit)* (Bonanno & Burton, 2013; Eldesouky & English, 2018; Southward, Altenburger, Moss, Cregg, & Cheavens, 2018).

Individuals that have the ability to use a greater number of strategies in regulatory efforts (size of repertoire) may be more likely to be effective across a range of situations, than those with a smaller repertoire (Bonanno & Burton, 2013; Southward et al., 2018). Previous research suggests that in *intrinsic* emotion regulation, individuals that had a greater number of strategies in their repertoire also reported less psychological distress, suggesting that size of repertoire is

linked to more effective intrinsic emotion regulation (Southward et al., 2018). Flexibility in emotion regulation can also be operationalised in terms of a regulator's tendency to implement a range of *different types* of strategies (*breadth of repertoire*). Different classifications of categories of strategies are identified in each of the process model (Gross, 1998), interpersonal affect regulation (Niven et al., 2009) and interpersonal emotion management (Little et al., 2012) perspectives. Compared to size of repertoire, which potentially involves the use of multiple strategies from the same category, the notion of *breadth of repertoire* captures the implementation of strategies from a range of different categories (Bonanno & Burton, 2013; Cheng, Lau, & Chan, 2014; Southward et al., 2018). Thus, a flexible regulator according to this conceptualisation is able to draw on multiple different categories of strategy when required.

The concept of *strategy-situation fit* as an index of flexibility, focuses on the extent to which there is an effective match between the situational context and the types of strategies used. The level of match or "goodness of fit" can be ascertained by comparing the situational context (e.g. how controllable a situation is perceived to be) and the type of strategy chosen (e.g. problem- focused, emotion-focused; Cheng et al., 2014; Haines et al., 2016; Southward et al., 2018; Troy, Shallcross, & Mauss, 2013). Thus, flexible individuals change the emotion regulation strategies they use according to situational demands, whereas non-flexible individuals may habitually use a more limited range of strategies across a range of situations in ways that provide a less ideal fit between situational context and strategy selection.

Flexibility in Extrinsic Emotion Regulation and Social Exchanges

The contention in the present thesis is that regulators who are more adept at managing emotion in their social partners across a range of situations, especially in down-regulating negative emotion, may have better social relationships- operationalised in terms of more frequent positive and less frequent negative social interactions. A flexible approach to selecting and implementing extrinsic strategies may be more effective in reducing negative emotion in social partners. As described by social exchange theory (Lawler & Thye, 2006), interactions that

promote positive emotion are appreciated by social partners and can strengthen relationships and foster positive reciprocal actions (Lawler, 2001).

Greater flexibility in extrinsic emotion regulation may also be associated with higher level socio-emotional skills more generally. The construct of emotional intelligence recognises individual differences in the capacity to effectively manage emotions both in oneself and in others and is considered essential in developing and maintaining good interpersonal relationships (Lopes, Salovey, & Straus, 2003; Petrovici & Dobrescu, 2014). For example, a study of college students (Lopes et al., 2004) reported that participants who ranked higher in managing emotions in self and others, also reported more positive social interactions, with their self-reports reinforced by independent evaluations by two of their close friends. Results of this study also showed that the specific emotional intelligence skill of managing emotions, was associated with more positive and less negative social interactions and more available emotional support (Lopes et al., 2004).

Therefore, it is anticipated that regulators who demonstrate greater flexibility in extrinsic emotion regulation may also possess higher level socio-emotional skills and consequently experience more frequent positive and less frequent negative social exchanges.

The Present Thesis

The research in this thesis examines individual differences in extrinsic emotion regulation. The initial examination of individual differences in extrinsic emotion regulation in this first questionnaire study focused on developmental differences between younger and older adults, reflected in the age of the regulator and age of the target. Although the findings of the first questionnaire study showed some age differences, the findings were modest. Recent work on age differences in intrinsic emotion regulation has found few consistent age differences (Eldesouky & English, 2018; Livingstone & Isaacowitz, 2019), instead suggesting that other moderator variables need to be taken into consideration (Allen & Windsor, 2017). Additionally, examining developmental differences by comparing extreme age groups has been proposed as being a flawed methodology (Freund & Isaacowitz, 2013). These notions are expanded upon in the discussion

chapter. Thus, we altered the focus of the subsequent studies to other salient features of extrinsic emotion regulation processes, specifically the concept of flexibility in the use of extrinsic strategies, over and above the use of specific strategies per se.

There were four broad aims of this thesis in examining individual differences in extrinsic emotion regulation. Initially, I examined whether there were age differences reflected in the strategy preferences of younger and older regulators. Secondly, I aimed to determine whether there were age differences reflected in regulators' preferences in strategy use for younger and older targets. Thirdly, I explored whether individual differences in strategy use were associated with the quality of individuals' social interactions more broadly, by examining associations of extrinsic regulation tendencies with self-reported frequency of positive and negative social exchanges. Fourthly, I examined whether there were individual differences in the flexible use of extrinsic emotion regulation, and whether flexibility was associated with (1) age or (2) the quality of self-reported social exchanges.

This thesis examined individual differences (including age differences) in extrinsic emotion regulation strategy preferences, and the associations of strategy endorsement with self-reported quality of social exchanges across three empirical studies. Firstly, a scenario-based online questionnaire, was used to assess extrinsic emotion regulation among 580 participants aged 18–87 years (M=50.04, SD=18.13). Participants were asked to imagine a younger (18-35) and an older (65+) social partner (in a counterbalanced order) in scenarios where the social partner was experiencing negative emotion, and to indicate the extent to which they would use different strategies to regulate their social partners' emotions. Using the Interpersonal Emotion Management Scale (Little et al., 2012), four strategies from the process model were examined (situation modification, attentional deployment, cognitive change, response modulation). Participants also reported on relationship characteristics and the frequency of positive and negative social exchanges they had experienced over the previous month. Developmental differences in strategy preference, reflected in both the age of the regulator (participant) and age

of the target (social partner in scenario), were the focus of this initial investigation, which is outlined in detail in Chapter 2.

In Chapter 3, the findings of additional analysis of the online questionnaire data are reported. Here, the goal was to examine further whether the endorsement of different extrinsic regulation strategies was associated with positive social exchanges (support, companionship) and negative social exchanges (neglect, criticism). The influence of the age of regulator on the relationships between strategy use and the quality of social exchanges was also examined. In Chapter 3 I also report on an initial examination of flexibility in extrinsic emotion regulation as a potentially important individual difference characteristic that could determine how well people adapt and respond to different social situations. These analyses made use of a proxy measure of extrinsic emotion regulation flexibility based on the number and intensity of the different types of strategies endorsed. The associations between this measure of flexibility, age of regulator, and the quality of social exchanges was also examined. We approached the examination of flexibility in extrinsic emotion regulation in a stepped way across the three studies, beginning with a binary proxy measure (Questionnaire Study 1), then size and breadth of repertoire (Questionnaire Study 2), then progressed to strategy-situation fit (Daily Diary Study 3). This corresponds with the way flexibility has been examined in the intrinsic emotion regulation research (Bonanno & Burton, 2013; Cheng, Lau, & Chan, 2014; Haines et al., 2016; Troy et al., 2013).

Next, in an endeavour to more accurately capture individual differences in extrinsic emotion-regulation flexibility, a revised scenario-based questionnaire was designed and tested. Results of this study are reported in Chapter 4. Two hundred and fifty-four university students aged 17 - 67 (M= 22.2, SD=7.17) provided free responses to three scenarios depicting an upset social partner. The responses were coded into ten categories of strategies, primarily based on the process model of emotion regulation (Gross, 1998). Two indices of flexibility in extrinsic emotion regulation were calculated based on previous research (Bonanno & Burton, 2013;

Eldesouky & English, 2018; Southward et al., 2018), (1) size of repertoire, and (2) breadth of repertoire. The convergent and discriminant validity of these indices was examined by assessing their associations with the conceptually related constructs of emotional intelligence, interpersonal communication competence and friendliness. Associations between flexibility and positive and negative social exchanges were also examined.

In a subsequent and final empirical study, a more nuanced and ecologically valid approach to examining flexibility in extrinsic emotion regulation was taken by considering the "match" between strategy use and situational context (strategy-situation fit). This study is reported in Chapter 5. A daily diary method was used to capture extrinsic emotion regulation in everyday social situations. Once a day for fourteen days, 137 university students aged 17-67 (M = 22.86, SD = 7.89) recorded any extrinsic regulatory attempts and the strategies that they had employed. The controllability (the ability to change or influence events) of each regulatory situation was reported by participants, and links between the controllability of the situation and the strategies used were assessed. Strategy-situation fit was conceptualised as using problem-focused strategies in more controllable situations, and emotion-focused strategies in less controllable situations, and associations between the level of strategy-situation fit and the quality of social exchanges were examined.

Finally, in Chapter 6, the findings in this thesis are discussed, expanding on the factors contributing to individual differences in extrinsic emotion regulation. A conceptual model is proposed, incorporating regulator, target, situational, and strategy factors, with proximal and distal outcomes related to extrinsic emotion regulatory processes. Developmental differences and the influence of relationship variables on strategy selection and associations with social exchanges are discussed. The process of examining flexibility in extrinsic emotion regulation across the three studies is reflected on. In conclusion, the strengths and limitations of the studies, future directions, and the original contribution of these studies have made to the body of knowledge regarding extrinsic emotion regulation are considered.

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Chapter 2: 'Calm Down', 'Cheer Up'; How Age Influences the Way We Manage Emotion in Social Partners

The entirety of this chapter has been published and the article has been reproduced here in full, thus there is some unavoidable repetition: Jarman, R.E., & Windsor, T.D., (2020). "Calm Down,""Cheer Up": How Age Influences the Way We Manage Emotion in Social Partners. *Research on Aging*, *43*(2), 74-84.

Abstract

This study examines how individuals (regulators) manage emotion in their social partners (targets) and whether the age of the regulator or the age of the target influences extrinsic emotion regulation strategy preference. An online questionnaire was used to assess extrinsic emotion regulation among 580 participants aged 18–87 years (M=50.04, SD=18.13). Participants (regulators) indicated the extent to which they would be likely to use different strategies when interacting with a younger or older target who was upset. Results of multi-level modelling showed that older regulators endorsed less use of situation modification than younger regulators, but age differences in regulators' use of other strategies were not significant. After adjustment for relationship-specific covariates, regulators endorsed less use of attentional deployment and cognitive change, for older targets than younger targets. Results are discussed in the context of lifespan perspectives on social behaviour and emotion regulation.

Background

Emotion is central to the human experience, however, experiencing emotion is not simply a passive process. We regularly manage emotions, not only in ourselves but also in our social partners (Gross, 1998). It is the act of regulating others' emotions, referred to as *extrinsic* emotion regulation, that is the focus of the present study. A better understanding of developmental differences in extrinsic emotion regulation is important because managing others' emotions may influence social relationship quality (Niven, Garcia, van der Löwe, Holman, & Mansell, 2015) and serve emotional goals, particularly in later life (Carstensen, Fung, & Charles, 2003). Drawing on research from intrinsic emotion regulation, interpersonal emotion management and lifespan developmental psychology, our aim is to examine whether the age of an individual regulating another's emotions (the *regulator*) or the age of the social partner whose emotions are being regulated (the *target*) is associated with the endorsement of different extrinsic emotion regulation strategies in response to hypothetical scenarios involving the down-regulation of negative emotion in older versus younger social partners.

We base our study on the process model of emotion regulation (Gross, 1998). Reeck, Ames, and Ochsner (2016) have extended and applied the process model to extrinsic emotion regulation, proposing that the regulator firstly *identifies* the emotion in the target, *evaluates* the need for emotion regulation, *selects* and then *implements* an emotion regulation strategy consistent with those specified by Gross. Strategies can increase or decrease positive or negative emotion in a target, depending on the goals of the regulator (Niven, Henkel, & Hanratty, 2018). In the present study, the focus is down-regulation of negative emotion in a target, based on the use of strategies proposed in the process model.

As there is little research on potential age differences in the use of specific extrinsic emotion regulation strategies, the present study represents an important first, albeit preliminary step in better understanding how developmental differences could affect preferences for different extrinsic emotion regulation strategies. Drawing on relevant developmental theory and previous

research conducted in relation to intrinsic emotion regulation, we outline several working hypotheses below, in the context of the regulatory strategies encompassed by Gross's (1998) process model.

Extrinsic Emotion Regulation Strategy Use: Differences According to Age of Regulator

Situation Modification

Situation modification involves the regulator making changes to a situation in an attempt to promote a desired emotional response or to avoid an undesired emotional response in a target; for example, the regulator removing a source of frustration for the target (Reeck et al., 2016). As situation modification calls for the regulator directly intervening, this is often likely to often involve processes of social exchange with the target and/or others contributing to the target's emotional state. It is known that social interactions place demands on cognitive resources such as attention and working memory (Ybarra et al., 2008). Although, there is a paucity of research into the cognitive demands of different extrinsic emotion regulation strategies, we anticipate that situation modification may be cognitively demanding as it requires a regulator to appraise the situation and the target's response, select and implement the strategy, (Reeck et al. 2016). Additionally, extrinsic situation modification requires utilising problem-solving skills, selecting an appropriate option and actively implementing a plan to change aspects of the situation. According to the Selection, Optimisation and Compensation with Emotion Regulation (SOC-ER) framework, emotion regulation strategies are selected according to available external (e.g. supportive friends) and internal resources (e.g. cognitive abilities) (Urry & Gross, 2010). As individuals age, many experience declines in cognitive abilities, including encoding information, processing speed, and working memory (Hedden & Gabrieli, 2004). Because situation modification may often place demands on cognitive resources, older regulators may be less likely to endorse use of situation modification relative to younger regulators, particularly where potentially less demanding strategies such as attentional deployment are available. For example, if a target is upset because they have dropped their popcorn at the movies a regulator could clean

up the mess, go and buy some more popcorn and give it to the target (situation modification). Alternatively, a regulator could distract the target by encouraging them to focus on what is happening in the movie that is playing (attentional deployment). It is reasonable to expect that these situation modification strategies would require more effort on the part of the regulator than attentional deployment strategies.

Additionally, collaborating with a target experiencing negative emotion to modify a situation, may increase the risk of negative emotion in the regulator via emotional contagion (Hatfield, Bensman, Thornton, & Rapson, 2014). Situation modification strategies necessitates the active involvement of the regulator both in prolonged exposure to the negative situation and engagement with an upset target. For example, if a target is upset because their partner has smashed china plates in the kitchen, situation modification could involve going to the target's house, helping clean up the broken china in an attempt to reduce the target's distress. As these actions would require time and involvement, there is an increased likelihood that the regulator may be impacted by the upsetting environment and the distress of the target, resulting in the regulator also becoming distressed through emotional contagion. This contrasts with strategies such as attentional deployment, cognitive change, and response modulation, where a regulator attempts to facilitate a target's regulatory efforts but is likely to play a less direct role in those ongoing regulatory processes once they are underway. Socioemotional selectivity theory (Carstensen, Isaacowitz, & Charles, 1999) proposes that ageing brings with it a growing salience of limits to time remaining, which in turn results in prioritising positive emotional environments and avoiding negative emotional experiences (Carstensen et al., 2003; Carstensen et al., 1999). Thus, it is anticipated that for older regulators, time remaining is more salient which increases the prioritisation of positive events and avoidance of negative events, and thus older regulators may be less likely to endorse extrinsic situation modification strategies than younger regulators, in order to avoid possible prolonged exposure to a negative emotional climate.

Attentional Deployment

In extrinsic emotion regulation, attentional deployment involves the regulator encouraging the target to focus their attention toward or away from certain aspects of a situation, in order to influence the target's emotional experience. In intrinsic emotion regulation, research concerned with the *positivity bias* has traditionally pointed to older adults focusing attention on positive stimuli and away from negative stimuli to regulate their own emotion to a greater degree relative to younger adults (Martins et al., 2018). A meta-analysis of 100 empirical studies that examined age differences in memory and attention for positive and negative stimuli, found a reliable positivity bias in older adults (Reed, Chan, & Mikels, 2014), and older adults have also been found to prefer the use of distraction (an attentional deployment strategy) over positive reappraisal relative to younger adults (Martins et al., 2018; Scheibe, Sheppes, & Staudinger, 2015). However, more recent research using mobile eye-tracking technology, has raised questions as to reliability of age differences in the positivity bias when participants are free to self-select stimuli. Several recent studies have now found no clear age differences in attentional preferences when participants were allowed to freely interact with positive, negative or neutral stimuli (Allard & Kensinger, 2018; Isaacowitz, Livingstone, Richard, & Seif El-Nasr, 2018; Livingstone & Isaacowitz, 2019). In light of these somewhat equivocal findings regarding age preferences for use of intrinsic attentional deployment, and given that, to our knowledge, age differences in the use of extrinsic attentional deployment are yet to be empirically examined, we consider our examination of age differences in preference for *extrinsic* attentional deployment use as exploratory.

Cognitive Change

To implement extrinsic cognitive change strategies, the regulator is required to engage with the target in a way that encourages reappraisal of the situation, often to see it in a more positive light (Gross, 1998). Cognitive change requires the target to remain engaged with the situation or problem, and thus represents an important strategy when the stimulus cannot be

avoided (Reeck et al., 2016). The SOC-ER framework proposes that intrinsic cognitive change strategies are relatively more resource intensive than other strategies, and that older adults may preference alternative strategies such as situation selection as a result of declining cognitive ability (Urry & Gross, 2010). *Intrinsic* cognitive change has been shown to be more cognitively effortful than intrinsic attentional deployment strategies (Martins et al., 2018; Sheppes, Catran, & Meiran, 2009; Strauss, Ossenfort & Whearty, 2016). However, the empirical evidence for age differences in the use of intrinsic cognitive change is mixed. Masumoto, Taishi, and Shiozaki (2016) found that older men used reappraisal (a cognitive change strategy) more often than younger men, however there were no differences between older and younger women. Another study found that older adults were more successful at reducing negative emotion when using positive reappraisal, but less successful when using detached reappraisal (focusing on non-emotional aspects) (Shiota & Levenson, 2009). Other studies have found no difference in the frequency of use of cognitive reappraisal strategies between younger and older adults (Eldesouky & English, 2018; Schirda, Valentine, Aldao, & Prakash, 2016).

We argue that cognitive change strategies are often likely to be cognitively effortful, for both intrinsic and extrinsic emotion regulation. Using extrinsic cognitive change has some similarities to interpersonal mediation, where a mediator helps a person involved in a dispute reappraise a situation to resolve conflict; a process that has been recognised as complex and effortful for the mediator (Jones & Bodtker, 2001). We propose that older regulators are less likely than younger regulators to endorse the use of extrinsic cognitive change as means of down- regulating negative emotion in a social partner, as this strategy may require substantial cognitive investment on the part of the regulator.

Response Modulation

In extrinsic emotion regulation, response modulation strategies consist of the regulator encouraging the target to suppress or change their emotional and physiological response (Gross, 1998; Reeck et al., 2016). Response modulation in *intrinsic* emotion regulation is considered a

less adaptive strategy, with negative personal and social consequences (Butler et al., 2003; John & Gross, 2004). Research related to age differences in *intrinsic* response modulation has shown mixed results (Allen & Windsor, 2017). Some studies have shown no difference between younger and older adults in the frequency of use of response modulation strategies (Eldesouky & English, 2018; Masumoto et al., 2016). Whereas, Schirda et al. (2016) found older adults endorsed maladaptive strategies, including response modulation, less than younger adults. As we are not aware of previous research that has examined age differences in the use of extrinsic response modulation, we regard our examination of age differences in this strategy as exploratory.

Extrinsic Emotion Regulation Strategy Use: Differences According to Age of Target

By definition, a social exchange involves interaction among two or more individuals. Most pertinent to the present study is the fact that social interactions include people of various ages, and the ages of *targets* as well as regulators could influence the types of extrinsic emotion regulatory strategies used. It has been shown that older adults are treated differently in social interactions, with older adults eliciting different behaviour from their social partners, compared to younger adults (Fingerman, Miller, & Charles, 2008; Miller, Charles, & Fingerman, 2009). Consistent with previous research, we anticipate regulators may endorse the use of strategies to different degrees depending on the target's age.

In their review of developmental differences in social relationships, Luong, Charles, and Fingerman (2010) concluded that older adults maintain a positive environment as a result of both their own actions (avoiding negative social interactions, optimising positive social interactions) and the actions of their social partners (older adults treated more positively than younger adults). According to the social input model, older adults are treated more kindly and are less likely to be blamed or confronted by social partners in interpersonal situations (Fingerman & Charles, 2010; Fingerman et al., 2008; Miller et al., 2009). The social input model incorporates socioemotional selectivity theory, in that when social partners are older, there is a perception of less time

remaining to interact with them. Due to the salience of limited time remaining, individuals are more likely to pursue positive experiences and avoid negative interactions with older social partners (Fingerman et al., 2008) and they may perceive there is less potential gain from conflict or confrontation with older social partners (Fingerman & Charles, 2010).

Additionally, stereotypes about older adults being less capable and less able to change, could be a contributing factor. Older adults are often seen as kind and friendly, but less competent than younger adults. In a questionnaire study, older adults were evaluated as being warm (friendly, good-natured), but low in competence (capable, intelligent) and evoked pity and sympathy from participants (Fiske, Cuddy, Glick, & Xu, 2002). Similarly, in workplace settings, older adults have been viewed as being less emotionally resilient (flexible, well balanced, able to regulate own emotions), particularly by younger adults (Rauschenbach, Göritz, & Hertel, 2012).

We contend that processes of socio-emotional selectivity and age stereotypes could also influence the extrinsic emotion regulation strategies used by regulators when targets are older. Specifically, regulators may attempt to decrease negative emotion with extrinsic attentional deployment more in older targets than younger targets, by drawing attention away from negative aspects and toward positive aspects of the situation. Attentional deployment may be explicitly or implicitly regarded by regulators as a less effortful strategy for older targets to implement, as it involves simply redirecting attention rather than engaging in more complex processes of cognitive change (cf. Urry & Gross, 2010).

Extrinsic cognitive change strategies require the regulator to help the target to see the situation from a different perspective in order to reduce the target's negative emotion (Reeck et al., 2016). Reappraising a situation requires higher levels of cognitive effort compared to using attentional deployment strategies, as has been shown in intrinsic emotion regulation literature (Martins et al., 2018; Sheppes et al., 2009; Strauss et al., 2016; Urry & Gross, 2010). Therefore, we argue that extrinsic cognitive change strategies may be selected less for older targets assuming

that older targets may be perceived to be less cognitively competent, compared to younger targets. In the absence of clear evidence that situation modification and response modulation may be perceived as requiring more or less cognitive effort on the part of the target, we did not make specific predictions for these strategies.

We asked participants to indicate their likely use of different extrinsic strategies in relation to an actual social partner. Thus, in addition to developmental differences in strategy preference, variability in responses may have also been a result of idiosyncratic aspects of those specific relationships. In order to account for this variability, consistent with Fingerman et al. (2008), we examined strategy use controlling for several relationship specific characteristics including ratings of closeness and relationship quality (see *Method*).

The Present Study

The aim of the present study was to examine whether the age of the regulator or the age of a target influenced the use of different extrinsic emotion regulation strategies. Participants (regulators) responded to scenarios of hypothetical social interactions where (a) a younger, and (b) an older social partner (targets) were upset. They were asked to imagine interacting with the social partner and to indicate how likely they would be to use different extrinsic emotion regulation strategies. The following hypotheses were proposed,

H1: It was predicted that older regulators would endorse the use of situation modification less than younger regulators.

H2 It was predicted that older regulators would endorse the use of cognitive change less than younger regulators.

H3: It was predicted that when targets were older, regulators would endorse the use of more attentional deployment than when targets were younger.

H4: It was predicted that when targets were older, regulators would endorse the use of less cognitive change than when targets were younger.

Finally, we also considered whether associations of age of regulator with strategy use

varied as a function of target age by examining possible interactions of age of regulator with age of target.

Method

Participants

Participants were US citizens over the age of 18 recruited online by Prime Panels, an online recruitment platform that offers researchers a degree of control over sampling (Litman, Robinson, & Abberbock, 2017) when drawing from their pool of over 30 million online workers worldwide. In the present study, we requested an age distribution that approximated that of the United States adult population, but with some over-sampling of those over the age of 65 to obtain good representation of the oldest-old.

Participants were informed of the nature of the study, then proceeded to the questionnaire online, which indicated their consent. Data from participants who took too little time to complete the survey (less than 5 minutes), failed both of two attention check questions, or specified a social partner outside of the required age ranges were excluded. A total of 279 participants were excluded; there was no significant age difference between those excluded, and those retained for analysis ($t(851)=0.41$, $p=.68$). Participants were remunerated according to their agreement with Prime Panels (US$3-4). Five hundred and eighty participants (56% female) aged 18 – 87 years old ($M=50.04$, $SD=18.13$) were included in the analysis. This project was given approval by the Social and Behavioural Research Ethics Committee of Flinders University (Project No. 8063).

Procedure and Measures

We adapted a scenario-based method that has been used in previous studies concerned with age differences in aspects of social behaviour (Fingerman et al., 2008). To manipulate the age of the target, participants were twice asked to think of a social partner, either aged 18-35 or over 65 years (with order of presentation randomised), participants were then presented with the following

instructions:

Please bring to mind your closest social partner, (but not a romantic partner), aged 18-35 (or over 65) (for example a friend, relative, or work colleague). Now imagine your social partner is upset and angry because a close friend of theirs has said something highly critical and insulting about them.

To assess extrinsic emotion regulation strategy use, participants responded to items adapted from the Interpersonal Emotion Management Scale (IEMS) (Little, Kluemper, Nelson, & Gooty, 2012). This 20-item scale measures situation modification (5 items, e.g., *'I would take action to get rid of the problems this person is having'*), attentional deployment (5 items, e.g., *'I would distract this persons' attention from the aspect of the problem causing their undesired emotions')* , cognitive change (5 items, e.g., *'I would try to influence the emotions of this person by changing how they think about the situation they are in')* and response modulation (5 items, e.g., *'I would encourage this person to keep their emotions to themselves')*, with responses to each item made on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). The IEMS showed good scale reliability for each strategy type in our study (α = .89 - .92), similar to the original validation (α = 82 - .91) by Little et al. (2012).

Control Variables

Consistent with Fingerman et al. (2008), we measured several factors to serve as relationship level control variables. Firstly, participants rated how upset they thought their social partner would be in the situation described on a scale from 0 (*not at all upset)* to 7 (*extremely upset)*. Participants also rated the closeness of their relationship with the target (1 = *not close*, 7 = *very close*) using the Inclusion of Other in the Self Scale (Aron, Aron, & Smollan, 1992). Ratings of the positive and negative quality of the relationship were provided using items from the American Changing Lives Survey that have previously been used for social relationships (Fingerman et al., 2008). Two items measure positive quality (e.g. *'How much is this person willing to listen to you talk about your worries or problems?'*; α = .70) and

two items measure negative quality (e.g. *'How much is this person critical of you or what you do?"*; α = .84), with a 5-point scale 1 (*not at all*) to 5 (*a great deal*).

We controlled for gender of regulator and gender of target, as women and men have different patterns of socioemotional functioning, with women more concerned with interpersonal problem solving (Strough, Berg, & Sansone, 1996) and more reactive to interpersonal tensions (Birditt & Fingerman, 2003) than men. Descriptive Statistics for the main study variables are shown in Table 1, and bivariate correlations among the study variables for older and younger targets are reported in supplementary materials.

Statistical Analysis

We used Linear Mixed Models (Snijders & Bosker, 2012) to accommodate the repeated assessments of strategy ratings made in response to the older and younger targets. Thus, variance in the strategy ratings was modelled at within-person (repeated assessments at Level 1) and between- person (inter-individual differences at level 2) levels by specifying a random intercept. The key independent variables of interest in this study were age of regulator (accounting for between-person variance at Level 2), age of target (accounting for within-person variance at Level 1) and possible cross-level interactions involving age of regulator and age of target. Age of regulator and covariates were grand-mean centred. Gender of regulator was fixed at Level 2, whereas the other covariates including gender of target, level of targets' upset, closeness of relationship, and positive and negative relationship ratings could vary both between individuals (Level 2), and across the two repeated assessments (Level 1).

In Model 1 we entered the age of regulator and the age of target variables. In Model 2 the interaction terms between age of regulator and age of target were entered. In Model 3, the covariates were added (gender of regulator, gender of target, closeness of relationship, level of upset, positive and negative quality of relationship between regulator and target). Where the interaction terms were non-significant in Model 2, they were not included in Model 3. The data were analysed using IBM SPSS Statistics Version 25.

Results

Descriptive statistics for strategies and covariates are presented in Table 1.

Table 1

Means (Standard Deviations) of Strategy Ratings and Covariates by Age of Target

	Younger Target	Older Target	Mean difference (*p* value)
Situation Modification	4.76 (1.25)	4.64 (1.32)	0.12 (.01)
Attentional Deployment	5.36 (1.09)	5.21 (1.14)	0.15 (.002)
Cognitive Change	5.28 (1.14)	5.05 (1.22)	0.23 (<.001)
Response Modulation	2.61 (1.40)	2.58 (1.38)	0.03 (.46)
Covariates			
Positive relationship quality	3.59 (1.03)	3.64 (1.11)	-0.05 (.34)
Negative relationship quality	2.05 (1.03)	2.25 (1.08)	-0.20 (<.001)
Closeness of relationship	4.49 (1.92)	4.18 (2.01)	0.31 (.001)
Perceived level of targets' upset	3.75 (1.05)	3.48 (1.16)	0.27 (<.001)

Note. Strategies measured on a 7-point scale, higher score = higher use. Positive and negative relationship, perceived level of upset scale, 1=not at all - 5=a great deal. Closeness scale, 1 = not close - 7 = very close.

Situation Modification

It was predicted that older regulators would endorse the use of situation modification less than younger regulators (Hypothesis 1). This was supported, with older regulators endorsing situation modification to a lesser degree than younger regulators (see Table 2, Model 1). Situation modification was endorsed significantly less for older targets than younger targets, and the interaction between age of regulator and age of target was not significant (Table 2, Model 2).

When covariates were included (Table 2, Model 3), both the age of regulator and age of target effects were reduced in magnitude, with the age of target effect becoming non-significant. Among the covariates, situation modification was endorsed more when relationships were rated

as closer and more positive, and when targets were rated as more upset. To examine whether the association between age of target and situation modification was accounted for by any particular covariate, we conducted follow-up analysis with inclusion of the covariates to Model 1 one at a time. After adjustment for relationship closeness, the regression coefficient for age of target was reduced in magnitude by 50%, from Model 1(B = -.12, SE = .05, p = .012) to Model 3 (B = -.06, SE = .05, ns). Thus, the age of target effect evident in Model 1 appears to be a result of younger targets (closeness ratings: M=4.49, SD=1.9) being rated as somewhat closer than older targets (closeness ratings: M=4.18, SD=2.0; t(578) = 3.22, p = .001) and participants being more likely to endorse situation modification when targets were rated as closer (see bivariate correlations reported in supplementary materials). The age of target effect was also reduced when controlling for perceived level of target's upset (by 42%). Taken together the results suggest that participants were overall closer and more engaged with younger targets, and these relationship-specific characteristics accounted for the greater endorsement of situation modification in response to younger, relative to older targets.

Attentional Deployment

It was predicted that when targets were older, regulators would endorse the use of attentional deployment more than when targets were younger (Hypothesis 3). This was not supported as attentional deployment was endorsed significantly *less* for older targets than younger targets (see Table 3). Relationships that were rated as closer and more positive elicited higher endorsement of attentional deployment, and when targets were rated as more upset, attentional deployment was endorsed more. Age of regulator was not a significant predictor of the use of attentional deployment and the age of regulator by age of target interaction was non-significant.

Cognitive Change

It was predicted that older regulators would endorse the use of cognitive change less than younger regulators (Hypothesis 2). This was not supported, as age of regulator was not a

significant predictor of cognitive change. It was further predicted that when targets were older, regulators would endorse the use of cognitive change less than when targets were younger (Hypothesis 4). This was supported as age of target was a significant predictor of cognitive change, with cognitive change endorsed less for older targets, than younger targets, (see Table 4). Among the covariates, cognitive change was endorsed more when relationships were rated as closer and more positive, and when targets were rated as more upset. The age of regulator by age of target interaction was non- significant.

Response Modulation

Older regulators used response modulation significantly less than younger regulators, with these associations remaining significant after adjustment for relationship specific covariates (see Table 5). Age of target was a significant predictor of response modulation only after controlling for the combination of covariates, with response modulation endorsed less for older, relative to younger targets. Among the covariates, relationships that were perceived as more negative, elicited stronger endorsement of response modulation.

Table 2

Age of Regulator, Age of Target and Covariates as Predictors of Situation Modification

	Model 1			Model 2			Model 3		
	B	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*
Predictors									
Intercept	4.76	0.05	<.001	4.76	0.05	<.001	4.94	0.07	<.001
Age of regulator	-0.10	0.003	<.001	-0.12	0.003	<.001	-0.006	0.002	.01
Age of target	-0.12	0.05	.012	-0.12	0.05	.012	-0.06	0.05	.21
Age of regulator * Age of target				0.004	0.003	.13	--	--	--
Covariates									
Gender of regulator (female)							-0.34	0.09	<.001
Gender of Target (female)							-0.04	0.06	.53
Closeness of relationship							0.12	0.02	<.001
Positive relationship							0.22	0.04	<.001
Negative relationship							0.04	0.03	.20
Perceived level of upset							0.17	0.03	<.001
Variance components									
Residual	0.69	0.04		0.69	0.04		0.59	0.03	
Intercept	0.93	0.08		0.93	0.08		0.73	0.06	
Pseudo R^2 within person	.01			.01			.15		
Pseudo R^2 between person	.03			.03			.24		

Table 3

Age of Regulator, Age of Target and Covariates as Predictors of Attentional Deployment

	Model 1			Model 2			Model 3		
	B	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*
Predictors									
Intercept	5.36	0.05	<.001	5.36	0.05	<.001	5.33	0.07	<.001
Age of regulator	-0.004	0.002	.09	-0.006	0.003	.02	<0.001	0.002	.90
Age of target	-0.15	0.05	.002	-0.15	0.05	.002	-0.11	0.05	.02
Age of regulator * Age of target				-0.005	0.003	.06	--	--	--
Covariates									
Gender of regulator (female)							0.002	0.08	.98
Gender of Target (female)							0.01	0.06	.88
Closeness of relationship							0.07	0.02	.001
Positive relationship							0.22	0.04	<.001
Negative relationship							0.04	0.03	.19
Perceived level of upset							0.14	0.03	<.001
Variance components									
Residual	0.63	0.04		0.63	0.04		0.58	0.03	
Intercept	0.62	0.06		0.61	0.06		0.48	0.05	
Pseudo R^2 within person	.02			.02			.09		
Pseudo R^2 between person	<.001			<.001			.22		

Table 4

Age of Regulator, Age of Target and Covariates as Predictors of Cognitive Change

	Model 1			Model 2			Model 3		
	B	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*
Predictors									
Intercept	5.28	0.05	<.001	5.28	0.05	<.001	5.22	0.07	<.001
Age of regulator	-0.003	0.002	.26	-0.005	0.003	.06	-0.002	0.002	.31
Age of target	-0.23	0.05	<.001	-0.23	0.05	<.001	-0.19	0.05	<.001
Age of regulator * Age of target				0.005	0.003	.06	--	--	--
Covariates									
Gender of regulator (female)							-0.01	0.08	.87
Gender of Target (female)							0.09	0.06	.15
Closeness of relationship							0.05	0.02	.01
Positive relationship							0.29	0.04	<.001
Negative relationship							0.05	0.03	.12
Perceived level of upset							0.15	0.03	<.001
Variance components									
Residual	0.67	0.04		0.66	0.04		0.56	0.03	
Intercept	0.72	0.06		0.72	0.06		0.60	0.05	
Pseudo R^2 within person	.04			.04			.18		
Pseudo R^2 between person	<.001			<.001			.16		

Table 5

Age of Regulator, Age of Target and Covariates as Predictors of Response Modulation

	Model 1			Model 2			Model 3		
	B	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*
Predictors									
Intercept	2.61	0.06	<.001	2.61	0.06	<.001	3.10	0.08	<.001
Age of regulator	-0.008	0.003	.01	-0.008	0.003	.01	-0.005	0.003	.06
Age of target	-0.03	0.04	.46	-0.03	0.04	.46	-0.08	0.04	.05
Age of regulator * Age of target				0.001	0.002	.80	--	--	--
Covariates									
Gender of regulator (female)							-0.71	0.10	<.001
Gender of Target (female)							-0.11	0.06	.05
Closeness of relationship							-0.04	0.02	.07
Positive relationship							-0.02	0.04	.61
Negative relationship							0.18	0.03	<.001
Perceived level of upset							-0.02	0.03	.41
Variance components									
Residual	0.43	0.03		0.43	0.03		0.44	0.03	
Intercept	1.48	0.10		1.48	0.10		1.21	0.09	
Pseudo R^2 within person	<.001			<.001			<.001		
Pseudo R^2 between person	.01			.01			.19		

Discussion

The aim of the current study was to examine whether age differences in both regulators and targets influenced the endorsement of different extrinsic emotion regulation strategies. This study is the first to our knowledge to assess age differences in extrinsic emotion regulation based on the process model (Gross, 1998).

Influence of Age of Regulator on Strategy Endorsement

We predicted that older regulators would use less situation modification, and less cognitive change than younger regulators. Our findings were mixed. As expected older regulators endorsed less situation modification, however age of regulator was not reliably associated with the endorsement of cognitive change.

The findings of lower endorsement of situation modification by older regulators may reflect that situation modification is a cognitively effortful strategy that older regulators are less likely to use due to declining cognitive abilities (cf. Urry & Gross, 2010). Additionally, situation modification requires prolonged exposure for the regulator to the negative emotion of the target which may influence the regulator's own affect. As older regulators are more likely to have pro-hedonic goals than younger regulators, they may be more motivated to avoid becoming involved in a negative interpersonal interaction with an upset social partner (Carstensen et al., 2003; Riediger, Schmiedek, Wagner, & Lindenberger, 2009).

Despite anticipating that older regulators would endorse the use of cognitive change less than younger regulators as it may require a greater investment of cognitive resources, no age association was evident in our data. This may reflect the mixed findings with age differences in *intrinsic* cognitive change (Eldesouky & English, 2018; Masumoto et al., 2016; Schirda et al., 2016). Although cognitive change is presumed to be cognitively effortful, it is generally considered to be a adaptive strategy. As adults age, they increasingly use more adaptive and less maladaptive intrinsic emotion regulation strategies (John & Gross, 2004). Older adults

appear to learn from their social experiences and become more effective in emotion regulation and interpersonal problem solving (Blanchard-Fields, 2009). Therefore, if older adults know from experience that cognitive change strategies are effective, they may be willing to expend the effort needed to encourage the use of such strategies in their social partners.

Exploratory analysis showed that older age was associated with lower use of response modulation. Extrinsic emotion regulation research in the workplace has shown that using extrinsic response modulation by suggesting to an upset person that they hide their feelings is associated with poorer supervisor-employee relationships and employee-customer relationships (Little, Gooty, & Williams, 2016; Little, Kluemper, Nelson, & Ward, 2013). Older adults may have learned through experience that encouraging response modulation in others is a relatively less effective strategy. It is, however, important to consider the patterns of endorsement of response modulation relative to the other strategies, where all age groups endorsed response modulation to a lesser degree than situation modification, attentional deployment and cognitive change, indicating that generally regulators prefer to use the strategies that are considered to be adaptive.

Taken together, our findings provide only limited evidence for normative age differences in preferences for the use of different extrinsic emotion regulation strategies. It is possible that age differences in extrinsic emotion regulation may be highly context specific. For example, regulators' actions may depend on the type of relationship they have with the target. We found that regulators' preferences for specific extrinsic emotion regulation strategies shared variance with various relationship-specific variables. In particular, the closeness and the positive quality of the relationship between the regulator and target showed substantial overlap with the endorsement of situation modification, attentional deployment and cognitive change, and the negative quality of relationship influenced the endorsement of response modulation. Thus, it is possible that relationship-contextual considerations often override developmental differences in influencing processes of extrinsic emotion regulation. This is consistent with recent reviews of

intrinsic emotion regulation, which have emphasised that contextual factors appear to frequently moderate relationships between age and strategy use (Allen & Windsor, 2017; Schirda et al., 2016).

Influence of Age of Target on Strategy Endorsement

We expected that older targets may be perceived by regulators as being less able to effectively utilise strategies that might be regarded as more cognitively effortful; thus, we anticipated that older targets would elicit the endorsement of more attentional deployment, and less cognitive change from regulators. Cognitive change was endorsed less for older targets, however, contrary to expectations, attentional deployment was also endorsed significantly less for older targets than younger targets. In fact, overall, there was a pattern of less endorsement of all extrinsic strategies for older targets compared to younger targets. Taken together, the findings point to younger regulators being less likely to engage with older targets, and regulators of all ages endorsing the use of extrinsic regulation strategies to marginally lower degrees when targets are older compared to when they are younger. Although we can only speculate based on the available data, there are several possible reasons for our findings.

First, the lower level of endorsement of situation modification, attentional deployment and cognitive change strategies for older targets may be consistent with the perception that older adults are low in competence (less intelligent and capable), although high in warmth (friendly, good- natured) (Fiske et al., 2002). Therefore, if regulators perceived older targets as less cognitively competent they may have considered that strategies may be too effortful for older targets to implement successfully and consequently endorsed less of these strategies when interacting with an older target. Studies in the area of intergenerational communication across the lifespan also provide evidence that younger adults may prefer to avoid social contact with older, relative to younger adults. For example, younger adults who perceive older adults negatively (i.e. patronising, complaining) are likely to avoid communication with older adults (McCann, Dailey, Giles, & Ota, 2005).

Conversely, older adults may also be perceived as being 'older and wiser' and perhaps more capable of regulating their own emotions. This is consistent with research showing that older adults are relatively less reactive to interpersonal stress (Birditt, Fingerman, & Almeida, 2005). Moreover, regulators were asked to think of a close social partner over 65 years old which may have resulted in regulators (particularly younger regulators) selecting family members (e.g. a grandparent) holding a position of respect within the family. Although research on respect for elders in Western societies is scant, recent findings show that 53% of an American sample of young people showed *acquiescent elder respect*, that is respectfully listening and complying with elders' communications (Sung, Kim, & Torres-Gil, 2010). Actively seeking to regulate an elder's emotion could be regarded as implicitly acknowledging limitation or weakness in the target, and may not always be consistent with displaying acquiescent elder respect.

Third, regulators may perceive there is less to gain from regulating the emotions of older targets. Generally, individuals are willing to invest in relationships that are perceived to be beneficial, and they evaluate social partners in terms of *reciprocity potential,* that is the capacity and willingness of the social partner to provide beneficial social or material resources (Vigil, 2007). Individuals show a preference for social partners that have similar reciprocity potential to themselves, and avoid social partners with much lower or higher reciprocity potential (Vigil, 2007). As individuals grow older, they may be seen as having less reciprocity potential due to negative stereotypes of aging (Fiske et al., 2002) and less time remaining in the relationship (Fingerman et al., 2008). Thus, it is possible that regulators perceive older targets as having lower reciprocity potential and are therefore less motivated to invest in relationships (via extrinsic emotion regulation) with older targets, to the same extent as younger targets.

Finally, it is important to emphasise that despite the consistent pattern of lower strategy endorsement for older targets, mean differences were small in magnitude, (*Cohen's d* = 0.01 - 0.19). Additionally, regulators showed a consistent preference for situation modification, attentional deployment and cognitive change strategies, with mean endorsement above the scale

mid-point, over response modulation, irrespective of target age.

Limitations and Future Directions

Using a self-report measure is a limitation, as there may be discrepancies between what participants report they would do and their actual use of strategies in everyday social situations. Future work could incorporate more ecologically valid methods, such as ecological momentary assessment (Haines et al., 2016) or a daily diary study (Lavy & Eshet, 2018) to measure the use of extrinsic emotion regulation in everyday interactions, Additionally, as we only focused on one scenario, this limits the generalisability of our findings. Using a range of scenarios encompassing different situations would improve the robustness of the methodology. In the scenario we used, the target was already upset and this may have limited the opportunity for regulators to endorse situation modification strategies. In our study, we measured the *frequency* of use of extrinsic emotion regulation strategies, future work could incorporate measures of how *effective* the different strategies may be. Further, exploration of the regulators' goals may yield insight into this complex process, as a regulator may be intervening to improve a situation for their own benefit or for the benefit of the target. Additionally, the scenario was designed to elicit strategies from the regulator (participant) in response to a target experiencing negative emotion (upset). However, regulators may use different strategies according to the type of emotion experienced by the target (e.g., anger, sadness, disgust), thus our findings may not be generalisable to other emotions.

Another limitation is that we were not able to assess cognitive ability, which, given the rationale underlying several of our predictions in relation to the SOC-ER model (Urry & Gross, 2010) may be a more important marker of individual differences in extrinsic strategy preferences than age per se. Measuring how regulators perceive older targets (level of competence, respect, wisdom, reciprocity potential) may yield further insight into strategy preferences. Further research could also focus on whether the level of cognitive effort varies between using the different extrinsic emotion regulation strategies (e.g. whether cognitive change is more

cognitively demanding than attentional deployment).

Conclusion

The aim of this study was to examine whether the age of the regulator or the age of the target influenced the endorsement of specific extrinsic emotion regulation strategies. Our results provide important preliminary information on age differences in extrinsic emotion regulation. Our mixed findings in regard to age of regulator may indicate that age differences in extrinsic emotion regulation may be context specific, and possibly influenced by relationship variables. Overall, regulators showed a preference for more adaptive strategies when attempting to regulate emotion in their social partners. In regard to the age of target, we found regulators overall endorsed less strategy use for older targets than for younger targets, which may reflect how older targets are perceived by regulators.

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Chapter 3: 'Let Me Help You Improve Your Mood – It May Be Good For Me Too': Extrinsic Emotion Regulation Strategy Use, Flexibility and Quality of Social Exchanges

Background

Managing the emotions of social partners through extrinsic emotion regulation is an important component of social behaviour and contributes to the maintenance of relationships. Effective extrinsic emotion regulation is associated with better quality social relationships, facilitates positive social interactions and fosters emotional support (Lopes et al., 2011; Lopes, Salovey, Côté, Beers, & Petty, 2005; Niven, Garcia, van der Löwe, Holman, & Mansell, 2015). In extrinsic emotion regulation, habitual use of certain strategies has previously been regarded as either typically *adaptive,* facilitating positive social outcomes (e.g., use of situation modification, cognitive change) or typically *maladaptive*, resulting in negative social outcomes (e.g., use of response modulation; (Little, Gooty, & Williams, 2016; Little, Kluemper, Nelson, & Ward, 2013).

Parallels are evident between the developing research area concerned with extrinsic emotion regulation, and the more established field of work on intrinsic emotion regulation, which focuses on how individuals regulate their own emotions (Gross, 1998). In intrinsic emotion regulation, certain strategies have generally been considered to be *healthy* (associated with positive affective, cognitive and social outcomes) or *unhealthy*, (negative associations with affect, well-being and social functioning) (John & Gross, 2004). However, an emerging picture in research on intrinsic emotion regulation now emphasises *flexibility* in strategy use as key for optimal adaptation (Aldao, Sheppes, & Gross, 2015; Bonanno & Burton, 2013). Our initial aim in the present study is to examine whether the use of specific extrinsic emotion regulation strategies and/or the flexible use of extrinsic emotion regulation strategies (as indicated by endorsement of

multiple strategies in response to a hypothetical interaction) in a lifespan sample is associated with positive social exchanges and negative social exchanges.

It has been theorised that as individuals age they become more adept at managing their own emotions (Birditt & Fingerman, 2005; Orgeta, 2009), and through experience, develop high-level skills in managing interpersonal problems (Blanchard-Fields, Mienaltowski, & Seay, 2007). It is therefore possible that older adults may also become more adept at managing emotion in their social partners by drawing on a range of regulatory strategies, and judiciously applying those strategies in ways that are consistent with their regulatory goals. This in turn may contribute to the high levels of satisfaction with social relationships typically reported by older, relative to younger adults (Luong, Charles, & Fingerman, 2010). Therefore, our second aim is to examine whether there are differences between younger and older individuals in the relationships between the specific regulation strategies they endorse (including flexibility in endorsement of strategies) and their self- reported quality of social exchanges.

Extrinsic Emotion Regulation and Social Relationship Quality

Extrinsic emotion regulation is a deliberate process where an individual (the *regulator*) attempts to manage emotion in a social partner (the *target*). Consistent with recent conceptual perspectives (Reeck, Ames, & Ochsner, 2016), we base our study of extrinsic emotion regulation strategy use on the process model of emotion regulation (Gross, 1998), which proposes five families of emotion regulation strategies: *situation selection*, or choosing which situations to engage in or avoid; *situation modification*, which involves making changes to the situation in the service of managing emotions; *attentional deployment*, or choosing to focus attention toward or away from certain aspects of the situation; *cognitive change,* characterised by addressing the meaning given to the situation or reappraising the situation from a different perspective; and *response modulation*, which involves suppressing or amplifying the experience and expression of emotion and physiological responses. The regulatory strategies specified in Gross's process model can be used to modify one's own emotional experience (intrinsic emotion regulation), or in

extrinsic emotion regulation, as the mechanisms through which a social partner's emotional experience is regulated. The emphasis in extrinsic emotion regulation is on the regulator's actions, where a regulator firstly identifies the emotion in the target, evaluates the need for extrinsic emotion regulation and then selects and actively implements strategies in an attempt to increase, decrease or maintain emotion in a target (Reeck et al., 2016).

Some emotion regulation strategies have been considered to be more adaptive than others. In the context of *intrinsic* emotion regulation, cognitive reappraisal strategies (changing the perceived meaning of a situation) are considered an adaptive response to negative emotion, typically offering beneficial effects for the individual's affect, cognition and social behaviour (Aldao, Jazaieri, Goldin, & Gross, 2014; Aldao, Nolen-Hoeksema, & Schweizer, 2010; Gross & John, 2003; John & Gross, 2004). On the other hand, response modulation, or the suppression of emotion, is considered a maladaptive strategy, with negative consequences for an individual's affective, cognitive and physiological well-being (Aldao et al., 2014; Aldao et al., 2010; Gross & John, 2003; John & Gross, 2004).

The links between use of specific *extrinsic* emotion regulation strategies and the quality of social relationships has previously been examined predominantly in organisational settings. In a recent study, relationships between supervisors and employees in a range of organisations were positively influenced when extrinsic situation modification and/or extrinsic cognitive change strategies were implemented by supervisors (Little et al., 2016). It was proposed that when supervisors used these strategies, it indicated to the employee that their supervisor was interested in their performance and well-being (Little et al., 2016). In contrast, when supervisors used response modulation strategies, suggesting that their employees suppress their negative emotion, there was a negative effect on the supervisor-employee relationship. It was suggested that the use of response modulation strategies may have signalled a lack of interest by the supervisor in helping the employee manage negative situations (Little et al., 2016).

A separate study of customer service representatives responding to customer complaints

over the phone showed similar results. Evaluators rated customers' positive and negative emotion at the beginning and end of the phone conversation. When customer service representatives applied situation modification or cognitive change strategies when addressing customer complaints, customers experienced a reduction in negative emotion by the end of the phone call (Little et al., 2013). On the other hand, when customer service representatives used response modulation strategies, by suggesting that upset customers 'calm down,' there was an increase in the customers' negative emotion. Furthermore, when customer service representatives used attentional deployment strategies, this also increased the customers' negative emotion (Little et al., 2013). However, as customers were seeking resolution to a specific problem, it is perhaps not surprising that attempting to redirect their attention did not satisfy the customers' goals. The use of extrinsic attentional deployment beyond workplace settings, may have a positive effect on social outcomes if it is effective in reducing negative emotion in the target and is congruent with the target's goals (e.g., reducing negative feelings in the moment rather than solving a specific problem). Indeed, research indicates that attentional deployment is a strategy used by older adults to maintain the quality of their own emotional experience in the here-and-now (Isaacowitz, Toner, Goren, & Wilson, 2008).

Taken together, the existing evidence suggests that individuals who show tendencies toward the greater habitual use of adaptive extrinsic regulation strategies might also in general sustain better quality relationships. Targets are likely to respond positively when regulators attempt to improve aspects of a problem situation or try to change the target's perspective regarding the problem in a constructive way. Cognitive change strategies may be beneficial in reducing negative emotion, especially if the problem is out of the target's control and cannot be easily resolved. Social exchange theory posits that when an interaction between social partners generates positive emotion, the positive emotion is attributed to the social interaction with that social partner and increases the importance and value of the relationship (Lawler & Thye, 2006). Therefore, in extrinsic emotion regulation where a regulator improves the emotional experience

of a target, the social bond between the regulator and target may be strengthened.

Additionally, when an individual experiences positive emotion within a social relationship, they seek to repeat this experience through further interactions with that social partner (Lawler, 2001). Also, positive social exchanges are usually reciprocated, fostering a supportive, mutually beneficial relationship (Lawler, 2001). In general, individuals respond in kind, with positive exchanges reciprocated with positive actions and negative exchanges reciprocated with negative actions (Chen, Chen, & Portnoy, 2009). Therefore, we contend that the more habitual use of effective extrinsic regulation strategies (situation modification, attentional deployment, cognitive change,) is likely to be associated with more frequent positive social exchanges.

In contrast, we expect that relatively more habitual use of extrinsic response modulation may have more negative outcomes for social relationships. Using response modulation does not involve attempts to address the situation giving rise to a target's emotions, and may signal a lack of interest or empathy, which may (1) increase, rather than decrease, negative emotion in the target (Little et al., 2013) and (2) cause the target to perceive the relationship in a more negative light (Little et al., 2016). As reciprocity also applies to negative exchanges (Chen et al., 2009), if a target interprets a regulator's efforts toward response modulation in a negative way, this is likely to lead to negative responses from the target. Further, when negative emotion is experienced in a social interaction it is attributed to that social partner, leading to detachment and avoidance of further interactions with them (Lawler & Thye, 2006). Therefore, we expected that regulators who more habitually encourage targets to supress their emotions may more frequently experience negative social exchanges, such as unsympathetic behaviour or neglect from their social partners.

Implications of Flexibility in Extrinsic Emotion Regulation for Social Relationship Quality

Although we expected the habitual use of strategies considered to be adaptive (situation modification, attentional deployment, cognitive change) to be associated with self-reported quality of social relationships, the flexible use of these strategies in accordance with contextual

demands may be characteristic of adaptive regulatory skills over and above preferences towards the use of any individual strategy. As extrinsic emotion regulation comprises of dynamic, bidirectional processes between the regulator and target (Reeck et al., 2016), and occurs across varying environments (e.g., home, workplace, public places), and with different types of social partners (e.g., family, friends, work colleagues), it follows that flexibility in the implementation of extrinsic emotion regulation strategies across various situations may be more important for relationships than the use of any individual strategy- even when that strategy is generally regarded as effective.

Flexibility in emotion regulation can be operationalised in terms of an individual's tendency to implement a range of different types of strategies (*breadth of repertoire*) or the match between the demands of a situation and the types of strategies used (*strategy-situation fit)* (Bonanno & Burton, 2013; Cheng, Lau, & Chan, 2014). In relation to *intrinsic* emotion regulation, it has been proposed that the consistent use of any single strategy across different situations may not be adaptive, and that both a broad repertoire of strategies and sensitivity to situational contexts may be more effective (Aldao et al., 2015; Bonanno & Burton, 2013; Southward, Altenburger, Moss, Cregg, & Cheavens, 2018). In intrinsic emotion regulation, those who implemented a wider range of strategies in attempts to regulate their emotions, reported lower levels of negative affect than those who implemented a narrower range of strategies (Blanke et al., 2019). Therefore, a broad repertoire that facilitates the implementation of a wider range of extrinsic emotion regulation strategies in a flexible way, may be more effective for achieving regulatory goals than a more habitual reliance on a narrower range of strategies.

When a regulator can effectively reduce negative emotion in a target across a variety of situations, the target is likely to feel gratitude, value the relationship and seek out further interaction with the regulator (Lawler & Thye, 2006). Further, the relationship between regulator and target is strengthened and the likelihood of reciprocal positive action is increased, as described by social exchange theory (Lawler, 2001; Lawler & Thye, 2006). Regulators that are more flexible

in implementing extrinsic emotion regulation strategies may be more effective in down-regulating negative emotion in their social partners, and consequentially experience more reciprocal positive social interactions than regulators that show lower levels of flexibility.

In the current study, we used strategy responses to hypothetical interactions depicting the regulation of emotions of a younger and an older social partner, to construct a proxy measure of habitual extrinsic emotion regulation flexibility based on the *breadth of repertoire* of strategy endorsement (see method). We expected that regulators that showed more extrinsic emotion regulation flexibility would also report more frequent positive social exchanges.

Associations of Age and Flexibility in Extrinsic Emotion Regulation

As there is little research on age related differences in extrinsic emotion regulation, we draw on research regarding how individuals regulate their own emotions and how they solve everyday problems, to inform our analysis of age differences in extrinsic regulatory flexibility.

In the domain of problem solving, increasing age has been associated with increasing flexibility, with older adults more likely to implement combinations of a diverse range of problem- solving strategies (breadth of repertoire), particularly in social conflict situations (Blanchard-Fields, 2009; Mienaltowski, 2011). When asked to generate problem solving solutions for everyday problems, older adults generated more solutions than younger adults, when problems were relevant to older persons (Artistico, Cervone, & Pezzuti, 2003). However, older adults generated less solutions than younger adults when problems were more relevant to younger adults, suggesting that situational context is important when assessing problem solving abilities. Older adults also showed more strategy-situation fit flexibility in selecting problem-focused strategies for instrumental problems and emotion-focused strategies for interpersonal problems (Blanchard-Fields et al., 2007). Additionally, Zimmer-Gembeck et al. (2018) found middle-aged adults were more likely than younger adults to use several coping strategies (breadth of repertoire) and more likely to ‘match’ strategies to each situation (strategy-situation fit), however these findings are somewhat limited as older adults were not represented in their sample

(age range 17 – 56). Increasing age has also been associated with greater flexibility in *intrinsic* emotion regulation, with older adults drawing on a broader repertoire of strategies and selecting more strategies appropriate to situational contexts than younger adults (Blanchard-Fields, 2009).

Although some emerging studies have reported no age advantages in the flexible use of intrinsic emotion regulation strategies, this may in part reflect measurement issues in the assessment of flexibility. For example, a study using an experience sampling method found few age-related differences in flexibility (Benson et al., 2019), however only the use of one adaptive strategy (cognitive change) and one maladaptive strategy (response modulation) were examined. This limits the ability to capture the use of a broad repertoire of strategies or strategy- situation fit. Additionally, a daily diary study comparing younger, middle-aged and older adults' flexibility (breadth of repertoire) in intrinsic emotion regulation strategies showed no significant age differences (Eldesouky & English, 2018). However, the authors argue that older adults may have learned through experience which strategies are most effective in certain situations, and therefore implement the most effective strategy rather than a range of strategies. Thus, although older adults showed lower breadth of repertoire, it was hypothesised that older adults may have demonstrated greater strategy-situation fit (which was not assessed). Additionally, the researchers suggested that older adults' environments are more consistent and stable than younger adults, and therefore older adults may require less flexibility on a day-to-day basis, despite having the capacity to respond flexibly when required. In the present study we avoided potential confounding resulting from the typically different day-to-day environments experienced by younger and older adults, by eliciting extrinsic emotion-regulation responses from younger and older participants (regulators) in relation to the same hypothetical interactions.

The Present Study

The aim of the current study was to extend the examination of associations between extrinsic emotion regulation strategy endorsement and the quality of social interactions beyond specific workplace settings (Little et al., 2016; Little et al., 2013), to the more habitual use of

regulatory strategies in everyday social situations. The quality of social interactions was measured by self-reported positive social exchanges (support, companionship) and negative social exchanges (failure to provide help, rejection). We expected that the strategies which have previously been shown to correlate with positive aspects of social relationships (situation modification, attentional deployment, cognitive change; Little et al., 2016; Little et al., 2013) would be positively associated with positive social exchanges. We also expected that participants (regulators) who endorsed greater use of response modulation would report more frequent negative exchanges.

H1: There will be a positive correlation between situation modification and positive social exchanges

H2: There will be a positive correlation between attentional deployment and positive social exchanges

H3: There will be a positive correlation between cognitive change and positive social exchanges

H4: There will be a positive correlation between response modulation and negative social exchanges

Additionally, we will explore possible age interactions with strategy use in predicting positive and negative exchanges. According to the social input model (Fingerman, Miller, & Charles, 2008), as people age, their social partners of all ages tend to treat them more favourably. This preferential treatment is believed to result from motivational and cultural factors including a perception that there is less time remaining to interact with older adults, leading to increased likelihood for social partners to minimise conflict with older adults and to forgive older adults for social transgressions (Fingerman et al., 2008; Miller, Charles, & Fingerman, 2009).

The social input model implies that with increasing age, the quality of social relationships gradually becomes less dependent on an individual's interpersonal skills (including extrinsic emotion regulation skills), and more dependent on the motivation and behaviour of their network

members. Thus, we tentatively predict that

H5: any associations of individuals' use of specific extrinsic regulation strategies with social network quality will be stronger among younger, relative to older regulators

In regard to flexibility, it was anticipated that participants who scored higher on an index calculated to capture flexibility in strategy use (breadth of repertoire) would also report more frequent experience of positive social exchanges. Additionally, we expected that older regulators would show more flexibility (breadth of repertoire) in extrinsic emotion regulation strategy use, consistent with older adults' higher flexibility in intrinsic emotion regulation and problem solving (Blanchard-Fields, Chen, & Norris, 1997; Watson & Blanchard-Fields, 1998).

H6: There will be a positive correlation between flexibility and positive social exchanges

H7: Older regulators will show greater breadth of repertoire than younger regulators

Method

Participants

Five hundred and eighty participants (56% female) aged 18 – 87 years old (*M*=50.04, *SD*=18.13) were recruited through Prime Panels, an online recruitment platform that offersresearchers a degree of control over sampling (Litman, Robinson, & Abberbock, 2017) when drawing from their pool of over 30 million online workers worldwide. In the present study, we requested an age distribution that approximated that of the United States adult population, but with some over-sampling of those over the age of 65 to obtain good representation of the oldest-old.

Participants were informed of the nature of the study, then proceeded to the questionnaire online, which indicated their consent. Data from participants who took too little time to complete the survey (less than 5 minutes), failed both of two attention check questions, or specified a social partner outside of the required age ranges were excluded. There was no significant age difference between those excluded (N = 279), and those retained for analysis (N = 580) (t(851)=0.41, p=.68). Participants were remunerated according to their agreement with Prime Panels (US$3-4). This project was given approval by the Social and Behavioural

Research Ethics Committee of Flinders University (Project No. 8063). This study extends on an initial analysis of these data reported in Jarman and Windsor (2020).

Procedure and Measures

Demographics

Participants self-reported their age, gender (coded 0 = male, 1 = female) and level of education (coded 1 = did not complete high school, 2 = completed high school, 3 = trade certificate or equivalent, 4 = bachelor's degree, 5 = postgraduate degree).

Extrinsic Emotion Regulation

Participants were asked to think of two social partners, one aged 18-35, and another aged over 65 years, and were presented with the following instructions in relation to each partner in counterbalanced order:

> *Please bring to mind your closest social partner, (but not a romantic partner), aged 18- 35 (or over 65) (for example a friend, relative, or work colleague). Now imagine your social partner is upset and angry because a close friend of theirs has said something highly critical and insulting about them.*

To assess extrinsic emotion regulation strategy use, participants responded to items adapted from the Interpersonal Emotion Management Scale (IEMS) (Little, Kluemper, Nelson, & Gooty, 2012) for both the younger and older social partner (targets). This 20-item scale measures situation modification (5 items, e.g., *'I would take action to get rid of the problems this person is having'*), attentional deployment (5 items, e.g., *'I would distract this persons' attention from the aspect of the problem causing their undesired emotions'*), cognitive change (5 items, e.g., *'I would try to influence the emotions of this person by changing how they think about the situation they are in'*), and response modulation (5 items, e.g., *'I would encourage this person to keep their emotions to themselves'*), with responses to each item made on a 7-point scale (*1 =*

strongly disagree, 7 = *strongly agree*). The IEMS showed good scale reliability for each strategy type in our study (α = .89 - .92), similar to the original validation (α = 82 - .91) by Little et al. (2012).

Social Exchanges

To assess the quality of social exchanges, the Positive and Negative Social Exchange measure (PANSE) was used (Newsom, Rook, Nishishiba, Sorkin, & Mahan, 2005). Participants reported how often in the past month (*1 = never, 5 = very often*) they had experienced both positive social exchanges (12 items measuring informational support, instrumental support, emotional support and companionship) and negative social exchanges (12 items measuring unwanted advice or intrusion, failure to provide help, unsympathetic or insensitive behaviour, rejection or neglect). The PANSE showed good scale reliability in our study (positive social exchanges α = .93, negative social exchanges α = .93).

Extrinsic Emotion Regulation Flexibility

We calculated a flexibility index based on the range of different types of putatively adaptive strategies used (breadth of repertoire) that would categorise regulators into *low flexibility* (primarily endorsing use of one, or indicating low use of all types of strategies) or *high flexibility* (high endorsement of two or three types of strategies). For examples of similar approaches to the assessment of flexibility in intrinsic emotion regulation and coping see Eldesouky and English (2018), Southward et al. (2018), Artistico et al. (2003).

Firstly, we calculated the mean level of three antecedent strategies (situation modification, attentional deployment, cognitive change) collapsed across condition (younger and older target). The original scale for endorsing each strategy had 7 points, with 1 = strongly disagree, 5 = somewhat agree, 7 = strongly agree. Therefore, for each strategy, scores between 0 and 4.9 were coded as 0, indicating strategy was only endorsed up to a moderate level, and scores of 5 - 7 were coded as 1, indicating endorsement of strategy use. Next, a flexibility variable was

created with two levels indicating the number of different types of strategies used by regulators, thus endorsing 0-1 strategies (coded as 0) indicated *low flexibility* and endorsing 2-3 strategies (coded as 1) indicated *high flexibility*.

Control variables

As we asked participants to think of a specific social partner, their responses may have reflected individual characteristics of that specific relationship and not their more general strategy use. Therefore, we measured several factors to serve as relationship level controls. Firstly, participants rated how upset they thought their social partner would be in the situation described on a scale from 0 (*not at all upset)* to 7 (*extremely upset)*. Participants also rated the closeness of their relationship with the target (1 = *not close*, 7 = *very close*) using the Inclusion of Other in the Self Scale (Aron, Aron, & Smollan, 1992). Ratings of the positive and negative quality of the relationship were provided using items from the American Changing Lives Survey that have previously been used in similar research on social relationships (Fingerman et al., 2008). Two items measure positive quality (e.g. *'How much is this person willing to listen to you talk about your worries or problems?'*) and two items measure negative quality (e.g. *'How much is this person critical of you or what you do?"*), with a 5-point scale 1 (*not at all*) to 5 (*a great deal*). This measure showed good reliability in our sample (positive α = .70, negative α = .84).

Statistical Analysis and Data Considerations

Multiple regression was used to examine the individual extrinsic emotion regulation strategies and flexibility of strategy use as predictors of both positive and negative social exchanges. In the first model we controlled for the covariates (mean centred), age and gender of regulator, perceived level of targets' upset, closeness of relationship, positive and negative quality of relationship between regulators and targets. We controlled for gender (coded 0 = male, 1 = female), as women and men have different patterns of socioemotional functioning, with women more concerned with interpersonal problem solving (Strough, Berg, & Sansone, 1996)

and more reactive to interpersonal tensions (K. S. Birditt & Fingerman, 2003) than men. Women have also been found to engage in higher overall *intrinsic* emotion regulation strategy use than men (Blanchard-Fields, Stein, & Watson, 2004). In Model 2 we added the extrinsic emotion regulation strategies (situation modification, attentional deployment, cognitive change, response modulation). Interaction terms between age and strategies were computed, with non-significant interaction terms progressively excluded from the models and significant interaction terms retained in Model 3. The data were analysed using IBM SPSS Statistics Version 25 and the PROCESS macro to plot the interactions (Hayes, 2017).

Results

The aim of this study was to examine whether there were associations between extrinsic emotion regulation strategies, including the flexible use of these strategies, and positive and negative social exchanges. Descriptive statistics are presented in Table 1.

Table 1

Descriptive Statistics of Strategies and Social Exchanges

	Mean	Standard Deviation
Situation Modification	4.70	1.14
Attentional Deployment	5.29	0.97
Cognitive Change	5.16	1.03
Response Modulation	2.60	1.31
Positive Social Exchanges	2.07	0.85
Negative Social Exchanges	0.93	0.83
Relationship Closeness	6.42	2.49
Target level of upset	5.35	1.42
Positive Relationship	5.43	1.33
Negative Relationship	3.27	1.41
Age	50.04	18.13
Gender	56% Female	
Flexibility	60.6% High flexibility	

Note: Strategy range 1-7, social exchanges range 0-4, relationship closeness range 1-7, level of upset, positive and negative quality of relationship range 1-5.

The correlations between extrinsic emotion regulation strategies, flexibility, age of regulator, positive and negative social exchanges, and covariates are shown in Table 2. The putatively adaptive strategies, situation modification, attentional deployment, and cognitive change, were highly correlated with each other and each were associated with more frequent positive social exchanges. Additionally, our flexibility index was also positively correlated with positive social exchanges. As expected, response modulation was associated with more frequent negative social exchanges. Situation modification and cognitive change were weakly positively correlated with negative social exchanges.

Table 2

Correlations Between Strategies, Flexibility, Positive Social Exchanges, Negative Social Exchanges and Covariates

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age	-	-.03	**-.17****	-.07	-.05	**-.10***	-.06	**-.19****	**-.40****	**-.12****	.02	**-.22****	**-.38****
2. Gender		-	**-.08***	.07	.07	**-.29****	.01	**.13****	-.02	**.09***	**.18****	**.10***	-.02
3. Situation Modification			-	**.65****	**.66****	**.16****	.63**	**.30****	**.10****	**.38****	**.16****	**.37****	**.20****
4. Attentional Deployment				-	**.73****	-.03	.68**	**.32****	.06	**.33****	**.25****	**.36****	**.09***
5. Cognitive Change					-	.02	.70**	**.31****	**.09***	**.31****	**.23****	**.35****	**.12****
6. Response Modulation						-	.04	.03	**.30****	-.05	-.06	**-.11***	**.33****
7. Flexibility							-	**.28****	.08	**.26****	**.21****	**.30****	**.14****
8. Positive Exchanges								**-**	**.13****	**.32****	**.17****	**.43****	**.19****
9. Negative Exchanges									-	.00	**.17****	**.10***	**.56****
10. Closeness										-	**.13****	**.66****	**.11***
11. Level of Upset											-	**.12****	**.26****
12. Positive Relationship												-	**.10***
13. Negative relationship													**-**

Note: * p<.05, ** p<.01, Age = age of regulator, Gender (male = 0, female = 1,), Positive/Negative Relationship = positive/negative quality of relationship between regulator and target.

Associations Between Individual Strategy Use and Positive Social Exchanges

Our results showed that none of the individual emotion regulation strategies (situation modification, attentional deployment, cognitive change, response modulation) were significant predictors of positive social exchanges when entered together as predictors in a model that also included the covariates and interactions (see Table 3). Thus, Hypotheses 1-3 were not supported.

There were, however, significant interactions of (1) age and situation modification, and (2) age and cognitive change in predicting positive social exchanges. In the first model, including only the covariates (not shown in table), the covariates explained 22.4% of the variance (R^2 = .224), with the strategies in Model 2 explaining a further 3.1%, (R_{change} = .031). The addition of interaction terms in Model 3 explained an additional 1.6% of the variance in positive social exchange (R^2_{change} = .016, $F_{change}(4,566) = 6.10$, p = .002).

Amongst the covariates, relationships rated by regulators as having more positive qualities were associated with more positive social exchanges generally, and women reported more positive social exchanges relative to men.

Table 3

Regression Coefficients for Strategy Use and Positive Social Exchanges

	Model 2			Model 3		
	B	*SE*	*p*	*B*	*SE*	*p*
Constant	1.98	.05	<.001	1.97	.05	<.001
Covariates						
Gender	**.16**	**.07**	**.01**	**.15**	.07	**.03**
Age	-.003	.002	.08	-.003	.002	.08
Closeness	.01	.02	.71	.01	.02	.71
Level of Upset	.03	.02	.24	.03	.02	.22
Positive Relationship	**.20**	**.03**	**<.001**	**.20**	.03	**<.001**
Negative Relationship	.04	.03	.09	.04	.03	.13
Strategies						
Situation Modification	.02	.04	.68	.02	.04	.68
Attentional Deployment	**.10**	**.05**	**.04**	.09	.05	.06
Cognitive Change	.05	.05	.27	.06	.05	.23
Response Modulation	.04	.03	.12	.04	.03	.14
Age x Situation Modification				**-.007**	.002	**.001**
Age x Cognitive Change				**.007**	.003	**.005**

Using PROCESS (Hayes, 2017) to probe the nature of the age x situation modification interaction, predicted values for positive social exchanges were generated for hypothetical younger (- 1 *SD*, age = 31.91) and older (+ 1 *SD*, age = 68.17) individuals with lower (-1 SD) and higher (+1 SD) endorsement of situation modification. The nature of the interaction is displayed in Figure 1. For younger regulators, the association between situation modification and positive social exchanges was positive, with higher endorsement of situation modification corresponding with more frequent positive exchanges (Younger Adults (-1 SD_{age}), $B = .15$, $p = .01$). In contrast, for older regulators, the association was the opposite, with *lower* levels of situation modification endorsement associated with more frequent positive exchanges (Older Adults (+1 SD_{age}) $B = -.12$, $p = .04$).

Figure 1

Interaction of Situation Modification with Age in the prediction of Positive Social Exchanges

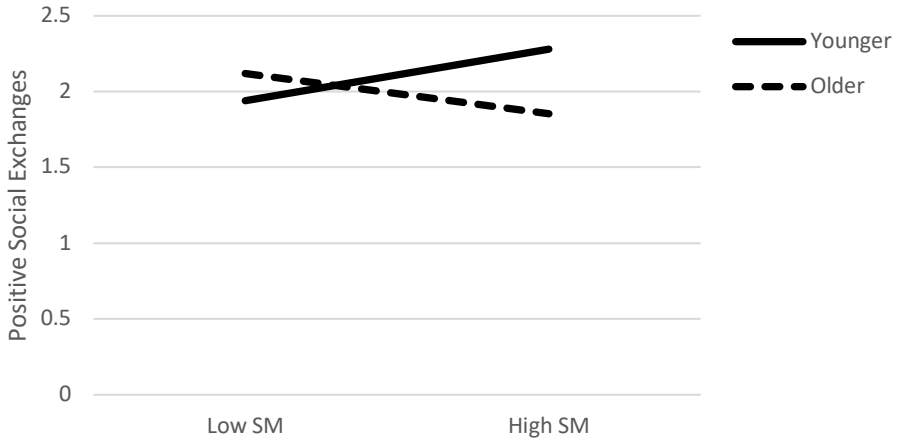
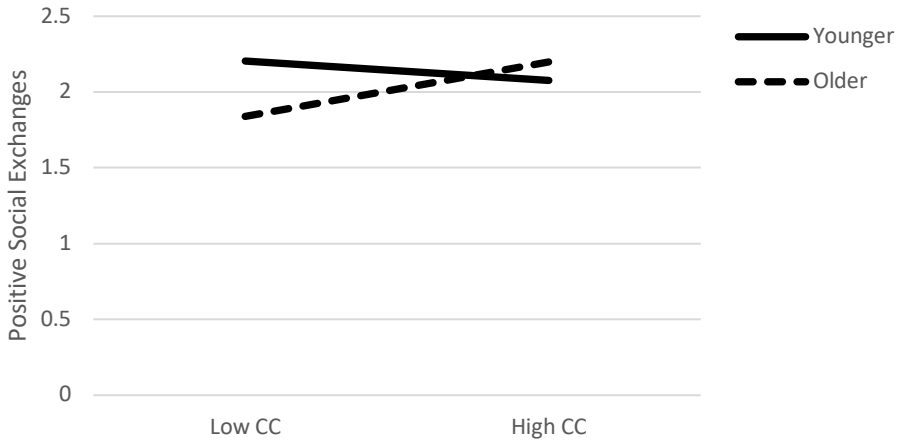


Figure 2

Interaction of Cognitive Change with Age in the prediction of Positive Social Exchanges



The nature of the age x cognitive change interaction is displayed in Figure 2. For younger adults, the association between cognitive change and positive social exchanges was similar at higher and lower levels of cognitive change (-1 *SD*, *B* = -.06, *NS*). However, for older adults, the association between cognitive change and positive social exchanges was positive, with higher

levels of cognitive change endorsement associated with more frequent positive exchanges (+1 *SD*, $B = .18$, $p = .01$).

Associations Between Individual Strategies and Negative Social Exchanges

Results showed that use of response modulation was associated with more frequent negative social exchanges, supporting Hypothesis 4 (see Table 4). With adjustment for covariates, situation modification was associated with less frequent negative social exchanges. No other strategies were significant predictors when entered in a model with the covariates. Among the covariates, relationships perceived as being more negative and less close were associated with more negative social exchanges. Older regulators were less likely to report negative social exchanges than younger regulators.

Table 4

Regression Coefficients for Strategy Use and Negative Social Exchanges

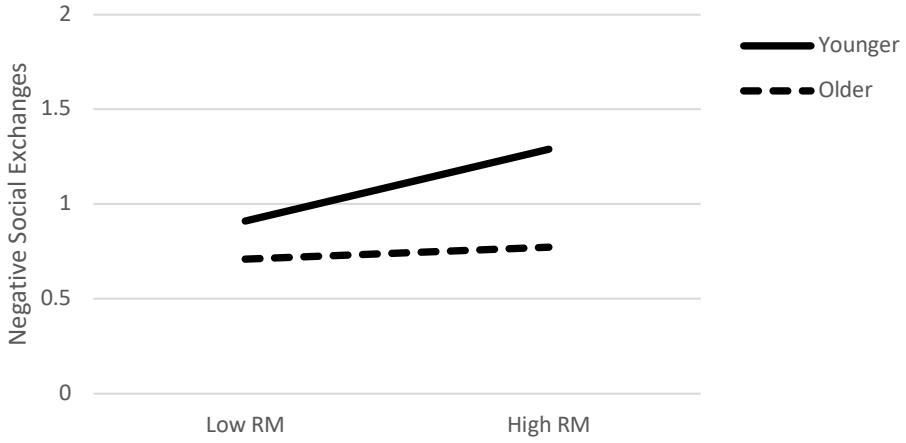
	Model 2			Model 3		
	B	*SE*	*p*	*B*	*SE*	*p*
Constant	.93	.04	<.001	.92	.04	<.001
Covariates						
Gender	.01	.06	.91	.01	.06	.92
Age	**-.01**	**.002**	**<.001**	**-.01**	**.002**	**<.001**
Closeness	**-.04**	**.02**	**.004**	**-.05**	**.02**	**.003**
Level of Upset	**.05**	**.02**	**.03**	.04	.02	.06
Positive Relationship	**.07**	**.03**	**.01**	**.07**	**.03**	**.02**
Negative Relationship	**.24**	**.02**	**<.001**	**.23**	**.02**	**<.001**
Strategies						
Situation Modification	**-.08**	**.04**	**.03**	**-.07**	**.04**	**.04**
Attentional Deployment	.00	.04	.99	.01	.04	.87
Cognitive Change	.06	.04	.13	.06	.04	.14
Response Modulation	**.11**	.02	**<.001**	**.09**	.02	**<.001**
Age x Response Modulation				**-.003**	.001	**.004**

In the first model, including only the covariates (not shown in Table 4) explained 36.8% of the variance ($R^2_{change} = .368$), with the strategies in Model 2 explaining a further 2. 5%, ($R^2_{change} = .025$). The age x response modulation interaction in Model 3 accounted for an additional

0.9% of the variance, (R^2 $_{change}$= .009, F_{change} (4,567) = 8.54, p = .004). The nature of the age x response modulation interaction is displayed in Figure 3. For older regulators, the association between the endorsement of response modulation and negative social exchanges was similar at higher and lower levels of response modulation (+1 *SD*, *B* = .02, *NS*). However, for younger regulators, higher use of response modulation was associated with more frequent negative social exchanges (-1 *SD*, *B* = .15, p <.001).

Figure 3

Interaction of Response Modulation with Age in the Prediction of Negative Social Exchanges



Flexibility and Social Exchanges

As flexibility is a combination of other adaptive emotion regulation strategies (situation modification, attentional deployment and cognitive change), we ran a final series of analyses to assess associations of flexibility in strategy use with positive and negative social exchanges, controlling for covariates. Flexibility was a significant predictor of positive social exchanges; individuals with greater extrinsic emotion regulation flexibility also reported more positive social exchanges, supporting Hypothesis 6 (see Table 5). Flexibility was not significantly associated with negative social exchanges (see Table 6), however the interaction between flexibility and age in the prediction of negative social exchanges was significant (see Figure 4).

Table 5

Regression Coefficients for Flexibility and Positive Social Exchanges

	B	*SE*	*p*
Constant	2.00	.05	<.001
Gender	.14	.06	.03
Age	-.003	.002	.07
Closeness	.01	.02	.45
Level of Upset	.03	.02	.16
Positive Relationship	.21	.03	<.001
Negative Relationship	.05	.03	.03
Flexibility	**.25**	.07	**<.001**
Flexibility x Age	-.002	.004	.63

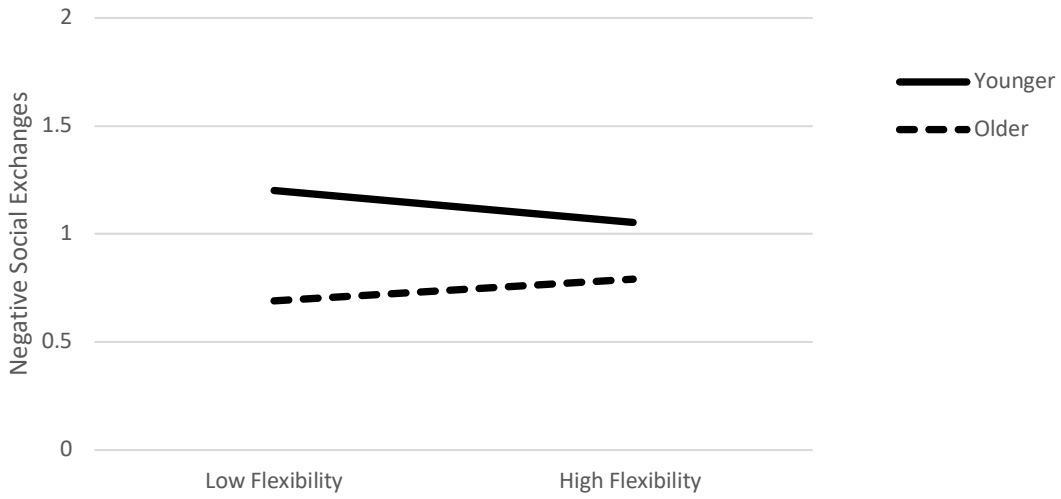
Table 6

Regression Coefficients for Flexibility and Negative Social Exchanges

	B	*SE*	*p*
Constant	.95	.04	<.001
Gender	-.03	.06	.55
Age	-.01	.002	<.001
Closeness	-.05	.02	.002
Level of Upset	.04	.02	.09
Positive Relationship	.07	.03	.02
Negative Relationship	.28	.02	<.001
Flexibility	-.02	.06	.69
Flexibility x Age	**.01**	.003	**.03**

Figure 4

Interaction of Flexibility with Age in the prediction of Negative Social Exchanges



The interaction showed that for younger regulators, the association between flexibility and negative social exchanges trended in a negative direction, whereas for older regulators, the association between flexibility and negative social exchanges trended in a positive direction. Although the slopes for younger and older regulators were significantly different from each other, neither slope was significantly different from zero.

Associations between Age of Regulator and Flexibility

It was anticipated that older regulators would be higher in flexibility than younger regulators (Hypothesis 7). Bivariate correlations (Table 1) indicated no significant unadjusted association between age and flexibility. To account for variance attributable to the covariates, we also examined associations of age with category membership on the flexibility variable (0 = low flexibility; 1 = high flexibility), using logistic regression, controlling for closeness of relationship, level of upset, and positive and negative quality of relationship. Once again, no association of age with flexibility was evident (OR = 1.00 (95%CI 0.99 – 1.01), *ns*).

Discussion

The aim of this study was to examine whether the endorsement of individual extrinsic emotion regulation strategies and breadth of strategy use as an index of extrinsic emotion regulation flexibility, were associated with self-reported frequency of positive and negative social exchanges. Additionally, we examined whether flexibility was related to age and whether associations of strategy use with social exchanges varied as a function of age.

Associations Between Individual Strategies and Positive Social Exchanges

It was expected that the higher endorsement of situation modification, attentional deployment, and cognitive change strategies would be associated with positive social exchanges. Our expectations were partially supported, with situation modification and cognitive change strategies associated with positive exchanges, however these associations were conditional on age. Attentional deployment was not associated with positive social exchanges.

Higher endorsement of situation modification was associated with more frequent positive exchanges for younger regulators, but not for older regulators. For older regulators, higher levels of situation modification endorsement were associated with *less* frequent positive exchanges. Although it is only possible to speculate given the available data, one possible explanation for our divergent findings rests on different ways that social partners may react to extrinsic regulation attempts in light of prevailing age-stereotypes. When younger regulators actively engage in situation modification, their behaviours may be seen as consistent with the stereotype of younger people as active, competent and energetic (Andreoletti, Leszczynski, & Disch, 2015; Bowen, Spuling, Kornadt, & Wiest, 2019). When younger regulators habitually and successfully actively intervene to address problems that produce negative emotions in their social partners, this could contribute to feelings of gratitude (Lawler & Thye, 2006), enhance the potential for reciprocity (Lawler, 2001) and generally promote a relationship climate characterised by frequent positive exchanges (Chen et al., 2009).

In contrast, when *older* regulators engage in situation modification their actions may be seen less favourably due to age-based stereotypes that characterise older adults as less competent than their younger counterparts (Chasteen & Cary, 2014). Attitudes toward older adults are often a mixture, recognising both positive and negative attributes. Although older adults are perceived to be warm, caring and knowledgeable, they are also seen as less competent (Cuddy, Norton, & Fiske, 2005) and less able to reciprocate positively in social interactions (Braun, Rohr, Wagner, & Kunzmann, 2018). Targets may perceive older regulators as less capable of resolving potential problems in the future and be less likely to invest in the relationship. Thus, older regulators who more habitually use extrinsic situation selection may be seen by some of their social partners as not conforming with social expectations (Chasteen & Cary, 2014; North & Fiske, 2013). This in turn may result in an overall less positive relationship climate among older adults who tend to actively intervene in their regulatory efforts relative to those who adopt more passive strategies.

It is also possible that the unexpected findings are a result of our study design inadvertently tapping into complex relationship-specific dynamics. Specifically, when we asked participants to think of a close social partner aged over 65, many younger participants may have brought a parent to mind. Adult children may perceive situation modification attempts by a parent as 'interfering' in their life. Many adult child-parent relationships are characterised by ambivalence and some tension, which includes giving unsolicited advice (Birditt, Miller, Fingerman, & Lefkowitz, 2009). Therefore, if older regulators are using relatively high levels of situation modification when interacting with their adult children, this could result in a decrease in positive parent-child exchanges, detracting from the overall experience of positive social exchanges.

In contrast to the findings for situation modification, higher endorsement of cognitive change was associated with more frequent positive social exchanges for older regulators, but not younger regulators. Cognitive change strategies involve the regulator making suggestions as to how the target could see the problem from another perspective or change their interpretation of

the meaning associated with the problem (Reeck et al., 2016). Unlike situation modification, perhaps use of cognitive change might be regarded as more consistent with age-related stereotypes such as having greater knowledge and wisdom (Bowen et al., 2019; Cuddy et al., 2005). The more habitual use of cognitive change by older regulators may activate positive stereotypes (Chasteen, Schwarz, & Park, 2002) and in turn broadly contribute to a greater likelihood of experiencing positive social exchanges.

An alternative "third variable" based explanation for the positive association between cognitive change strategy use and positive social exchanges for older adults concerns general cognitive ability, which was not assessed, acting as a potential confounder. As individuals age, cognitive decline is common (Hedden & Gabrieli, 2004) and the costs of cognitive tasks increase, leading older adults to be more selective in which cognitive activities they undertake (Hess, 2014). Although extrinsic cognitive change strategies may be less active and require less energy than situation modification, facilitating processes of cognitive change in a target may involve a significant degree of cognitive effort on the part of the regulator. The regulator needs to contemplate the problem situation from the target's perspective, generate alternative ways of looking at the problem and make suggestions likely to be acceptable to the target (Reeck et al., 2016). Thus, older regulators who have more limited cognitive resources may be less inclined to use cognitive change strategies (Urry & Gross, 2010). Research also shows that those experiencing aged-related cognitive decline, also experience a decline in their social networks (Aartsen, Van Tilburg, Smits, & Knipscheer, 2004) which could in turn restrict opportunities for positive social experiences. Taken together, our findings in relation to age differences in the use of cognitive change and positive social exchanges could reflect older regulators with poorer cognitive ability reporting both less frequent use of cognitive change strategies, and less frequent positive social exchanges.

Associations Between Flexibility and Positive Social Exchanges

In this study, the extrinsic emotion regulation flexibility index (breadth of repertoire), categorised regulators as either having low flexibility (primarily endorsing use of one, or indicating low use of all types of strategies) or high flexibility (high endorsement of two or three adaptive strategies). As anticipated, flexibility was associated with reporting more frequent positive social exchanges. These findings broadly correspond with the notion of flexibility in extrinsic regulatory strategies as an adaptive regulatory resource, suggesting that regulators who have a broad repertoire of strategies to draw on may generally be more effective at achieving regulatory goals. This ability in turn might result in more frequent experiences of positive aspects of social relationships and exchanges.

As a flexible regulator may more effectively manage negative emotion in their social partners, these social partners may attribute their improved affect to the regulator, and as described by social exchange theory, consequently feel increased attachment to the regulator, enhancing the value of the relationship (Lawler & Thye, 2006). The social partner is more likely to seek out further social interactions with the regulator (Lawler, 2001) and also engage in positive reciprocal actions (Chen et al., 2009). In our data, the flexible use of a range of strategies appears to have more reliable association with self-reported frequency of positive social exchanges than the use of any specific strategy, indicating that flexibility may be a more effective regulatory resource than reliance on any single strategy.

Associations Between Individual Strategies and Negative Social Exchanges

It was anticipated that response modulation would be associated with negative social exchanges and this hypothesis was partially supported; however, once again the association was conditional upon age. Our results showed that younger regulators who endorsed higher levels of response modulation strategies, such as encouraging social partners to suppress their expression of negative emotion, also reported more frequently experiencing more insensitive behaviour, lack of support or rejection from their social partners. However, for older regulators, response modulation

was not associated with negative social exchanges.

These findings suggest that social partners may respond more negatively to response modulation efforts when they are implemented by younger, as opposed to older regulators. One possible explanation is that older regulators have gained experience in extrinsic emotion regulation and are more judicious in terms of when, how, and with whom they use response modulation strategies (Eldesouky & English, 2018), and as a result cause less offence than younger regulators using response modulation. In *intrinsic* emotion regulation, older adults who used higher levels of response modulation showed no negative effect on their psychological well-being, whereas younger adults using higher levels of response modulation showed increased psychological distress (Brummer, Stopa, & Bucks, 2014). Similarly, higher levels of intrinsic response modulation used in the workplace were associated with lower negative emotion and higher work performance for older workers, but not for younger workers (Yeung & Fung, 2012). Taken together, these results could indicate that older adults develop skills through experience that allow them to use extrinsic response modulation in ways that do not undermine relationship quality.

Another explanation for the age differences in the association of response modulation and negative social exchange in our study is provided by the social input model (Miller et al., 2009). This model proposes that older adults are treated more kindly compared to younger adults, and are less likely to be blamed when they commit a social transgression. Therefore, social partners may not react as negatively toward older regulators using response modulation, because they see older adults as less responsible for their actions, or see less to be gained from challenging older social partners over perceived transgressions including unwelcome attempts at encouraging suppression of emotional experience.

It is also possible that the positive relationship between response modulation and negative social exchanges that emerged for younger participants reflects the operation of reverse causality. If regulators commonly experience negative social exchanges with their social partners, they may be less inclined to invest effort into these relationships. These regulators may be more inclined to

use less effortful extrinsic emotion regulation strategies such as response modulation (for example, suggesting a distressed friend "put on a brave face and get on with it"), rather than the putatively adaptive strategies (e.g., exploring possible solutions to the friend's problem, or alternative ways of appraising the situation) that may require more effort, or be more likely to invite unwanted future solicitations of support. This possible explanation is consistent with our finding that regulators who endorsed higher situation modification also reported less frequent negative social exchanges. In helping a target by modifying aspects of a problem situation and consequently reducing negative emotion in the target, the regulator signals that they are willing to invest in this relationship. Targets may respond positively to these actions of the regulator and may be less likely to demonstrate unsupportive or insensitive behaviours toward the regulator.

In contrast to the association with positive social exchanges, flexibility in extrinsic emotion regulation strategies was not associated with negative social exchanges. Regulators who were higher in regulatory flexibility reported more frequent positive social exchanges, however, there was no associations with negative social exchanges. One possibility is that regulators with greater flexibility in extrinsic emotion regulation have better skills in managing negative social interactions and are therefore less motivated to avoid such situations. In *intrinsic* emotion regulation, individuals may manage their emotional experiences by strategically approaching or avoiding situations that could detrimentally influence their mood (situation selection) (Gross, 1998). If a regulator with high flexibility has confidence in their ability to manage negative emotion in social partners, they may not use avoidance to the same extent as regulators with lower flexibility. Thus, any broad social benefits in terms of managing situations with the potential to produce negative emotions and negative social exchanges that arise from being a highly flexible regulator, may be counteracted by greater exposure to situations with the potential to produce negative exchanges, and may account for the absence of an association between flexibility and negative social exchanges. Alternatively, it is possible that the relatively low occurrence of negative social exchanges (associated low variability) compared to positive social

exchanges in our data reduced statistical power for detecting statistically reliable associations.

Association of Age with Flexibility

It was anticipated that older regulators would show more flexibility in use of extrinsic emotion regulation strategies, than younger regulators, however this was not supported by the findings. One possible explanation is that older adults become more adept at choosing the most effective strategy for a given situation. Research suggests that over the lifespan individuals learn from their experiences, and become more effective and flexible in interpersonal problem solving and managing their own emotions (Blanchard-Fields, 2009; Mienaltowski, 2011). Thus, older regulators may have endorsed effective strategies based on their existing knowledge of their social partners, rather than a range of strategies that might be relevant to different relationships and social contexts. Additionally, older adults tend to have social networks made up of close social partners, with fewer peripheral social partners than younger adults (Fung, Carstensen, & Lang, 2001). It is possible that with long and enduring relationships, older adults understand these social partners and implement the most effective ways to regulate their emotion without the need to use a wide range of strategies. To more accurately assess breadth of repertoire in extrinsic emotion regulation, a method that does not invoke regulatory responses in relation to an existing social partner may better capture individual differences in tendencies toward flexible strategy use across different situations. Presenting several scenarios with a degree of ambiguity in the way the situation could be managed may better capture strategy preferences and avoid well-established patterns of extrinsic emotion regulation that may habitually occur with close social partners.

The lack of developmental differences regarding flexibility of extrinsic regulation may also be consistent with the findings of the previous chapter, where we found few reliable age differences between younger and older regulators in the use of the specific extrinsic emotion regulation strategies. It is also possible that our index of flexibility was too simplistic to capture differences between older and younger regulators and a more nuanced measure may be needed.

Our index of flexibility captured the number of different types of strategies endorsed, but we could not measure strategy-situation fit and whether the strategies endorsed were the most appropriate for the situation. Additionally, we had only two levels of flexibility, thus an index with an increased range may allow more power for detecting age differences. Therefore, to further study flexibility in extrinsic emotion regulation, future work will examine the different methods of measuring flexibility in further depth, and this will be the focus of the next chapter.

Limitations and Future Directions

We acknowledge that self-report measures have limitations, as there may be discrepancies between what participants report they would do in response to scenarios and their actual use of strategies in everyday social situations. Social desirability bias could also influence the way participants of different ages respond to questionnaire items. Age differences social desirability have been found, with social desirability tending to be stronger in older, rather than younger adults (Hitchcott, Penna, & Fastame, 2020; Ausmees et al., 2020; Soubelet & Salthouse, 2011). An inclusion of a social desirability measure would allow more confidence in interpreting age differences. Additionally, it is a limitation of this study that the flexibility measure was derived from only two scenarios that differed only by the age of the target. Using a greater number of scenarios depicting different social partners and contexts could provide the stimuli needed to assess individual differences in extrinsic emotion regulation flexibility (Southward et al., 2018). Also, using a more ecologically valid method, such as ecological momentary assessment (EMA) or daily diary studies to assess people's responses to social interactions in everyday life over a period of days could provide a more effective context for assessing the flexible implementation of extrinsic regulation strategies (Haines et al., 2016). Additionally, extrinsic emotion regulation flexibility could be assessed in terms of whether the strategies selected are appropriate to the situation (strategy-situation fit) and whether this type of flexibility is associated with positive social outcomes. Additionally, as our study was cross-sectional in nature, we cannot distinguish developmental differences from possible cohort

differences.

In our study, we used breadth of repertoire as a measure of flexibility in extrinsic emotion regulation, consistent with studies examining flexibility in intrinsic emotion regulation (Blanke et al., 2019; Eldesouky & English, 2018) and interpersonal problem-solving (Blanchard-Fields, 2009). Breadth of repertoire captures the *frequency* of use of strategies, however, future work could incorporate additional measures of how *effective* the different strategies may be. Further, exploration of the regulators' goals may yield insight into this complex process, as a regulator may be intervening to improve a situation for their own benefit or for the benefit of the target. Another limitation is that we were not able to assess cognitive ability, which may have influenced the endorsement of individual strategies. Studying associations between individual strategies and positive and negative social exchanges has some limitations, as social exchanges are not directly linked to an extrinsic emotion regulation event, but are a measure of social relationships more generally and are influenced by other factors besides extrinsic emotion regulation.

Conclusion

The aim of this study was to examine the associations between the use of specific extrinsic emotion regulation strategies, flexibility in strategy use, and self-reported experiences of positive and negative social exchanges. We further examined whether these associations varied as a function of the age of the regulator. Our findings provide some support for our hypotheses that the use of adaptive extrinsic emotion regulation strategies (situation modification, attentional deployment, cognitive change) would be linked to positive social exchanges, however these effects were conditional on age. One posited explanation is that age-related stereotypes may account for why the use of some extrinsic emotion strategies are associated with different social outcomes for younger and older adults. It is possible that more active extrinsic emotion regulation strategies (situation modification) are perceived as being consistent with stereotypes of younger adults being competent and valuable social partners in regard to potential future

assistance. On the other hand, strategies that are less active and more cognitive in nature (cognitive change) may be seen as being consistent with stereotypes of older adults being ‘wiser’ than their younger counterparts. However, it was not possible to directly test these possible explanations with the available data. The flexible use of the adaptive strategies was associated with positive social exchanges, suggesting that flexibility in strategy use may contribute to positive social relationships. As we found that there were no differences in flexibility between younger and older adults, this suggests that flexibility in use of different strategies to regulate the emotions of others may contribute to positive social relationship quality across adulthood.

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Chapter 4: Development and Validation of a Flexibility in Extrinsic Emotion Regulation Measure

Background

As part of our social interactions, we actively engage in shaping the emotional environment around us. We use emotion regulation strategies to manage our own emotions (intrinsic emotion regulation) and we also attempt to manage the emotions of those around us (extrinsic emotion regulation) (Gross, 1998). Emotion regulation occurs across a wide range of contexts, encompassing different environments, different social partners, and different emotions. Therefore, the ability to be flexible in the selection and implementation of emotion regulation strategies in ways that are responsive to contextual demands is likely to make regulatory efforts more effective and may ultimately lead to better socioemotional outcomes. Emerging research on intrinsic emotion regulation has highlighted the importance of flexibility in the selection and implementation of intrinsic emotion regulation strategies (Blanke et al., 2019; Southward, Altenburger, Moss, Cregg, & Cheavens, 2018). Therefore, it is likely that a flexible approach to the selection and implementation of extrinsic emotion regulation strategies may have benefits for individuals who attempt to manage emotion in others (referred to as regulators) and their social partners (referred to as targets).

A first step in the study of flexibility in extrinsic emotion regulation concerns development of a reliable, valid means of assessing extrinsic emotion regulation flexibility. Using the process model of emotion regulation (Gross, 1998) as a foundation, we aim to develop a method of measuring of flexibility in extrinsic emotion regulation and test its convergent and discriminant validity by examining its associations with emotional intelligence, interpersonal communication competence, and Friendliness. We also examine the relationships between individuals' flexibility in extrinsic emotion regulation and self-reports of the frequency with which they generally experience positive and negative social exchanges.

Conceptualisation and Measurement of Emotion Regulation Flexibility

In many domains, the ability to flexibly adapt to dynamic situations is important for individual psychological well-being and positive social outcomes (Kashdan & Rottenberg, 2010). In intrinsic emotion regulation research, flexibility in selecting and implementing strategies that are appropriate in a given situation is considered to be adaptive, effective, and important for successful goal pursuit (Aldao, Sheppes, & Gross, 2015; Blanke et al., 2019; Southward et al., 2018).

Although specific intrinsic emotion regulation strategies have been previously regarded as generally adaptive or maladaptive (Aldao, Jazaieri, Goldin, & Gross, 2014; Gross & John, 2003; John & Gross, 2004), more recent research has highlighted that the adaptiveness of specific intrinsic emotion regulation strategies depends on the situational contexts (Haines et al., 2016; Troy, Shallcross, & Mauss, 2013). Moreover, being flexible in the use of intrinsic emotion regulation strategies across situations may be key to effective regulation (Blanke et al., 2019; Bonanno & Burton, 2013; Southward et al., 2018). Similarly, in coping research, flexibility in coping with stressful life events has been recognised as an individual differences characteristic that is important for healthy adjustment and psychological well-being (Cheng, Lau, & Chan, 2014). To our knowledge, the flexible use of extrinsic emotion regulation strategies across situations has not been examined. However, it is expected that flexibility in extrinsic emotion regulation may also be advantageous and may play a central role in the maintenance of good social relationships.

Flexibility has been defined and studied in different ways in intrinsic emotion regulation research and in the coping literature. Individuals' flexibility may be measured by the total number of strategies (i.e., coping, or emotion regulation) implemented (size of repertoire), the number of different types of strategies implemented (breadth of repertoire) or the appropriateness of strategy use in a given situation (strategy-situation fit) (Aldao et al., 2015; Cheng, 2001; Cheng et al., 2014). In the current study we will use size and breadth of repertoire as indices of

individual differences in flexibility in extrinsic emotion regulation.

Our study of extrinsic emotion regulation is based on the process model of emotion regulation (Gross, 1998), which proposes five families of emotion regulation strategies: situation selection, (choosing which situations to engage in or avoid); situation modification, (making changes to the situation to influence emotions); attentional deployment, (directing attention toward or away from certain aspects of the situation); cognitive change, (reappraising the situation from a different perspective); and response modulation, (suppressing or amplifying the experience and expression of emotion and physiological responses). Drawing on interpersonal affect regulation research (Niven, Totterdell, Stride, & Holman, 2011), we also consider two additional types of strategies pertinent to extrinsic emotion regulation; problem solving strategies (giving advice or suggestions to the target) and empathic listening (sympathetically listening to the target). Problem solving strategies involve the regulator giving advice or offering solutions as to how the target could manage the situation in order to reduce its emotional impact (Niven, Totterdell, & Holman, 2009). Giving social partners appropriate advice in a tactful way can help resolve problems and build trust in close relationships (Feng & Magen, 2016; MacGeorge, Guntzviller, Hanasono, & Feng, 2016). Empathic listening is another strategy that is used to help relieve distress and negative emotion in social partners (Lepore, Ragan, & Jones, 2000) and is a fundamental component in supportive relationships (Jones, 2011).

Size of Repertoire

From an individual differences perspective, those who tend to draw from a greater number of strategies in coping and regulating their own emotions may be better placed to react to different contexts in flexible ways relative to those who typically use a smaller number of strategies (Bonanno & Burton, 2013; Bonanno, Pat-Horenczyk, & Noll, 2011; Southward et al., 2018). Thus, size of repertoire has been recognised as an indicator of flexibility in previous research, and is typically operationalised in terms of the total number of strategies an individual

can access and implement in situations where emotion regulation is required (Bonanno & Burton, 2013). For example, a regulator may use three attempts to distract a target's attention from an emotion inducing stimulus (attentional deployment), two suggestions that the target consider their situation from a different perspective (cognitive change) and one attempt to make changes to the situation (situation modification). In this example, the size of repertoire would consist of six strategies. Size of repertoire is associated with positive outcomes in intrinsic emotion regulation, with individuals who accessed more intrinsic emotion regulation strategies after a traumatic event, showing lower levels of post-traumatic stress than those who implemented fewer strategies (Orcutt, Bonanno, Hannan, & Miron, 2014).

Breadth of Repertoire

A potentially more nuanced measure of flexibility considers an individuals' ability to access and use a range of different types of extrinsic emotion regulation strategies. Rather than simply using multiple strategies, which may be from the same category (e.g., attentional deployment), breadth of repertoire involves the use of strategies from a range of categories (e.g., attentional deployment and cognitive change). Accessing a wide range of extrinsic strategies is expected to enable regulators to utilise greater flexibility and potentially be more effective in regulating targets' emotion in a variety of situational contexts. Thus, breadth of repertoire or categorical variability is operationalised as an individual's ability to implement a broad range of different categories of strategies, rather than the total number of strategies (Bonanno & Burton, 2013; Cheng et al., 2014). From the above example (3 x attentional deployment, 2 x cognitive change, and 1 x situation modification strategies), the individual used strategies from three different categories, thus the breadth of repertoire is reflected in three categories.

Research concerned with coping flexibility indicates that greater breadth of repertoire is linked to better psychological adjustment. After exposure to a traumatic event, individuals who implemented both trauma-focused strategies (paying attention to responses to trauma) and forward- focused strategies (maintaining goals and plans, distraction) showed less severe post-

traumatic stress than those who only implemented a single type of strategy (Bonanno et al., 2011). In their meta-analysis on coping flexibility, Cheng et al. (2014) found a modest but positive association between breadth of repertoire in coping strategies and psychological adjustment. Additionally, a study using an experience-sampling method, found that individuals with higher flexibility in choosing from several categories of intrinsic emotion regulation strategies also experienced lower levels of negative affect, compared with those who were less flexible (Blanke et al., 2019).

The Present Study

The aim of the present study is to develop and validate a method of assessing extrinsic emotion regulation flexibility in terms of size and breadth of repertoire. We will assess convergent and discriminant validity by comparing our flexibility index with the theoretically relevant constructs of emotional intelligence, interpersonal communication competence and Friendliness. Additionally, we will consider the associations between extrinsic emotion regulation flexibility and self-reported quality of social exchanges.

Convergent Validity

Emotional Intelligence. Emotional intelligence encompasses an individual's ability to identify, appraise and regulate emotion both in themselves and in others and to use emotional information to inform behaviour and achieve goals (Salovey & Mayer, 1990; Schutte et al., 1998). Emotional intelligence has a positive influence on interpersonal relationships, increasing the understanding of the feelings and behaviours of others (Schutte et al., 2001) and facilitating the ability to manage emotion in oneself and others (Lopes, Salovey, & Straus, 2003).

The ability to appraise emotion, to accurately identify emotion in social partners and understand how they are feeling, is necessary for effective extrinsic emotion regulation (Reeck, Ames, & Ochsner, 2016). Further, the general skill of effectively managing emotion in social

partners as measured in emotional intelligence may be related to the flexible selection and implementation of extrinsic emotion regulation strategies. Therefore, we would expect that -

H1: the emotional intelligence subscales of *appraising emotion* and *managing emotion in others* would be positively correlated with our indices of flexibility in extrinsic emotion regulation- size and breadth of repertoire.

Interpersonal Communication Competence. The skills encompassed by interpersonal communication competence, enable individuals to effectively and appropriately manage interpersonal interactions (Rubin & Martin, 1994). Interpersonal communication competence encompasses *intra*personal domain skills such as *self-disclosure* (opening up to others), *social relaxation* (feeling at ease in social situations), *assertiveness* (standing up for oneself), *expressiveness* (communicating feelings) and *immediacy* (being approachable). It also includes *inter*personal domain skills such as *empathy* (understanding and feeling from another's perspective), *interaction management* (conversational skills), *altercentrism* (interest in and responsiveness to others), *supportiveness* (validating and helping others) and *environmental control* (achieving goals and solving problems)(Rubin & Martin, 1994).

We would expect that interpersonal domain skills would be related to flexibility in managing the emotions of others. Being interested in others (altercentrism), having empathy and being supportive of others may be similar to the skills exercised by a regulator to accurately identify emotion in a target and understand a situation from the target's perspective in order to select appropriate extrinsic emotion regulation strategies (Reeck et al., 2016). Additionally, having the skills to manage interpersonal communication and solve conflict or problems (environmental control) is similar to skills implemented in extrinsic emotion regulation. Therefore, we expect –

H2: the interpersonal communication competence skills – *empathy, interaction management, altercentrism, supportiveness* and *environmental control* would be positively correlated with size and breadth of repertoire.

Friendliness. The construct of Friendliness is a facet of the Extraversion trait in the NEO personality inventory, which encompasses enjoying being with others, feeling comfortable around others and expressing warmth toward them (Costa & McCrae, 1992). The Friendliness/warmth facet is associated with closeness with social partners, taking the perspective of others and understanding their emotional state (Haas et al., 2015). We expect that these aspects of Friendliness associated with understanding the perspectives of others and their emotional states would be likely to facilitate flexibility in extrinsic emotion regulation. Thus,

H3: we expect that Friendliness will positively correlate with size and breadth of repertoire.

Discriminant Validity

Emotional Intelligence. As extrinsic emotion regulation is an other-focused ability, we would not necessarily expect our indices of flexibility in extrinsic emotion regulation to be as strongly associated with self-focused abilities. There are some similarities in intrinsic and extrinsic emotion regulation (e.g. similar goals to change an emotional experience), however, the ability to manage emotion in one's self is distinct from managing emotion in others (Nozaki & Mikolajczak, 2020). Further, the utilisation of emotion to assist in flexible planning and creative thinking is also less likely to be closely associated with extrinsic emotion regulation flexibility. Therefore,

H4: we would not expect a strong association of our indices of extrinsic flexibility with the emotional intelligence subscales *managing emotion in self* and *utilisation of emotion*.

Interpersonal Communication Competence. In contrast to the interpersonal domain skills of the interpersonal communication competence measure, we would not expect the intrapersonal domain skills to be strongly associated with our indices of flexibility. Self-focused skills such as expressiveness, assertiveness and comfort in social situations are less directly conceptually related to the skills needed to flexibly manage emotion in others compared to the intrapersonal skills (e.g., empathy, altercentrism) outlined above. Thus, associations of our

flexibility indices with the self- focused items are considered as a means of assessing discriminant validity. Thus,

H5: we would not expect a strong association of our indices of extrinsic flexibility with the interpersonal communication competence skills – *self-disclosure, social relaxation, assertiveness, expressiveness,* and *immediacy.*

Associations of Extrinsic Emotion Regulation Flexibility and Quality of Social Exchanges

Flexibility in regulating the emotions of social partners may be associated with more frequent positive social interactions more generally. The ability to flexibly select and implement a range of extrinsic emotion regulation strategies appropriate to different situations is likely to be more effective than the rigid use of fewer strategies across all situations. A regulator who can effectively manage emotion in a social partner across varied situations, especially down-regulating negative emotion, could improve the emotional environment for the target. According to social exchange theory, in such a situation, the target is likely to attribute the positive emotion they feel to the regulator, which may strengthen the social bond between them and over time facilitate positive reciprocal social exchanges (Lawler, 2001; Lawler & Thye, 2006). Thus, our contention is that flexibility in extrinsic emotion-regulation- as an individual differences characteristic- is likely to be associated with better quality social exchanges more generally. Therefore, we would expect individuals showing higher flexibility in extrinsic emotion regulation to report more frequent positive social exchanges relative to those showing less flexible patterns in regulating others' emotions. Additionally, the ability to flexibly and effectively down-regulate negative emotion in one's social partners, could reduce the occurrences of social conflict and negative interactions. Thus, we would expect that greater flexibility in extrinsic emotion regulation would be associated with less frequent self-reported negative social exchanges. Therefore, we expect that –

H6: Size and breadth of repertoire will be positively correlated with positive social exchanges

H7: Size and breadth of repertoire will be negatively correlated with negative social exchanges

Method

Participants

Participants were 254 university students aged 17 - 67 (M= 22.2, SD=7.17, 83% female) who completed the questionnaire for course credit or $10 AUD. Participants were informed of the nature of the study, then proceeded to the questionnaire online, which indicated their consent. Using the online WebPower calculator (Zhang & Yuan, 2018), we conducted a power analysis, with a sample size of 254, α = .05, and r = .20, the power to detect a significant effect was .896, suggesting the study was adequately powered. This project was given approval by the Social and Behavioural Research Ethics Committee of Flinders University (Project No. 8440).

Procedure and Measures

Extrinsic emotion regulation flexibility

To assess flexibility in extrinsic emotion regulation, we used hypothetical scenarios depicting social partners (targets) in situations likely to elicit negative emotions and that might typically be experienced by university students (e.g. a friend failing an assignment or a friend at risk of losing their job). The Southward et al (2018) scenarios were used as the basis of our scenarios in this study. However, as Southward et al (2018) were examining *intrinsic* emotion regulation, some modifications were needed to ensure the scenarios were relevant to extrinsic emotion regulation. Hypothetical scenarios allowed the stressful situations to be standardised across participants (e.g., Southward et al., 2018), in contrast to asking participants to recall their responses to actual stressful occurrences (e.g., Cheng, 2001) where idiosyncratic differences between participants might introduce bias.

Pre-validation. Scenarios in our study were developed by drawing on examples from the study of flexibility in intrinsic emotion regulation (Southward et al., 2018). In order to allow for potentially flexible responding, we developed scenarios (seven in total) that presented a degree of

ambiguity in the extent to which the situation was subject to the direct control of the target or regulator. We used scenarios that had ambiguity around perceived controllability by the target to increase the likelihood of capturing individual differences in typical strategy preference, rather than the idiosyncratic demands of the situations presented. An example scenario is presented below;

> *Your lecturer has just returned the assignments in an important topic in your course. You did okay by your standards, but your best friend just checked their grade and they have failed the assignment although they tried their hardest. They are upset because they have been dreaming of pursuing this course since high school.*

The scenarios were presented in an online validation study to 18 raters, who were asked to rate perceived controllability by both regulator and target in each scenario. The raters were presented with the definition of controllability, the *power to influence or change the course of events* (Cheng, 2001; Folkman, 1984), and using a scale from 0 (*no control at all*) to 8 (*a great deal of control*) indicated perceived degree of control. We sought to obtain reactions to scenarios where the degree of controllability that could be exercised by the target was ambiguous. This was to promote conditions for potentially flexible responding, where regulatory efforts might reasonably involve a range of different strategies ranging from accepting to proactively changing the situation, rather than prompting use of a single strategy offering a clear solution. Thus, based on the validation study results, three scenarios were selected (see Appendix A) for the main study that produced mean controllability by target scores that fell within one standard deviation of the scale midpoint.

Main Study. The main questionnaire study was completed online. Participants were asked to imagine themselves in a situation similar to the presented scenario and- using an open-ended response format- to describe what they would do in this situation. To allow for flexible responding, after providing their initial response, participants were prompted a second time, asking if the person was still upset, would they do anything else and if so to describe what else

they would do. This prompting was in order to give participants an opportunity to present more a comprehensive list of strategies they might use in the situation, similar to the method used by Southward et al. (2018). Participants were asked to give free responses, rather than responding to set questionnaire items, which improved external validity (Southward et al., 2018; Taxer & Gross, 2018). Spontaneous responses (which are then coded) are preferable to reactive responses (endorsing responses provided for items), as participants may be influenced by the presentation of the responses provided (Weiner, 1985). There was no restriction on the amount participants could write.

To code the open responses, a codebook was developed based on Gross' (Gross, 1998) process model with additional categories based on interpersonal affect regulation (Niven et al., 2011) to better capture the full range of qualitatively distinct responses. Ten categories were used; *situation selection* (avoiding or ignoring the target), *situation modification* (actively changing or removing aspects of the problem), *problem solving strategies* (offering advice, suggestions, solutions to the target), *attentional deployment* (directing target's attention away from the problem, changing the subject, using humour), *cognitive change* (helping target reappraise the situation more positively or from a different perspective), *response modulation* (encouraging target to suppress expression of negative emotion, telling them to calm down), *empathic listening* (active listening, letting the target talk), *other emotion-focused strategies (*offering validation, sympathy, reassurance), *other strategies* (doing or saying something that may impact the target, not otherwise described), *other non-strategies* (doing or saying something that would have no impact on the target). The codebook is provided in Appendix B. Three coders coded responses to 30 scenarios and discrepancies were discussed and resolved. Two of the three coders then coded an additional 258 scenarios (34% of total responses). Consistency between the two coders' flexibility scores was high (size of repertoire, $r = .90$, $p < .001$; breadth of repertoire $r = .86$, $p < .001$) supporting the reliability of the coding scheme. The remaining 474 scenarios were coded by the first author (RJ).

Controllability. Participants were asked to rate how controllable they thought each scenario was from the perspective of themselves (regulator, i.e., "If you were trying to help your friend, how much control would you have in this situation?") and the social partner (target, i.e., "How much control would your friend have in the situation described?"). Controllability of regulator and controllability of target were each measured on 9-point scales (0 = no control at all, 8 = a great deal of control).

Social Exchanges. To assess the quality of social exchanges, the Positive and Negative Social Exchange measure (PANSE) was used (Newsom, Rook, Nishishiba, Sorkin, & Mahan, 2005). This scale assesses both positive and negative social exchanges experienced in the previous month; 12 positive items measured informational support, instrumental support, emotional support and companionship (items include *provide you with aid and assistance* and *cheer you up or help you feel better*), and 12 negative items measured unwanted advice or intrusion, failure to provide help, unsympathetic or insensitive behaviour, rejection or neglect (items include *let you down when you needed help* and *act angry or upset with you*). A 5-point scale was used, from *never* to *very often*. The PANSE showed good scale reliability in our study (positive scale α = .92, negative scale α = .87).

Emotional Intelligence. Emotional intelligence was measured by a 33-item self-report measure (Schutte et al., 1998). This measure consists of four subscales; appraisal of emotions (items include, *I easily recognize my emotions as I experience them* and *I am aware of the non-verbal messages other people send,* α = .80), managing self-emotions (items include, *when I experience a positive emotion, I know how to make it last* and *I have control over my emotions,* α = .81), managing emotions of others (items include, *I help other people feel better when they are down* and *I arrange events others enjoy,* α = .64) and utilisation of emotions (items include, *when I am in a positive mood, solving problems is easy for me,* α = .70). A 5-point scale was used, from *strongly disagree* to *strongly agree,* to respond to each item.

Interpersonal Communication Competence. To assess interpersonal skills we used the Interpersonal Communication Competence Scale (Rubin & Martin, 1994) with 10 subscales, including five *intra*personal domain skills; self-disclosure (items include, *I allow friends to see who I really am)*, social relaxation (items include, *I am comfortable in social situations*), assertiveness (items include, *I stand up for my rights*), expressiveness (items include, *I express myself well verbally*) and immediacy (items include, *I tell people when I feel close to them)* (α = .86). It also includes *inter*personal domain skills; empathy (items include, *I can put myself in others' shoes*), interaction management (items include, *I take charge of conversations I'm in by negotiating what topics we talk about*), altercentrism (items include, *I let others know that I understand what they say*), supportiveness (items include, *others would describe me as warm*) and environmental control (items include, *I achieve my communication goals when talking with others*) (α = .75). A 5-point scale was used, from *almost never* to *almost always,* to respond to each item.

Friendliness. We used the 10-item IPIP representation (Goldberg et al., 2006) of the Friendliness facet of Extraversion from the NEO personality inventory (Costa & McCrae, 1992), with 5 positively keyed items including *I make friends easily* and *I feel comfortable around people,* and 5 negatively keyed items including *I am not really interested in others* and *I often feel uncomfortable around others* (α = .86). A 5-point scale was used, from *strongly disagree* to *strongly agree,* to respond to each item.

Extrinsic Emotion Regulation Flexibility. The *size of repertoire* was the mean number of strategies reported across the three scenarios. The *breadth of repertoire* was derived by calculating the mean number of *different types* of strategies a participant endorsed across the scenarios. For example, if a response to a scenario (including both the initial and follow-up prompts) included one situation modification strategy, two cognitive change strategies and two emotion-focused strategies, this would produce a *size of repertoire* score of five and a *breadth of repertoire* score of three.

Statistical Analysis

To examine convergent and discriminant validity, we used bivariate correlations to assess relationships between size and breadth of repertoire and the emotional intelligence subscales, interpersonal communication competence subscales, and Friendliness. Multiple regressions were used to examine size and breadth of repertoire as predictors of positive and negative social exchanges. There were no missing data. Data were analysed with IBM SPSS Statistics Version 25.

Results

Firstly, we present the descriptive statistics of the indices of flexibility, the subscales of emotional intelligence and interpersonal communication competence, Friendliness and social exchanges (see Table 1).

Table 1

Means and Standard Deviations of Variables

	Mean	Standard Deviation
Size of repertoire	3.87	1.37
Breadth of repertoire	2.61	0.76
Emotional Intelligence Subscales		
Managing emotions of others	3.79	0.46
Appraisal of emotions	3.72	0.55
Managing self-emotions	3.59	0.57
Utilisation of emotions	3.75	0.57
ICC Interpersonal Subscales		
Empathy	3.68	0.54
Interaction Management	3.29	0.59
Altercentrism	3.63	0.45
Supportiveness	4.06	0.60
Environmental Control	3.37	0.62
ICC Intrapersonal Subscales		
Self-Disclosure	3.14	0.85
Social Relaxation	3.19	0.81
Assertiveness	3.14	0.97
Expressiveness	3.31	0.73
Immediacy	3.97	0.70
Friendliness	3.44	0.63
Positive Social Exchanges	2.57	0.76
Negative Social Exchanges	1.08	0.66

Note: ICC = Interpersonal Communication Competence. Emotional Intelligence subscales, Interpersonal Communication Competence subscales, and Friendliness scale 1 - 5, social exchanges scale 0 – 4.

Convergent Validity

To test convergent validity, we examined the associations of our flexibility indices with the individual *appraising emotion* and *managing emotion of others* subscales of emotional intelligence (H1) and the interpersonal domain skills of the interpersonal communication competence measure

(H2) and Friendliness (H3). Bivariate correlations used to examine convergent validity are shown in Table 2. Results indicated a substantial degree of measurement overlap between the size and breadth of repertoire (r = .72).

Table 2 shows that size of repertoire was positively and weakly correlated with the emotional intelligence subscale of *managing emotions of others* but was not reliably associated with the *appraisal of emotion* subscale. Size of repertoire was positively and weakly correlated with the interpersonal communication competence subscales of *empathy, altercentrism and supportiveness* but not with *interaction management* or *environmental control.* Breadth of repertoire was positively correlated with *altercentrism,* but was not reliably associated with any other interpersonal communication competence subscales, nor with the emotional intelligence subscales.

Discriminant Validity

Discriminant validity was examined through comparison with the self-focused emotional intelligence subscales, *managing emotion in self* and *utilisation of emotion* (H4) and the intrapersonal domain skills of interpersonal communication competence (H5). Bivariate correlations used to examine discriminant validity are shown in Table 3. As expected, there were no significant correlations with size or breadth of repertoire and the subscales *managing emotion in self* and *utilisation of emotion* from the emotional intelligence measure or with the intrapersonal domain skills of interpersonal communication competence.

Associations of Extrinsic Emotion Regulation Flexibility and Quality of Social Exchanges

To examine size and breadth of repertoire as predictors of positive and negative social exchanges (H6, H7), we conducted a series of regression models, controlling for age and gender in Model 2. Breadth of repertoire was a significant predictor of positive social exchanges (see Table 4), but size of repertoire was not reliably associated with positive social exchanges. Neither size or breadth of repertoire were significant predictors of negative social exchanges (see Table 5).

Table 2

Convergent Validity - Correlations between Size of Repertoire, Breadth of Repertoire, Emotional Intelligence Subscales, Interpersonal Communication Competence (Interpersonal) Subscales,

	1	2	3	4	5	6	7	8	9	10
1. Size of repertoire	-	**.72****	**.20****	.04	**.16***	.06	**.19****	**.17****	-.04	.10
2. Breadth of repertoire		-	.11	.08	.11	.04	**.16****	.12	-.05	.06
3. Managing emotions of others (EI)			-	**.55****	**.51****	**.37****	**.22****	**.59****	**.31****	**.52****
4. Appraisal of emotions (EI)				-	**.52****	**.41****	**.13***	**.42****	**.42****	**.42****
5. Empathy (ICC)					-	**.32****	**.26****	**.49****	**.26****	**.27****
6. Interaction Management (ICC)						-	.05	**.27****	**.47****	**.41****
7. Altercentrism (ICC)							-	**.33****	**.16****	**.17****
8. Supportiveness (ICC)								-	**.23****	**.44****
9. Environmental Control (ICC)									-	**.43****
10. Friendliness Mean										-

Note: * $p<.05$, ** $p<.01$, EI = Emotional Intelligence, ICC = Interpersonal Communication Competence

Table 3

Discriminant Validity - Correlations between Size of Repertoire, Breadth of Repertoire, Emotional Intelligence Subscales, Interpersonal Communication Competence (Intrapersonal) Subscales,

	1	2	3	4	5	6	7	8	9
1. Size of repertoire	-	**.72****	.02	.08	.07	.01	-.06	.09	.12
2. Breadth of repertoire		-	-.04	.03	.05	-.05	-.05	.11	.10
3. Managing self-emotions (EI)			-	**.49****	**.40****	**.46****	**.33****	**.45****	**.44****
4. Utilisation of emotions (EI)				-	**.20****	**.26****	**.25****	**.29****	**.31****
5. Self-Disclosure (ICC)					-	**.36****	**.29****	**.62****	**.52****
6. Social Relaxation (ICC)						-	**.44****	**.47****	**.44****
7. Assertiveness (ICC)							-	**.48****	**.30****
8. Expressiveness (ICC)								-	**.45****
9. Immediacy (ICC)									-

Note: * $p<.05$, ** $p<.01$, EI = Emotional Intelligence, ICC = Interpersonal Communication Competence

Table 4

Size and Breadth of Repertoire as Predictors of Positive Social Exchanges

	Model 1			Model 2		
	B	*SE*	*p*	*B*	*SE*	*p*
Constant	2.35	.14	<.001	2.41	.30	<.001
Size of repertoire	0.06	.04	.09	0.06	.04	.10
Age				-0.01	.01	.22
Gender				.07	.12	.56
Constant	2.19	.17	<.001	2.28	.31	<.001
Breadth of repertoire	**0.15**	**.06**	**.02**	**0.14**	**.06**	**.03**
Age				-0.01	.01	.27
Gender				0.05	.12	.70

Table 5

Size and Breadth of Repertoire as Predictors of Negative Social Exchanges

	Model 1			Model 2		
	B	*SE*	*p*	*B*	*SE*	*p*
Constant	1.16	.12	<.001	1.23	.26	<.001
Size of repertoire	-0.02	.03	.51	-0.02	.03	.51
Age				-0.01	.01	.20
Gender				0.05	.01	.63
Constant	1.18	.15	<.001	1.27	.27	<.001
Breadth of repertoire	-0.04	.06	.48	-0.05	.06	.40
Age				-0.01	.01	.19
Gender				0.06	.11	.58

Discussion

The aims of this study were to (1) develop a standardised method of assessing individual differences in flexibility in the use of extrinsic emotion regulation, (2) examine the validity of the flexibility indices derived using this method by examining their associations with related constructs of emotional intelligence, interpersonal communication competence and Friendliness, and (3) assess the extent to which flexibility was associated more broadly with quality of positive and negative social exchanges. To this end, participants read hypothetical scenarios involving a social partner experiencing negative emotion and generated free responses indicating what they would do if they were in that situation. The responses were coded in line with categories of strategies proposed by the process model of emotion regulation (Gross, 1998) and interpersonal affect regulation (Niven et al., 2011). We calculated two indices of flexibility *size of repertoire,* derived from the *mean number* of strategies generated and *breadth of repertoire*, derived from the mean number of *different categories* of strategies generated. Overall, our findings provided only limited evidence in support of the validity of this method for assessing flexibility in extrinsic emotion regulation strategy use. We will discuss both substantive and methodological explanations for our findings (and lack thereof) in the sections that follow.

Convergent and Discriminant Validity

It was anticipated that extrinsic emotion regulation flexibility, operationalised as size and breadth of repertoire, would be positively associated with the *appraising emotion* and *managing emotion of others* subscales of emotional intelligence, the subscales representing *inter*personal domain skills in the interpersonal communication competence measure (*empathy, interaction management, altercentrism, supportiveness, environmental control*) and Friendliness. The emotional intelligence subscales of *managing emotion in self* and *utilisation of emotion*, are self- focused and were not expected to be strongly associated with our indices of extrinsic emotion regulation flexibility. Likewise, we expected that flexibility in extrinsic emotion regulation would not correlate strongly with the *intra*personal domain skills of the

interpersonal communication competence measure (*self-disclosure, social relaxation, assertiveness, expressiveness, immediacy*).

Our results were mixed; The interpersonal communication competence *altercentrism* subscale, which represents interest in others and responsiveness to their needs, was the only construct to be positively associated with both size and breadth of repertoire, in line with our predictions. Size of repertoire, but not breadth of repertoire, was positively associated with the emotional intelligence subscale, *managing emotions of others*, the interpersonal communication competence subscales, *empathy* (understanding and feeling from another's perspective) and *supportiveness* (validating and helping others) as anticipated. Despite expectations, neither size nor breadth of repertoire were associated with the *appraising emotion* subscale of emotional intelligence, the *interaction management* and *environmental control* subscales of interpersonal communication competence, or Friendliness. As expected, there were no associations between our indices of flexibility and the emotional intelligence subscales of *managing emotion in self* and *utilisation of emotion* or the *intra*personal subscales of interpersonal communication competence, which are self-focused skills rather than interactive skills.

As noted above, regulators who endorsed both a larger number of strategies and a larger range of different types of strategies, were also more likely to report being caring and inclusive of others (*altercentrism*). Being aware of others and attuned to their experiences would be expected to be a foundational component of effective extrinsic emotion regulation, as the initial stage of extrinsic emotion regulation involves being aware of another's experience and accurately identifying emotion in social partners (Reeck et al., 2016).

Additionally, results show that individuals who drew on a larger number of strategies in response to our hypothetical scenarios (size of repertoire), were also more likely to report effectively managing emotions of others, being empathic and supportive (although the associations were weak, *r*s ranged from .16 to .20). However, breadth of repertoire was not associated with these subscales. This may indicate that regulators who use a larger number of

strategies, which may include the use of several strategies from the same category, are also more likely to report attempting to manage others' emotions, and being empathic and supportive, compared to regulators who use a wider range of different types of strategies, but perhaps fewer strategies overall. It is possible that implementing a large number of strategies in an attempt to reduce negative emotion in social partners (as reflected in our *size* measure) suggests greater regulatory effort on the part of regulators, signalling regulators' willingness to invest time and effort into a relationship. Individuals who put personal effort into relationships, also experience reciprocity (mutually beneficial exchanges) and emotional closeness with partners, relatives and friends (Lang, Wagner, Wrzus, & Neyer, 2013). Similarly, intangible investments, such as time and effort put into a relationship, can increase commitment and improve the quality of close relationships (Goodfriend & Agnew, 2008). Using a larger number of strategies in extrinsic emotion regulation attempts may be perceived as an expression of the regulators' care and commitment to the relationship (rather than flexibility per se), hence the associations of size of repertoire with managing emotions of others, empathy and supportiveness.

However, there were no significant associations between size and breadth of repertoire with the *appraising emotion* subscale of emotional intelligence. This may indicate that there are differences between appraising emotion as measured in emotional intelligence and the complex cognitive and affective skills needed to be flexible in extrinsic emotion regulation. The emotional intelligence subscale of appraising emotion encompasses recognising emotion in oneself and in others (items include, *I am aware of my emotions as I experience them*, and *I know what other people are feeling just by looking at them*; Schutte, et al., 1998). Extrinsic emotion regulation also involves correctly identifying emotion in the target, however, the appraisal of emotion is a necessary, but not sufficient condition for effective emotion management. In extrinsic emotion regulation, the regulator needs to go beyond simply recognising the emotion a target is experiencing. The regulator also initiates goal directed actions, including deciding whether to regulate, assessing the most appropriate strategies, then selecting and implementing the chosen

strategies (Nozaki & Mikolajczak, 2020; Reeck et al., 2016). Although emotional intelligence skills are important in social relationships (Schutte et al., 2001), our mixed findings may indicate that flexibility in extrinsic emotion regulation is not required for effective appraisal of emotions in others.

An alternative explanation for the lack of strong convergent validity with emotional intelligence, interpersonal communication competence and Friendliness, may be that our indices of emotion regulation flexibility may not have accurately captured flexibility in extrinsic emotion regulation. Although our free response methodology was adapted from similar research (Southward et al., 2018) and allowed a wide range of strategies to be assessed, perhaps the use of hypothetical scenarios did not adequately capture how individuals would respond in real world settings. Additionally, it is possible that the indices we focused on were not optimal for operationalising flexibility in extrinsic emotion regulation. Size of repertoire represents the ability to implement a large number of extrinsic strategies when a social partner is experiencing negative emotion. However, emerging perspectives suggest that implementing numerous strategies (size of repertoire) may not necessarily be the most effective way to reduce negative emotion, particularly if some of the strategies are poorly chosen or inappropriate to the situation (Nozaki & Mikolajczak, 2020). Similarly, implementing a large number of different types of strategies (breadth of repertoire) may not always be the most effective way to manage a social partner's negative emotion. Instead, a regulator that carefully considers the situational context may accurately select and implement fewer strategies that better "fit" the contextual demands. Thus, more nuanced approaches that take situational context into account may be needed to provide conclusive insights into whether individual differences in extrinsic emotion regulation flexibility contribute to regulatory success.

Associations Between Flexibility and Quality of Social Exchanges

We anticipated that flexibility in extrinsic emotion regulation would be associated with positive social exchanges. This was partially supported, with breadth of repertoire, but not size

of repertoire, being positively associated with positive social exchanges. Although the association between positive social exchanges and breadth of repertoire was small (r = .15), this was consistent with the earlier findings (Chapter 3) where the proxy measure of flexibility derived from individual strategy endorsement was also correlated with positive social exchanges (r = .28). Taken together, there is modest support for the notion that those who endorse use of more strategies, either in a questionnaire or spontaneously, also report more frequent positive exchanges. It is possible that the small association and lack of consistency in findings across the two flexibility indices in this study reflect that the concepts of size and breadth of repertoire do not adequately capture flexible emotion regulation. As discussed previously, the use of a larger repertoire of strategies may not necessarily translate into more effective extrinsic emotion regulation.

It is also possible that a third variable, such as personality, may have confounded the relationships between flexibility and the quality of social exchanges. For example, those high in Extraversion are more likely to use a proactive approach in interpersonal emotion regulation and use challenging strategies such as cognitive change, whereas those high in Agreeableness tend to use strategies that minimise upsetting their social partners (Hughes, Kratsiotis, Niven, & Holman, 2020). Those higher in Extraversion also interact more often with social partners and report better social interactions than those lower on this trait (Nezlek, Schütz, Schröder-Abé, & Smith, 2011) and those high in Agreeableness tend to report less frequent negative social exchanges (Tov, Nai, & Lee, 2016).

In regard to negative social exchanges, there were no associations with either size or breadth of repertoire. Regulators that used a large number of strategies or types of strategies did not report more or less frequent negative social interactions than those that used a smaller number of strategies. These findings are consistent with those of Chapter 3, where no association was found between the proxy measure of flexibility and negative social exchanges. However, our conceptualisation of size and breath of repertoire may not fully capture the concept of flexibility

in extrinsic emotion regulation, and a more nuanced approach to measuring flexibility may be required.

Strengths and Limitations

A strength of this study was using a common set of scenarios for all participants which reduced variation in individual experiences such as when recalling actual events. This reduced the extent to which the flexible use of strategies as assessed here was likely to be determined by participants' idiosyncratic life circumstances, allowing for a more standardised assessment of individual differences. Selecting scenarios with ambiguous controllability was designed to capture individual difference in strategy preference, rather than differences elicited by specific scenario content. However, we acknowledge that hypothetical scenarios have limitations and may not reflect the actual strategies an individual may implement in real life settings. To overcome this limitation, daily diary methods could be used, where participants record their experiences once a day, capturing actual strategy use in natural situations (Eldesouky & English, 2018). Similarly, the use of ecological momentary assessment, which utilises randomly timed prompts throughout a day, enables the recording of regulatory processes as they occur in everyday life (Blanke et al., 2019; Haines et al., 2016). These methods assess behaviour as it unfolds in everyday situations, and more accurately represent what actually occurs in real-world settings, therefore, findings can be generalised more confidently. Also, these methods allow the examination of variation in strategy use within individuals, across situations, rather than providing estimates of more habitual patterns of responding as captured by questionnaire-based methods. Although the micro-longitudinal methods outlined above do not control for differences in individual life circumstances that might impact on the use of different regulatory strategies, they are recognised as being high in ecological validity, and having participants report on their experiences soon after the event reduces the likelihood of memory biases or inaccuracies (Scollon, Prieto, & Diener, 2009).

In this study we measured size and breadth of repertoire as indices of flexibility,

representing how many strategies or types of strategies a regulator endorsed in response to a single situation. Measuring flexibility by assessing repertoire, reflected in both size and breadth, is an established method in intrinsic emotion regulation research (Bonanno & Burton, 2013; Southward et al., 2018). Access to a larger repertoire of strategies, is considered to represent more flexible responding and is associated with better psychological outcomes (Southward et al., 2018). However, simply considering repertoire may not provide an adequate assessment of flexibility. Implementing a larger number of extrinsic emotion regulation strategies may increase the chance that one of the chosen strategies will be effective, but selecting a smaller number of strategies that are optimal for a given situation may be just as effective while better conserving available resources (Hobfoll, 1989). The concept of "more is better" is may not necessarily be true for emotion regulation, with a judicious selection of strategies that provide a better fit between strategy and situation possibly being a better indicator of effective flexibility than the tendency to draw on a wide range of strategies. Recently, intrinsic emotion regulation research has begun to examine a more nuanced way of measuring flexibility that takes situational context more directly into account (Haines et al., 2016; Troy et al., 2013). Thus, measuring situational context and calculating a measure of strategy-situation fit may provide a more nuanced assessment of flexibility in extrinsic emotion regulation, and this will be the focus of the next chapter.

Conclusion

In this study, we aimed to create an index of flexibility in extrinsic emotion regulation by calculating size and breadth of repertoire and comparing this flexibility index with similar constructs. There was only limited evidence in support of the validity of the flexibility measures, and it is difficult to ascertain based on these findings whether (1) the approach used here was inadequate as a means of assessing aspects of repertoire (size and breadth) as indices of flexibility, or (2) size and breadth were adequately assessed, but represent less appropriate conceptualisations of flexibility than alternative approaches such as assessment of strategy-

situation fit. Thus, using a methodological approach that directly takes situational context into account, and considers the "match" between strategy selection and the characteristics of a given situation, may provide a better means of assessing flexibility in the use of extrinsic emotion regulation strategies, and the extent to which flexibility relates to social relationship quality more broadly.

Appendix A: *Study Scenarios and Controllability Ratings*

Scenarios	Controllability rating	
	Regulator *M (SD)*	Target *M (SD)*
1. As well as studying, you are working part time at a restaurant. Recently, a new employee started working there too. They are quite nervous and make several mistakes. One evening the new employee comes to you crying because they have just dropped a tray of glasses.	4.82 (1.97)	4.35 (2.15)
2. Your lecturer has just returned the assignments in an important topic in your course. You did okay by your standards, but your best friend just checked their grade and they have failed the assignment although they tried their hardest. They are upset because they have been dreaming of pursuing this course since high school.	3.40 (1.84)	4.98 (2.19)
3. Your close friend works at a retail store that has just been taken over by a larger corporation. There are rumours that they may be cutting staff numbers. Your friend tells you how worried they are about losing their job.	2.12 (1.96)	2.95 (2.26)

Appendix B: *Extrinsic Emotion Regulation Flexibility Code Book*

1. Situation Selection / Avoidance

- staying away from the target while they are upset, avoiding engaging in conversation with target, ignoring the target, walking away from the target

2. Situation Modification

- actively do something about the situation, changing, removing or altering a problem to remove the emotional impact, address or solve the problem

3. Problem Solving

– offering advice, feedback, suggestions, solutions, guidance about the problem, suggest what the target should do about the problem

4. Attentional deployment

– directing the target's attention away from the cause of the problem, or toward something more pleasant, change the subject to something more positive, talk about something unrelated, tell a joke or use humour, offering strategies for shifting attention away from the emotional event, offering suggestions for activities to help the target get their mind off the problem

5. Cognitive change

– help target reappraise a situation or problem as more positive, altering the target's perspective regarding the problem, reframing the problem to make it less stressful, provide alternative explanation for the problem, telling target to keep things in perspective, offering a different perspective or a different interpretation of the situation to modify its emotional impact, helping the target reframe the emotional event, helping the target derive meaning from the situation, acceptance.

6. Response modulation

– influencing emotional response tendencies, telling target to ‘take a deep breath’ or ‘calm down’ or ‘relax’, interrupt target’s rant / venting, tell target to lower their voice/ change tone of voice, tell target ‘that’s enough’, suggesting the target take a few deep breaths, talking to the target in a calm, soothing tone of voice, suggesting the target has a cup of tea / drink of water

7. Empathetic listening

– active listening, letting the target talk

8. Other emotion-focused support

– offering validation, understanding, sympathy, reassurance, consolation, encouragement,

9. Other - strategy

– doing or saying something that could impact the target or situation, not otherwise described

10. Other - non-strategy

– doing or saying something that would have no impact on the target or situation, not otherwise described

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Chapter 5: Strategy-Situation Fit in Extrinsic Emotion Regulation and Quality of Social Exchanges: A Daily Diary Study

Background

Extrinsic emotion regulation is a dynamic process that involves an individual (the *regulator*) appraising emotion in a social partner (the *target*), then selecting and implementing emotion regulation strategies to influence the target's emotional experience (Reeck, Ames, & Ochsner, 2016). This regulatory process is an important component of social interactions and can influence the quality of social relationships (Niven, Garcia, van der Löwe, Holman, & Mansell, 2015). Some extrinsic regulatory strategies have been previously regarded as either generally promoting positive or negative social outcomes in workplace settings (Little, Kluemper, Nelson, & Ward, 2013). Similarly, in regulating emotion in one's self (*intrinsic* emotion regulation), some strategies have been generally considered as more adaptive than others (John & Gross, 2004).

More recently, however, researchers interested in intrinsic emotion regulation have highlighted the importance of considering context. Specifically, rather than habitually using certain types of putatively adaptive strategies, effective emotion regulation may largely depend on one's ability to select and implement strategies that best align with regulatory goals (Tamir, 2015) and are most appropriate to the demands of a specific situation (Haines et al., 2016). As extrinsic emotion regulation occurs across various social situations, it is also likely that an approach to regulating other peoples' emotions that takes situational context into account when selecting and implementing strategies will be most effective. Following this line of argument, possessing the ability to flexibly apply extrinsic regulatory strategies with different social partners across diverse contexts might be regarded as a key skill for establishing and maintaining high quality interpersonal relationships (Lopes et al., 2011).

Despite its centrality to maintaining social relationships, research on extrinsic emotion regulation is relatively scant compared to the burgeoning literature on intrinsic emotion regulation (Nozaki & Mikolajczak, 2020). Our aim is to extend the study of differences between individuals in extrinsic emotion regulation strategy use by examining the correspondence between perceived controllability of day-to-day regulatory contexts and strategy selection in everyday life. By using a daily-diary approach (Eldesouky & English, 2018; Richardson, 2017), we increase ecological validity in comparison to lab- or scenario-based approaches that have frequently been utilised in previous studies of intrinsic (Southward, Altenburger, Moss, Cregg, & Cheavens, 2018) and extrinsic (Jarman & Windsor, 2020) emotion regulation. We also consider whether differences in overall relationship quality- operationalised as frequency of self-reported experiences of positive and negative social exchanges- accounts for differences in the degree of coupling between perceived controllability over situations where a target's emotions are being regulated, and the selection of strategies in that situation.

Strategy-Situation Fit in Extrinsic Emotion Regulation

Emotion regulation in oneself (intrinsic) or others (extrinsic), is a process which influences the experience and expression of an emotional response (Gross, 1998). In extrinsic emotion regulation, an active attempt is made by an individual (the regulator) to influence a social partner's (the target) emotional experience (Nozaki & Mikolajczak, 2020). Such regulation requires the ability in regulators to accurately appraise emotions in their social partners and to select and implement effective strategies to produce a desired emotional state (Lopes et al., 2011; Reeck et al., 2016). Strategies such as *situation modification* (making changes to the situation), *attentional deployment*, (focusing attention toward or away from certain aspects of the situation) and *cognitive change,* (reappraising the situation from a different perspective) generally involve intervening early in the emotion generation cycle before an emotion is fully formed. In contrast, *response modulation* (suppressing or amplifying the experience and expression of emotion and physiological responses), focuses on the emotion once it is being experienced (Gross, 1998).

Consistent with recent research (Nozaki & Mikolajczak, 2020; Reeck et al., 2016), we base our study of extrinsic emotion regulation strategy use on the process model of emotion regulation which encompasses the strategies outlined above (Gross, 1998). We also include two additional strategies specific to extrinsic emotion regulation; *empathic listening* and *problem solving,* drawn from an *interpersonal affect regulation* perspective (Niven, Holman, & Totterdell, 2012; Niven, Totterdell, & Holman, 2009). *Empathic listening* involves paying attention to a social partner, understanding their emotional experience and responding in verbal and non-verbal ways and can be used as a method of improving affect in social partners (Niven, Holman, et al., 2012). Empathic listening can provide important emotional support which can improve social partners' affect (Jones, 2011) and reduce their experience of stress after a stressful encounter (Lepore, Ragan, & Jones, 2000). Additionally, *problem solving* strategies involve the regulator offering advice to the target or suggesting actions that the target could take, and can also be used to improve emotion (e.g., down- regulating feelings of distress) in social partners (Niven et al., 2009). In turn, good quality advice given by a regulator that is accepted and implemented by the target can reduce negative emotion in social partners (Tracy & Tracy, 1998) and help build and maintain supportive relationships over time (MacGeorge, Guntzviller, Hanasono, & Feng, 2016). In the present study, problem solving differs from the strategy of situation modification (described above) as the former involves the regulator offering suggestions for how the target might address a problem, whereas the latter involves the regulator directly intervening themselves in an effort to modify the situation.

In intrinsic emotion regulation research, some strategies have been typically classified as adaptive (e.g. cognitive change) or maladaptive (response modulation) (John & Gross, 2004). However, recently scholars have questioned this assumption and rather have focused on *flexibility* in emotion regulation which incorporates being sensitive to changing situational contexts and having access to a diverse repertoire of strategies (Aldao, Sheppes, & Gross, 2015; Bonanno & Burton, 2013). Some intrinsic emotion regulation researchers have focused on

whether the use of a wide range of strategies is more effective than drawing on a smaller repertoire (Blanke et al., 2019). However, a more nuanced approach may be to consider *strategy-situation fit*; that is the extent to which strategy selection provides an effective fit with the demands of a given situational context (Haines et al., 2016; Troy, Shallcross, & Mauss, 2013). One important aspect of situational context is the perceived *controllability* of the situation, that is the power that an individual feels they have (or in the case of extrinsic emotion regulation, the power that a target has) *to influence or change the course of events* (Cheng, 2001; Folkman, 1984). A situation may be high in controllability, such as when a target is angry because they dropped the contents of their briefcase on the ground, where a regulator can make changes to the situation by helping the target pick up their belongings. On the other hand, a situation may be low in controllability, such as when a target is upset because their relative has been taken to hospital with a serious illness.

In relating concepts of controllability to the choices made in extrinsic emotion regulation, it is helpful to draw on the established literature on coping. In general, effective coping involves appraising the controllability of a situation, then selecting and implementing appropriate coping strategies (Cheng, 2001; Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986; Park, Armeli, & Tennen, 2004; Park, Folkman, & Bostrom, 2001). Coping strategies can be broadly classified as problem-focused or emotion-focused (Folkman et al., 1986). Problem-focused strategies are used to manage or make changes to the problem situation in order to alter its emotional impact, for example by implementing direct action or problem solving. On the other hand, emotion-focused strategies directly focus on managing the distressing emotions felt by the individual, for example by altering the meaning of the situation or redirecting attention (Folkman, 1984; Folkman et al., 1986; Park et al., 2004). When a situation that is causing distress is perceived to be controllable, problem-focused strategies are considered appropriate, whereas in less controllable situations, emotion-focused strategies are of greater utility. This matching of coping style to the situation is referred to as *goodness of fit* (Park et al., 2004) or

strategy-situation fit (Cheng, 2001). Emerging research in intrinsic emotion regulation also points to an importance of selecting regulatory strategies that match situational demands. For example, in a study which used ecological momentary assessment (EMA) over 7 days to measure the use of intrinsic emotion regulation in everyday situations, Haines et al. (2016) found that when the putatively adaptive strategy of cognitive reappraisal (e.g. changing one's perspective of the situation, an emotion-focused strategy) was used in situations perceived to be uncontrollable by the individual, it was associated with higher well-being. However, when cognitive reappraisal was used in situations that were rated as relatively more controllable, use of cognitive reappraisal was associated with lower well-being. Similar support for strategy-situation fit in intrinsic emotion regulation was reported by Troy et al. (2013), who examined associations between participants' cognitive reappraisal abilities and the controllability of their self-reported stressful life events. This study found that participants who had higher cognitive reappraisal abilities also experienced less depression and greater well-being when coping with uncontrollable stressful events. However, in more controllable situations higher cognitive reappraisal abilities was associated with higher levels of depression. These findings suggest that when a problem situation is within the control of an individual, problem-focused strategies are likely to be beneficial. By resolving or changing the problem situation (situation modification) the negative emotional impact is lessened. However, when a problem situation is out of the control of an individual, problem-focused strategies may be ineffectual (Troy et al.), and it may be more beneficial for the individual to use emotion-focused strategies. In this case, an individual may try to see the problem situation from another perspective (cognitive change) or distract themselves (attentional deployment) in order to directly reduce their negative emotion (Haines et al.).

Consistent with the findings of recent studies that have examined strategy-situation fit in the context of intrinsic emotion regulation (Haines et al., 2016; Troy et al., 2013), we expect that the flexible and effective use of extrinsic emotion regulation will also be characterised by

strategy- situation fit. More specifically, in situations where a regulator seeks to down-regulate a target's negative emotion, and perceive the situation as controllable by themselves (regulator control), they may be more likely to use problem-focused strategies. This may include *situation modification* strategies that involve actively making changes to a problem situation to lessen its emotional impact on the target. In situations where the regulator perceives the situation as controllable by the target (target control) they may implement *problem solving* strategies that involve offering advice or suggestions about how the target could make positive changes to their situation. On the other hand, in situations where the regulator perceives that the situation is less controllable by themselves or the target, regulatory efforts might be better served by using emotion-focused strategies to down- regulate a target's negative emotion. The regulator may use *cognitive change* strategies, that is suggesting alternative ways of looking at the problem situation, such as highlighting a positive aspect or potential outcome of the situation. Additionally, in less controllable situations, regulators may also suggest *attentional deployment* strategies to distract the target or *empathic listening* to reduce negative emotion in the target. Therefore, when a situation is perceived to be high in controllability, problem-focused strategies (situation modification, problem solving) would represent better strategy-situation fit. On the other hand, when a situation is perceived to be low in controllability, emotion-focused strategies (cognitive change, attentional deployment, empathic listening) would represent better strategy-situation fit.

Differences in Quality of Social Exchanges as a Predictor of Strategy-Situation Fit

In addition to examining the extent to which the controllability of situations was associated with the use of different extrinsic regulation strategies, we were also interested in the possibility that self-reported relationship quality more generally would be associated with strategy-situation fit. Specifically, we expected that extrinsic regulators who demonstrated better strategy-situation fit would also report more frequent positive and less frequent negative social interactions in general. In their meta-analytic review on coping flexibility Cheng, Lau, and Chan

(2014) found a moderately strong positive association between strategy-situation fit and psychological adjustment (e.g. psychological well-being, positive affect) and concluded that individuals showing better strategy- situation fit had better coping skills. Higher levels of emotional intelligence, which encompasses managing emotion both in oneself and one's social partners, is linked to increased positive social interactions and reduced negative social interactions (Lopes, Salovey, & Straus, 2003). Individuals who scored higher in emotional intelligence are also viewed as more sensitive and interpersonally prosocial by their peers (Lopes, Salovey, Côté, Beers, & Petty, 2005). Thus, individuals who have higher socio-emotional skills, as conceptualised by emotional intelligence, may be more skilled in extrinsic emotion regulation as well as more proficient in identifying emotion in social partners and managing social relationships more generally (Petrovici & Dobrescu, 2014). Therefore, in our study we might expect that regulators that demonstrate higher strategy-situation fit also possess higher levels of interpersonal skills to maintain positive social relationships and avoid negative social interactions.

Regulators who employ strategies that provide an optimal fit with the situation when regulating a target's emotion are likely to be effective in reducing negative emotion in a target. In turn, the target may attribute this alleviation of negative emotion to the regulator's actions (Lawler & Thye, 2006). According to social exchange theory, when an individual experiences positive emotion within a social relationship, they seek further interactions with that social partner, cultivating a supportive, mutually beneficial relationship (Lawler, 2001). Because our research focused on the actions of extrinsic regulators, and not the responses of targets, we were unable to directly assess the effectiveness of regulatory efforts by measuring changes in targets' emotions. However, by assessing the extent to which differences in positive and negative social exchanges predicted strategy-situation fit, we obtained a broad picture of the extent to which flexibility in extrinsic emotion regulation was also more broadly related to social exchange quality.

The Present Study

The aim of the present study is to examine the concept of strategy-situation fit in extrinsic emotion regulation, and to test associations of strategy-situation fit (assessed as a within-person process) with differences in frequency of positive and negative social exchanges. To our knowledge, this is the first study to assess the use of a wide range of extrinsic emotion regulation strategies in everyday life and apply the concept of strategy-situation fit to extrinsic emotion regulation. By asking participants to report their use of extrinsic emotion regulation on a daily basis, and examining the specific strategies they used, we add to the research concerning extrinsic emotion regulation using a method with high ecological validity.

Better strategy-situation fit is thought to be represented by the greater relative use of problem-focused strategies (situation modification, problem solving) in response to more controllable situations, and greater relative use of emotion-focused strategies (cognitive change, attentional deployment, empathic listening) in response to less controllable situations. Therefore, we expect that;

a). Situation modification (problem-focused strategy) will be used more in situations that are rated as higher in controllability for the regulator than in situations rated lower in controllability.

b). Problem solving (problem-focused strategy) will be used more in situations that are rated as higher in controllability for the target than in situations rated lower in controllability.

c). Cognitive change, attentional deployment, and empathic listening (emotion-focused strategies) will be used more in situations that are rated as lower in controllability by regulators or targets than in situations that are rated as higher in controllability.

As regulators that demonstrate greater strategy-situation fit may be more effective in managing their social partners' emotions, we also expect that these regulators would in general have better quality social relationships, characterised by relatively more frequent positive social exchanges and less frequent negative social exchanges. Therefore, we expect that;

d). Greater levels of strategy-situation fit will be evident among participants who report more frequent positive social exchanges and less frequent negative social exchanges.

Method

Participants and Procedure

Participants were 137 university students aged 17-67 (M = 22.86, SD = 7.89, 86% female) who completed a baseline questionnaire and subsequent daily assessments for course credit or $40 reimbursement. The study consisted of two components. Firstly, participants completed an online baseline questionnaire which included questions regarding demographic characteristics and the quality of their social interactions over the previous month. Secondly, they participated in a daily diary study, completing a short online survey every evening for 14 consecutive days. Participants received an email every afternoon at 3pm containing a link to the survey which was accessible until 11.30pm, after which time the link expired. The mean number of daily surveys completed by participants was 11.54 (SD = 3.42), with 72.8% of participants completing 12-14 of the 14 daily surveys. We conducted power analysis using the online WebPower calculator (Zhang & Yuan, 2018), with estimates of medium effect sizes based on Hox, Moerbeek, and Van de Schoot (2017). Results indicated that with a sample of 120 participants, 10 repeated assessments, and assuming a large ICC (0.6), the power to detect a significant effect of a level 2 variable (e.g., positive social exchanges) accounting for 5% of variance in a level 1 slope (e.g., the association of WP controllability with strategy use) was 0.999, suggesting that the study was adequately powered. This project was given approval by the Social and Behavioural Research Ethics Committee of Flinders University (Project No. 8440).

Measures

Questionnaire Measures

Social Exchanges. In the baseline questionnaire, we assessed self-reported quality of social exchanges that participants had experienced in the previous month by using the Positive and Negative Social Exchange measure (PANSE) (Newsom, Rook, Nishishiba, Sorkin, & Mahan, 2005). This scale assesses both positive and negative social exchanges, with 12 positive items (e.g., "provided you with aid and assistance", "gave you helpful advice when you needed to make important decisions") assessing informational support, instrumental support, emotional support and companionship, and 12 negative items (e.g., "let you down when you needed help", "forget or ignore you") assessing unwanted advice or intrusion, failure to provide help, unsympathetic or insensitive behaviour, rejection or neglect. A 5-point scale was used, ranging from (1) *never* to (5) *very often*, (positive scale α = .92, negative scale α = .87). Previous research with the PANSE has shown that positive exchanges are related to higher life satisfaction (Pilkington, Windsor, & Crisp, 2012), positive emotional well-being (Fiori & Consedine, 2013), positive mood and lower loneliness (Rook, 2001). In contrast, negative exchanges are related to lower life satisfaction (Pilkington et al., 2012), negative emotional well-being (Fiori & Consedine, 2013), negative mood, depression and increased loneliness (Rook, 2001).

Daily Diary Measures

Extrinsic Emotion Regulation. Each evening for two weeks, participants were asked if they had "attempted to cheer someone up, or calm someone down". If they indicated that they had made more than one attempt during that day, they were directed to think of the attempt that stood out most in their mind. If they endorsed having attempted extrinsic emotion regulation that day, they were then asked a series of follow-up questions related to their use of six types of extrinsic emotion regulation strategies, endorsed using an 11-point scale (0 = *not at all*, 10 = *a great deal*). Using the process model of emotion regulation (Gross, 1998) as a foundation,

extrinsic emotion regulation was measured with four items adapted from the Interpersonal Emotion Management scale (Little, Kluemper, Nelson, & Gooty, 2012); situation modification, (*I changed, or tried to change, the situation my social partner was facing to alter its emotional impact on them*), attentional deployment (*I distracted my social partner's attention away from the negative aspects of the problem*), cognitive change (*I attempted to influence the emotions of my social partner by changing how they thought about the situation*), and response modulation (*I encouraged my social partner to keep their emotions to themselves).* Two other extrinsic strategy types were included; empathic listening (*I listened sympathetically to my social partner*) from interpersonal affect regulation research (Niven, Totterdell, Holman, & Headley, 2012) and problem solving (*I offered advice, suggestions or solutions*), from an emotion management in the workplace perspective (Tracy & Tracy, 1998). Single-item measures have demonstrated correspondence to multi-item measures when measuring emotional and motivational constructs (Zhu & Urhahne, 2014), stress (Elo, Leppänen, & Jahkola, 2003), and relationship closeness (Aron, Aron, & Smollan, 1992), and can be justifiable in daily diary contexts where participant fatigue needs to be considered (Gardner, Cummings, Dunham, & Pierce, 1998). A recent online daily diary study of intrinsic emotion regulation strategy use, also used single item statements for each strategy (McMahon & Naragon- Gainey, 2019).

Controllability. Using items adapted from a coping flexibility study by Cheng (2001), participants indicated how much control they felt *they* had (regulator control) and how much control their *social partner* had (target control) over the situation using an 11-point scale (*0 = no control at all, 10 = a great deal of control)*.

Covariates. We included age as a covariate, as there is some emerging evidence for developmental differences in extrinsic emotion regulation strategy preference (Jarman & Windsor, 2020); however our sample were predominantly young adults, and age was not a focus of this study. Gender (coded male = 0, female = 1) also may influence strategy preference as women are more reactive to interpersonal stressors (Birditt & Fingerman, 2003) and more

focused on interpersonal aspects when problem solving (Strough, Berg, & Sansone, 1996). As social relationships vary in their function and closeness (Fingerman, 2009), we controlled for the degree of relationship closeness between regulators and targets. Regulators rated the closeness of their relationship with the target (1 = *not close*, 7 = *very close*) using the Inclusion of Other in the Self Scale (Aron, Aron, & Smollan, 1992). As activities and social interactions are potentially different between weekdays and weekends, we also controlled for whether the reported extrinsic emotion regulation attempt occurred on a weekday or a weekend (coded weekday = 0, weekend = 1).

Analytic Strategy

Firstly, descriptive statistics and correlations were calculated to describe the frequency of extrinsic emotion regulation strategy use and associations between the study variables. We then conducted a series of Linear Mixed Models (LMM) to accommodate the repeated measurement occasions across the fourteen days (Snijders & Bosker, 2012), with separate LMM models to predict use of each strategy (situation modification, problem solving, attentional deployment, cognitive change, empathic listening, response modulation). The Linear Mixed Models were set up to allow for co-occurrence to be analysed. This allowed insight into flexible responding.

The models had two levels with the daily diary measurement occasions *j* (Level 1) nested within individuals *i* (Level 2). We examined the effect of perceived control of the situation for the participant (regulator) and their social partner (target), and closeness of the relationship between regulator and target on the use of each of the strategies. The models were fitted across two sequential steps. At Step 1, predictors comprising regulator and target control and closeness ratings were examined at the between person level (BP; Level 2) by centring on the sample mean, and at the within person level (WP; Level 1) by subtracting the person mean from each participant's day- specific scores (Hoffman & Stawski, 2009). Main effects for positive and negative exchanges were also included at Step 1. At Step 2, we added cross-level interactions

representing the associations of differences in positive and negative social exchanges (Level 2) with slopes for perceived regulator and target controllability and relationship closeness (WP Level 1 effects). To simplify the final models, non-significant interactions were progressively excluded. All analyses were conducted using IBM SPSS Statistics Version 25. An example equation with situation modification as the dependent variable is included here:

Step 1

$$\text{Situation modification}_{ij} = \gamma_{00} + \text{BP regulator control}_i + \text{WP regulator control}_{ij} + \text{BP target control}_j + \text{WP target control}_{ij} + \text{BP closeness}_j + \text{WP closeness}_{ij} + \text{Positive social exchanges}_i + \text{Negative social exchanges}_i + \text{Covariates} + r_{ij}$$

Step 2

$$\text{Situation modification}_{ij} = \gamma_{00} + \text{BP regulator control}_i + \text{WP regulator control}_{ij} + \text{BP target control}_j + \text{WP target control}_{ij} + \text{BP closeness}_j + \text{WP closeness}_{ij} + \text{Positive social exchanges}_i + \text{Negative social exchanges}_i + \text{Covariates}$$

$$+ \text{WP regulator control}_{ij} \text{ X Positive social exchanges}_i$$
$$+ \textit{WP} \text{ target control}_{ij} \text{ X Positive social exchanges}_i$$
$$+ \textit{WP} \text{ closeness}_{ij} \text{ X Positive social exchanges}_i$$
$$+ \textit{WP} \text{ regulator control}_{ij} \text{ X Negative social exchanges}_i$$
$$+ \textit{WP} \text{ target control}_{ij} \text{ X Negative social exchanges}_i$$
$$+ \textit{WP} \text{ closeness}_{ij} \text{ X Negative social exchanges}_i$$
$$+ r_{ij}$$

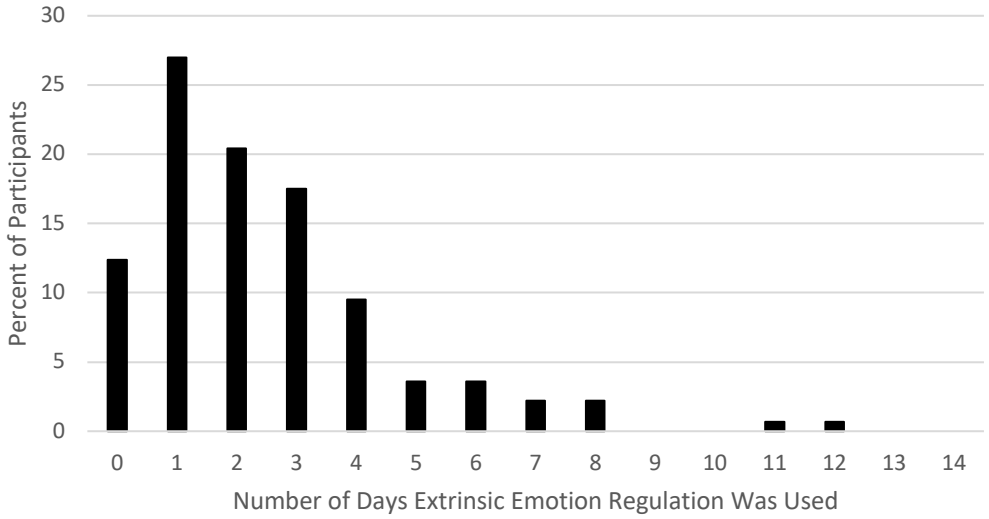
We estimated individual specific random effects for the intercept (μ_{0i}) and tested random slopes (μ_{1i}) for WP regulator control, WP target control and WP closeness at Step 1. Random slopes that significantly contributed to the model fit (assessed by χ^2 test of difference in -2 restricted log likelihood) were retained in the model. Only the random slope for WP regulator control contributed to the model fit for problem solving and empathic listening strategies. We also estimated the intercept-slope covariance (μ_{01}) in the models that included random slopes. Pseudo R^2 was calculated based on the proportional change in variance components at Levels 1 and 2 (Singer, Willett, & Willett, 2003).

Results

Descriptive Statistics

During the daily diary study, 87.6% of participants reported using extrinsic emotion regulation at least once across the 14 assessments. A majority of participants (74.4%) used extrinsic emotion regulation between one and four times during the study period, with a further 13% using extrinsic emotion regulation on five or more occasions (see Figure 1).

Figure 1
Percentage of Participants Reporting Extrinsic Emotion Regulation



Overall regulators reported using higher levels of the strategies considered to be adaptive compared to response modulation (see Table 1). The intraclass correlations coefficients (ICC) calculated using null (empty) LMMs represent the proportion of variance at Level 2 (between- person variance). The ICCs indicated that most of the variance occurred at the within person level (Level 1) for the adaptive strategies, whereas the variance for response modulation was primarily at the between person level (see Table 1).

The between person correlations in Table 2 show that those reporting greater overall use of cognitive change also reported more positive social exchanges, whereas those reporting greater use of response modulation also reported using more situation modification and more frequent negative social exchanges. Perceived control by regulator and by target were also positively correlated.

Within person correlations (Table 3) show that across days, use of both problem-focused strategies, situation modification and problem solving, were positively correlated. However, problem solving, attentional deployment, cognitive change and empathic listening were all positively correlated, indicating that regulators used *both* problem- and emotion-focused strategies.

Table 1

Means, Standard Deviations and Intraclass Correlation Coefficients of Extrinsic Strategy Use

Strategy	*M (SD)*	*ICC*
Situation Modification	6.61 (2.27)	.29
Problem Solving	7.64 (2.20)	.31
Attentional Deployment	7.00 (2.19)	.20
Cognitive Change	7.45 (2.16)	.35
Empathic Listening	8.44 (2.03)	.33
Response Modulation	2.35 (1.86)	.56
Relationship Closeness	6.62 (1.52)	.36
Regulator Control	3.54 (2.31)	.41
Target Control	5.16 (2.50)	.25
Positive Social Exchanges	2.53 (0.75)	
Negative Social Exchanges	1.03 (0.64)	
Age	22.86 (7.89)	
Gender	86% female	

Note: Strategy range 1-11, social exchanges range 0-4, relationship closeness range 1-7, control range 0-10. ICC = Intra-class correlation. ICCs only apply for variables that vary between (Level 2)- and within (Level 1)-participants.

Table 2

Between Person Correlations of Strategy Use, Controllability, Social Exchanges and Covariates

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age	-	**-.05***	-.06	**-.14****	-.06	**.19***	.06	-.05	-.07	-.17	-.12	-.10	**.20***
2. Gender		-	**-.13****	**-.15****	**.07****	-.04	-.01	**.07****	**-.15****	**.07****	**-.13****	-.04	**.12****
3. Closeness			-	.18	-.13	.06	.07	.03	.12	.11	**.20***	-.07	-.14
4. Positive Social Exchanges				-	**-.30****	.07	.09	-.08	.17	-.08	**.19***	.05	-.10
5. Negative Social Exchanges					-	.09	.16	**.24****	.01	.14	-.04	-.01	**.24****
6. Regulator Control						-	**.54****	.07	.001	.01	-.02	-.06	**.23***
7. Target Control							-	**.20***	.13	-.01	.16	-.02	.03
8. Situation Modification								-	**.39****	**.24****	**.28****	.14	.05
9. Problem Solving									-	**.25****	**.52****	**.46****	.02
10. Attentional Deployment										-	**.34****	**.22***	.04
11. Cognitive Change											-	**.23***	-.17
12. Empathic Listening												-	**-.19***
13. Response Modulation													-

Note: *p<.05, **p<.01, Closeness = closeness of relationship between regulator and target, Regulator control = perceived control by regulator, Target control = perceived control by target, Level 1(BP) variables are mean scores across all available assessments.

Table 3

Within Person Correlations of Strategy Use, Controllability and Closeness

	1	2	3	4	5	6	7	8	9
1. Situation Modification	-	**.29****	.04	.10	.05	-.02	.01	**.15****	**.24****
2. Problem Solving		-	**.14****	**.35****	**.25****	**.12***	-.03	-.01	.04
3. Attentional Deployment			-	**.31****	**.25****	-.001	-.03	.01	**.13***
4. Cognitive Change				-	.04	**.12***	.03	-.06	.03
5. Empathic Listening					-	**-.20****	-.05	**-.22****	-.04
6. Response Modulation						-	-.07	.04	.07
7. Closeness							-	.03	-.02
8. Target Control								-	**.19****
9. Regulator Control									-

Note: **p*<.05, ***p*<.01, Closeness = closeness of relationship between regulator and target, Target control = perceived control by target, Regulator control = perceived control by regulator.

In the sections that follow, results of the LMM analyses used to test our main hypotheses are reported for each strategy in turn.

Situation Modification

It was expected that the use of situation modification would be greater in situations perceived to be higher in perceived regulator controllability, than in situations perceived as lower in controllability (indicating greater strategy-situation fit). Consistent with this prediction, within person controllability by regulator was positively associated with situation modification (see Table 4, Step 1); however, two significant interactions (Step 2) qualified this relationship. The interaction between perceived controllability by the regulator and relationship closeness (see Figure 2) showed that situation modification strategies were used more when regulators perceived a higher degree of control than when they perceived lower control (as expected), however, only for relationships rated as less close. In relationships rated higher in closeness, situation modification strategies were used at similar levels at both lower and higher levels of perceived control by the regulator.

It was expected that the positive WP association of regulator controllability with situation modification (as represented by the WP regulator controllability slope), would be stronger among those reporting more frequent positive social exchanges and weaker among those reporting more frequent negative social exchanges. This prediction was partially supported, as an interaction of WP regulator controllability and negative social exchanges emerged at Step 2, showing that the positive WP regulator controllability slope was weaker among those reporting more frequent negative social exchanges (see Figure 3). However, positive social exchanges were not associated with the use of situation modification, or strategy-situation fit.

Table 4

Predictors of Situation Modification

	Step 1			Step 2		
	B	*SE*	*95% CI*	*B*	*SE*	*95% CI*
Predictors						
Intercept	6.37	.62	5.15 - 7.60	6.37	.61	5.15 – 7.58
WP Closeness	0.02	.10	-0.18 - 0.22	0.01	.10	-0.19 - 0.21
BP Closeness	0.10	.14	-0.16 - 0.37	0.11	.14	-0.16 – 0.38
WP Reg Control	**0.26****	.08	0.10 – 0.41	**0.26****	.08	0.11 – 0.42
BP Reg Control	0.003	.11	-0.21 – 0.21	0.01	.11	-0.20 - 0.22
WP Target Control	0.10	.06	-0.03 – 0.22	0.10	.06	-0.02 - 0.22
BP Target Control	0.17	.10	-0.03 – 0.37	0.17	.10	-0.03 - 0.37
Positive Social Exchanges	0.00	.29	-0.58 – 0.58	0.03	.29	-0.55 - 0.61
Negative Social Exchanges	**0.67***	.33	0.003 – 1.33	**0.67***	.33	0.003 - 1.33
Interaction terms						
WP Reg Control x WP Closeness				**-0.11***	.05	-0.21 - -0.01
WP Reg Control x Negative SE				**-0.27***	.13	-0.53 - -0.01
Covariates						
Age	-0.02	.02	-0.06 – 0.03	-0.02	.02	-0.06 – 0.03
Gender	0.27	.65	-1.02 – 1.55	0.25	.64	-1.02 – 1.53
Weekend	0.09	.32	-0.54 – 0.72	0.14	.32	-0.48 – 0.77
Variance components						
Residual	5.38	.50	4.48 – 6.47	5.26	.50	4.37 – 6.33
Intercept	2.22	.62	1.29 – 3.83	2.24	.61	1.31 – 3.83
Pseudo R^2 within person	.05			.07		
Pseudo R^2 between person	.20			.19		

Note: *$p < .05$, **$p < .01$, WP = within person, BP = between person, Reg = regulator

Figure 2

Interaction of WP Perceived Regulator Controllability with WP Relationship Closeness in the Prediction of Situation Modification

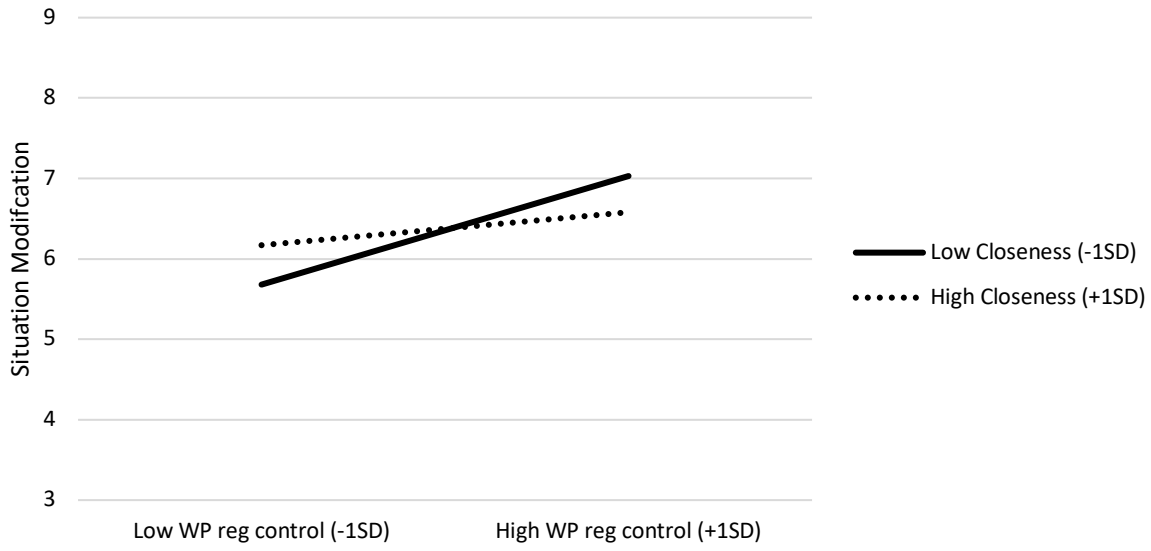
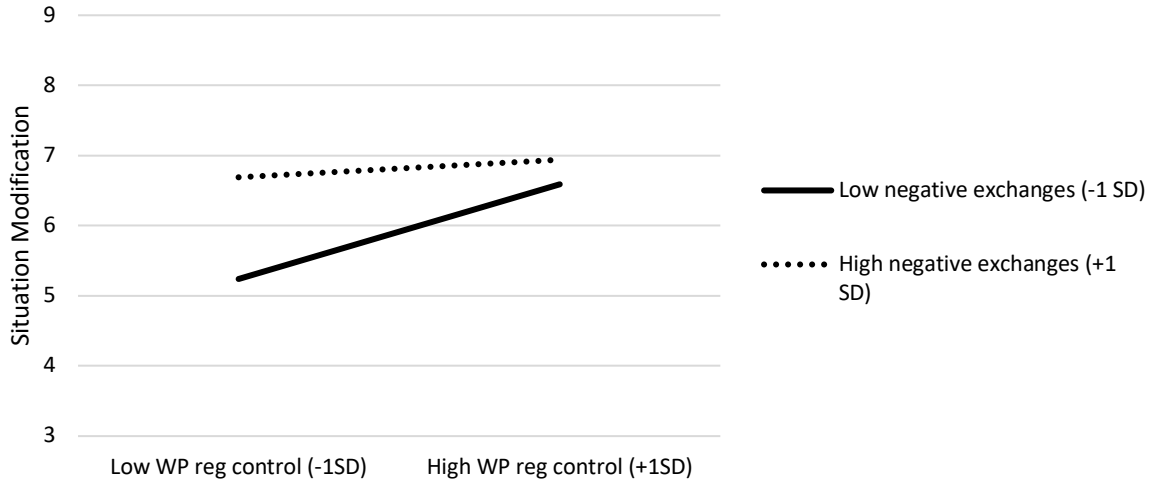


Figure 3

Interaction of WP Perceived Regulator Controllability with Negative Social Exchanges in the Prediction of Situation Modification



Problem Solving

It was anticipated that problem solving (e.g. giving advice) would be used more in situations where regulators perceived the situation to be relatively more controllable by the target (indicating greater strategy-situation fit). Although perceived controllability by the target was not a significant predictor of problem solving, there were significant interactions of perceived controllability by the regulator with relationship closeness and negative social exchanges (see Table 5). The interactions showed similar patterns to those reported above in relation to situation modification.

The interaction between perceived controllability by the regulator and relationship closeness showed that problem solving was used more when regulators perceived a higher degree of control than when they perceived lower control, however, only for relationships rated as less close. In relationships rated higher in closeness, problem solving was used at similar levels at both lower and higher perceived control by the regulator (see Figure 4).

The interaction between perceived controllability by the regulator and negative social exchanges showed that using higher levels of problem solving when situations were regarded as more personally controllable was associated with less frequent negative social exchanges (see Figure 5).

Table 5

Predictors of Problem Solving

	Step 1			Step 2		
	B	*SE*	95% CI	*B*	*SE*	*95% CI*
Predictors						
Intercept	8.20**	.60	7.00 – 9.40	8.21**	.60	7.02 – 9.40
WP Closeness	-0.06	.10	-0.25 – 0.13	-0.07	.09	-0.26 – 0.11
BP Closeness	0.11	.13	-0.15 – 0.37	0.12	.13	-0.14 – 0.38
WP Reg Control	0.17	.10	-0.05 – 0.38	0.19	.10	-0.02 – 0.40
BP Reg Control	-0.07	.10	-0.28 – 0.13	-0.07	.10	-0.28 – 0.13
WP Target Control	-0.04	.06	-0.16 – 0.08	-0.04	.06	-0.16 – 0.08
BP Target Control	0.10	.10	-0.10 – 0.29	0.10	.10	-0.10 – 0.29
Positive Social Exchanges	0.48	.29	-0.09 – 1.04	0.51	.28	-0.06 – 1.07
Negative Social Exchanges	0.09	.33	-0.56 – 0.74	.020	.33	-0.45 – 0.85
Interaction terms						
WP Reg Control X WP Closeness				**-0.10***	.05	-0.20 - -0.002
WP Reg Control X Negative Social Exchanges				**-0.45****	.17	-0.78 - -0.12
Covariates						
Age	-0.01	.02	-0.06 – 0.03	-0.01	.02	-0.05 – 0.04
Gender	-0.61	.63	-1.87 – 0.65	-0.64	.63	-1.90 – 0.61
Weekend	-0.19	.30	- 0.78 – 0.41	-0.15	.30	-0.73 – 0.44
Random slopes						
WP Reg Control	**0.24***	.12	0.10 - .62	**0.22***	.10	0.09 – 0.56
Variance components						
Residual	5.17	.49	4.30 – 6.22	4.15	.44	3.37 – 5.11
Intercept	2.21	.61	1.28 – 3.80	2.53	.61	1.58 – 4.07
Pseudo R^2 within person	<.01			.19		
Pseudo R^2 between person	.04			<.01		

Note: *$p < .05$, **$p < .01$, WP = within person, BP = between person, Reg = regulator

Figure 4

Interaction of WP Perceived Regulator Controllability with WP Relationship Closeness in the Prediction of Problem Solving

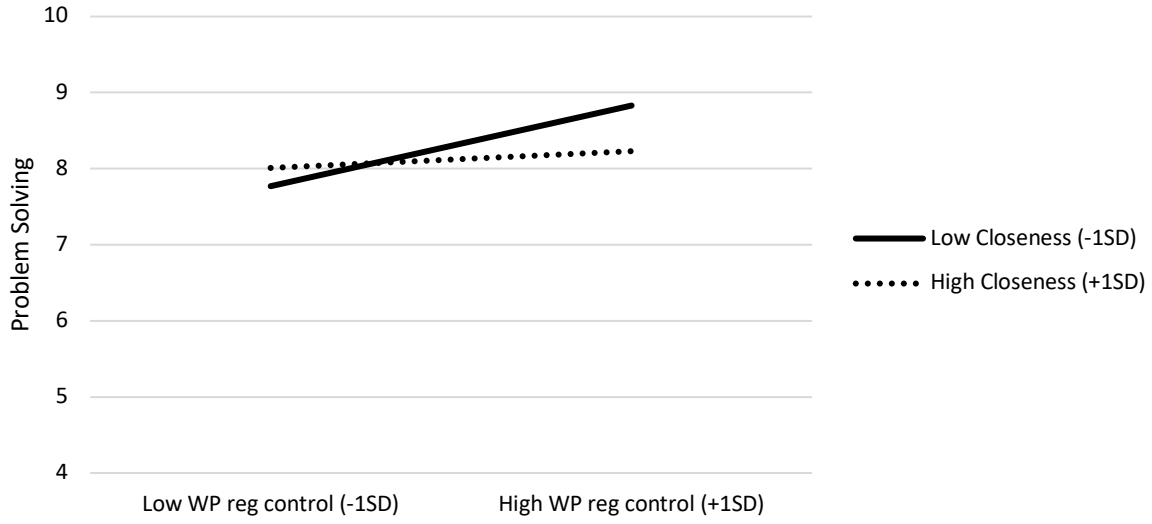
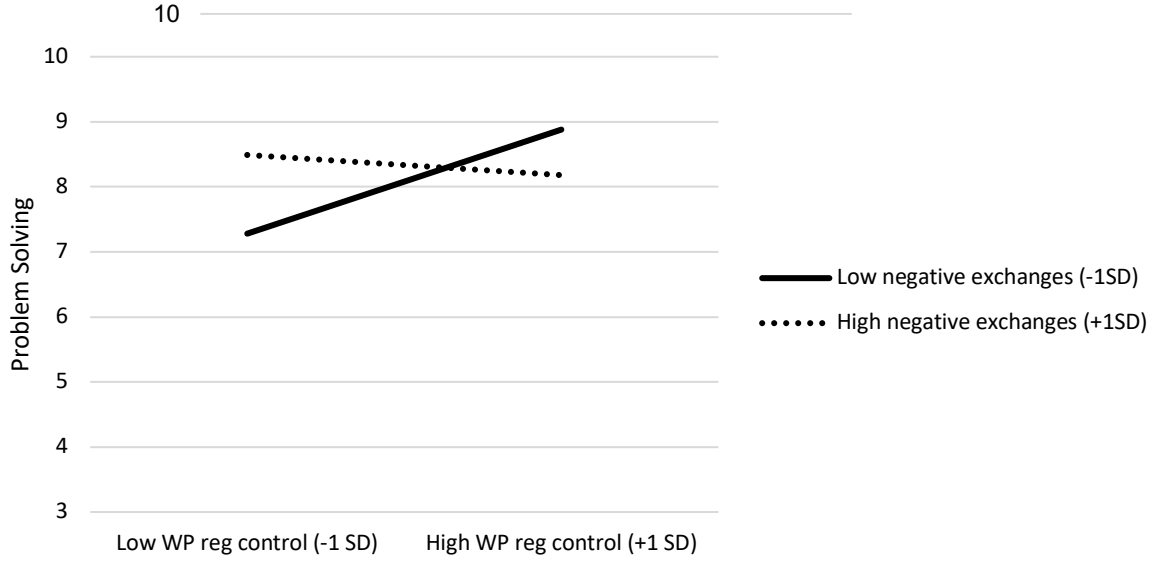


Figure 5

Interaction of WP Perceived Regulator Controllability with Negative Social Exchanges in the Prediction of Problem Solving



Attentional Deployment

It was expected that attentional deployment would be used more in situations that were perceived to be lower in controllability than situations perceived as higher in controllability. However, neither WP perceived control by regulator, nor WP perceived control by the target were reliably associated with attentional deployment. See Table S1 in Appendix A.

Cognitive Change

It was expected that cognitive change would be used more in situations that were perceived to be less controllable, rather than more controllable. However, WP controllability (of regulator and target) was not reliably associated with cognitive change. See Table S2 in Appendix A.

Empathic Listening

It was expected that empathic listening would be used more in situations that were perceived to be less controllable, rather than more controllable. This was supported with lower levels of perceived control by the target associated with higher levels of empathic listening (see Table 6). However, contrary to predictions, test of interactions at Step 2 indicated that the negative WP slope for perceived target control did not vary as a function of either positive or negative social exchanges. There were no significant interactions.

Table 6

Predictors of Empathic Listening

	Step 1		
	B	*SE*	95% CI
Predictors			
Intercept	8.53**	.57	7.40 – 9.65
WP Closeness	-0.04	.09	-0.22 – 0.13
BP Closeness	-0.10	.12	-0.35 – 0.15
WP Reg Control	0.02	.09	-0.15 – 0.20
BP Reg Control	-0.04	.10	-0.24 – 0.15
WP Target Control	**-0.16****	.06	-0.27 - -0.05
BP Target Control	-0.01	.09	-0.19 – 0.17
Positive Social Exchanges	0.23	.27	-0.30 – 0.76
Negative Social Exchanges	-0.22	.31	-0.83 – 0.39
Covariates			
Age	-0.03	.02	0.08 – 0.01
Gender	-0.08	.60	-1.26 – 1.10
Weekend	-0.17	.28	-0.71 – 0.38
Random slope			
WP Reg Control	0.13	.07	0.04 - 0.38
Variance components			
Residual	3.64	.38	2.96 – 4.47
Intercept	2.26	.55	1.41 – 3.63
Pseudo R^2 within person	.14		
Pseudo R^2 between person	<.01		

Note: *$p < .05$, **$p < .01$, WP = within person, BP = between person, Reg = regulator

Response Modulation

Response modulation was used more frequently by participants who on average perceived situations as more controllable, and who reported higher levels of negative social exchanges (see Table 7). There were no significant interactions in the prediction of response modulation.

Table 7

Predictors of Response Modulation

	Step 1		
	B	*SE*	95% CI
Predictors			
Intercept	1.91**	.48	0.97 – 2.86
WP Closeness	-0.06	.06	-0.18 – 0.06
BP Closeness	-0.15	.10	-0.35 – 0.06
WP Reg Control	0.05	.05	-0.05 – 0.14
BP Reg Control	**0.25****	.08	0.09 – 0.41
WP Target Control	0.01	.04	-0.06 – 0.09
BP Target Control	-0.13	.08	-0.28 – 0.02
Positive Social Exchanges	-0.04	.22	-0.49 – 0.40
Negative Social Exchanges	**0.79****	.26	0.27 – 1.30
Covariates			
Age	0.04	.02	-0.00 – 0.07
Gender	0.52	.50	-0.47 – 1.52
Weekend	-0.08	.20	-0.47 – 0.32
Variance components			
Residual	1.96	.19	1.62 – 2.37
Intercept	1.84	.39	1.21 – 2.78
Pseudo R^2 within person	.02		
Pseudo R^2 between person	<.01		

Note: *$p < .05$, **$p < .01$, WP = within person, BP = between person, Reg = regulator

Discussion

This study examined the extrinsic emotion regulation strategies used by individuals in day- to-day life over a period of two weeks. As extrinsic emotion regulation occurs across a variety of social situations, it was expected that regulators' use of different strategies would vary in accordance with the perceived controllability of the situation, supporting the concept of strategy- situation fit. In line with coping and intrinsic emotion regulation research, we expected that situation modification and problem solving (problem-focused strategies) would be used more in situations perceived as more controllable (by the target and/or regulator), and that attentional deployment, cognitive change, and empathic listening (emotion-focused strategies) would be used more in situations perceived as less controllable. In addition to assessing broad evidence for strategy-situation fit, we also assessed whether patterns of regulation corresponding with the notion of strategy-situation fit were more evident among participants who reported better quality social relationships (evidenced by more frequent positive social exchanges and less frequent negative social exchanges).

Situation Modification and Problem Solving

As expected, when regulators attempted to regulate emotion in a target and they perceived they had a higher degree of control over a situation, they more often used situation modification strategies than in less controllable situations. We expected more problem-solving strategies (suggesting advice, or solutions to the target) to be implemented when regulators felt that the target had more control over the situation. However, regulator control, rather than target control, was a stronger predictor of problem solving. This may be due to regulators finding it more difficult to rate how much control *a target* had in a given situation, compared to rating how much control *they* had over the situation. Thus, regulators perceptions of their own controllability (regulator control) may have emerged as a more reliable predictor of strategy use.

Our finding that problem-focused strategies were more strongly endorsed for situations rated as higher in controllability corresponds with our operationalisation of strategy-situation fit and is consistent with coping flexibility research, where the concept of a "good fit" between strategy type and situational context is consistent with the use of problem-focused strategies in controllable situations (Cheng, 2001; Park et al., 2004). However, our findings for both situation modification and problem solving were moderated by the closeness of the relationship between the regulator and target, with higher strategy-situation fit displayed when the target was rated as less close. This raises the possibility that in less close social relationships, regulators may be more analytical and objective when evaluating situations in terms of controllability and matching the type of strategies they implement to the situation. In contrast, for close relationships, the selection and implementation of extrinsic strategies may be more influenced by established behavioural patterns. In close, long-term relationships, patterns of social behaviour are more likely to be routine, well- established and guided by fast, automatic thinking processes, rather than more deliberate, slower, and effortful thinking (Reis, Collins, & Berscheid, 2000). Additionally, in close relationships, repeated patterns of thoughts and behaviours lead to the development of unique *relational schemas*, which shape and guide the relationship (Baldwin, 1992). Relational schemas influence how individuals evaluate and process social information and how they respond in social interactions with close friends (Baldwin, 1992; Koerner & Fitzpatrick, 2002). Thus, strategy-situation fit may emerge as the dominant method of selecting strategies with less close social partners, but other relationship variables, such as relational schemas, may be more salient for close social partners, and in turn more directly shape strategy selection.

We expected that regulators who demonstrated greater strategy-situation fit might also be more broadly effective in aspects of social and emotional functioning, including having greater skills in managing interpersonal interactions (Petrovici & Dobrescu, 2014), resulting in the experience of more frequent positive and less frequent negative social exchanges (Lopes et al., 2005; Lopes et al., 2003). Our findings showed that regulators that used situation modification

and problem solving strategies more in situations where perceived controllability was higher (indicating greater strategy-situation fit), reported less frequent negative social exchanges. This suggests that regulators that demonstrate greater strategy-situation fit may be more effective in down-regulating negative emotion in their social partners, and consequently experience less frequent negative social exchanges. Emotional intelligence encompasses both interpersonal skills such as managing emotion in social partners and intrapersonal skills such as managing one's own emotions (Lopes et al., 2003; Petrovici & Dobrescu, 2014). Individuals who have higher levels of emotional intelligence and demonstrate better extrinsic emotion regulation (e.g., strategy-situation fit), may also be more skillful at intrinsic emotion regulation. In the domain of social relationships, one intrinsic emotion regulation strategy that has been highlighted is situation selection; that is choosing which situations to approach or avoid, in order to meet regulatory goals (Sims, Hogan, & Carstensen, 2015). Our results could suggest that individuals who show greater flexibility in managing others' emotions are also relatively more adept at using situation selection to avoid potentially negative social situations.

Despite strategy-situation fit of problem-focused strategies being negatively associated with negative social exchanges, there were no associations between any of the strategies or strategy- situation fit and positive social exchanges. Negative and positive social interactions are generally considered to be distinct dimensions (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Lincoln, 2000). Negative social interactions have a stronger (negative) effect on psychological well-being, whereas positive social interactions have a weaker (positive) effect on well-being (Baumeister et al., 2001). Individuals generally expect social interactions to be positive, and negative social interactions are less common, unexpected and more challenging (Lincoln, 2000; Newsom, Nishishiba, Morgan, & Rook, 2003). Although it is only possible to speculate based on our results, it may be that good regulatory skills are more important for reducing exposure to negative social exchanges than they are for creating opportunities for positive social interactions. Indeed, previous research suggests that the ability to manage emotion

in self and others has been shown to be more strongly associated with reduced conflict and negative interactions, but less strongly associated with positive aspects of social interactions (Lopes et al., 2011). Positive social interactions may be less influenced by an individual's regulatory skills, and more likely to be influenced by aspects of personality such as Extraversion (Srivastava, Angelo, & Vallereux, 2008) or different developmental life contexts (Fiori, Windsor, & Huxhold, 2020).

Attentional Deployment, Cognitive Change, and Empathic Listening

It was expected that regulators would use more emotion-focused strategies in situations perceived to be lower in controllability, compared to situations perceived to be higher in controllability. Our findings in relation to this hypothesis were mixed. Regulators used more empathic listening strategies in situations that were perceived to be less controllable by the target. This suggests that in less controllable situations, regulators implemented a strategy to directly address the emotion felt by the target, rather than attempting to actively change the problem situation. Empathic listening may be an important extrinsic emotion regulation strategy that can reduce negative emotion in social partners (Niven, Totterdell, et al., 2012) and signals to a support seeker (target) that the supporter (regulator) is emotionally supportive and invested in the relationship (Jones, 2011).

However, regulators did not implement more attentional deployment or cognitive change strategies in situations where they rated targets as having lower levels of control. Attentional deployment and cognitive change share some similarity, in that both strategies require the regulator to appraise the situation from the target's perspective and suggest that the target focus on something else, or take a different perspective (Reeck et al., 2016). Perspective taking is regarded as cognitively complex (Ybarra & Winkielman, 2012) and may be more resource intensive for the regulator than empathic listening (Urry & Gross, 2010). As individuals are often motivated to conserve their resources (Hobfoll, 1989, 2002), when a situation cannot be effectively modified, regulators may prefer empathic listening as this could require less

investment of energy and cognitive resources than using attentional deployment or cognitive change strategies. As the most passive of the emotion-focused strategies included in this study, empathic listening may become the most relevant in situations where there are very low levels of control. As situations that are perceived to be less controllable are associated with increased anxiety (Endler, Speer, Johnson, & Flett, 2000), it is possible that in less controllable situations targets may often be relatively more distressed than in more controllable situations. Thus, in uncontrollable situations accompanied by higher levels of target distress, empathic listening could often be preferred by regulators over attentional deployment and cognitive change as it asks nothing directly of the target in that moment.

Contrary to expectations, between-person differences in positive and negative social exchanges did not predict the extent to which emotion-focused strategies (attentional deployment, cognitive change, empathic listening) were used in in less controllable situations (our index of strategy-situation fit). This is in contrast to the use of more problem-focused strategies in more controllable situations as an indicator of strategy-situation fit being a predictor of less negative social exchanges. However, this finding is consistent with coping studies which found a stronger association for problem-focused coping in controllable situations predicting positive mood, but a weaker effect for the use of emotion-focused coping in less controllable situations (Park et al., 2004; Park et al., 2001).

With the use of the putatively adaptive strategies, situation modification, problem solving, attentional deployment, cognitive change and empathic listening, most of the variation in use was accounted for by within person differences. This suggests that the selection of these extrinsic emotion regulation strategies depends less on trait-like factors and more on the contextual demands of the situation, highlighting the conceptual value of considering strategy-situation fit as a method of examining flexibility in strategy use, and the methodological value of micro-longitudinal approaches to research in the area. In contrast, response modulation, generally considered to be a maladaptive strategy, was used at lower levels than the adaptive strategies.

However, less of the variance was explained by within person differences, suggesting the use of response modulation may be more of a habitual response by some individuals, and less determined by situational contexts.

Strengths, Limitations and Future Directions

Using a daily diary methodology increased ecological validity as it allowed participants' everyday experiences to be captured soon after any attempt at regulating a social partner's emotion, thus increasing the likelihood that participants' responses reflected their actions more accurately than when recalling past events (Ready, Weinberger, & Jones, 2007). Once a day reporting may be sufficient, as extrinsic emotion regulation may only occur once or twice within a day. However, ecological validity could be further enhanced by using ecological momentary assessment methods (Haines et al., 2016) with responses requested at multiple times during a day.

This is the first study to our knowledge that assessed people's use of a range of extrinsic emotion regulation strategies in everyday life. It is a limitation that we used single-item representations of each regulatory strategy, however, we aimed to minimise participant response burden and the high compliance across the fourteen days suggests that the present study was not too onerous. However, future studies could include multiple items to improve measurement reliability, perhaps focusing on a smaller subset of regulatory strategies. As our participants were university students and primarily younger, our findings may not be generalisable to the broader adult population and it may be beneficial for future work to include more diverse samples.

We know there are various motives influencing extrinsic emotion regulation (Niven, Henkel, & Hanratty, 2018). Therefore, including an assessment of regulators' goals could clarify whether regulators attempts at extrinsic emotion regulation were motivated by intentions to enhance the quality of targets' experiences, to reduce or avoid their own discomfort, or both. Finally, Extrinsic emotion regulation is a complex, dynamic process, involving the goals,

personalities and actions of two (or more) individuals (Nozaki & Mikolajczak, 2020; Reeck et al., 2016). Therefore, future research could study the experiences of dyads, which may further capture the processes that occur in regulatory interactions, and provide important insights into the extent to which regulatory efforts are successful (Horn, Samson, Debrot, & Perrez, 2019).

Conclusion

The aim of this study was to examine the concept of strategy-situation fit in extrinsic emotion regulation, and whether patterns of extrinsic regulation strategy use indicative of strategy- situation fit were associated with better quality social exchanges more generally. We found considerable within person variation in strategy use across different situations, suggesting that situational context was related to participants' strategy choices. There was some evidence that the perceived controllability of the situations was related to strategy use, with situation modification and problem solving strategies employed more when regulators felt they had more control over the situation and empathic listening used more when regulators felt they had less control over the situation. This provides some support to the notion of strategy-situation fit in extrinsic emotion regulation and the "matching" of problem-focused strategies to more controllable situations and emotion-focused strategies to less controllable situations (Cheng, 2001; Haines et al., 2016). In some instances of greater situation-strategy fit (i.e., use of problem-focused strategies in more controllable situations), those demonstrating greater fit were also less likely to report experiencing negative social exchanges more generally. Future studies are needed to determine the extent to which the ability to "match" extrinsic emotion regulation strategies to situational contexts both increase the effectiveness of such regulatory efforts and provide broader beneficial outcomes for both regulators and targets.

Appendix A: Supplementary Material

Table S1

Predictors of Attentional Deployment

	B	*SE*	95% CI
Predictors			
Intercept	6.61**	.59	5.45 – 7.78
WP Closeness	-0.05	.11	-0.26 – 0.16
BP Closeness	0.17	.13	-0.08 – 0.43
WP Reg Control	0.16	.08	-0.004 – 0.32
BP Reg Control	0.09	.10	-0.11 – 0.29
WP Target Control	-0.01	.07	-0.14 – 0.12
BP Target Control	-0.11	.10	-0.30 – 0.08
Positive Social Exchanges	-0.13	.28	-0.68 – 0.42
Negative Social Exchanges	0.45	.32	-0.18 – 1.08
Covariates			
Age	-0.04	.02	-0.08 – 0.001
Gender	0.42	.61	-0.79 – 1.64
Weekend	0.01	.33	-0.65 – 0.66
Variance components			
Residual	6.11	.57	5.09 – 7.33
Intercept	1.57	.56	0.78 – 3.15
Pseudo R^2 within person	.01		
Pseudo R^2 between person	<.01		

Note: *$p < .05$, **$p < .01$, WP = within person, BP = between person, Reg = regulator

Table S2

Predictors of Cognitive Change

	B	*SE*	95% CI
Predictors			
Intercept	7.69**	.59	6.52 – 8.87
WP Closeness	0.04	.09	-0.14 – 0.22
BP Closeness	0.22	.13	-0.04 – 0.48
WP Reg Control	0.05	.07	-0.09 – 0.19
BP Reg Control	-0.04	.10	-0.25 – 0.16
WP Target Control	-0.06	.06	-0.17 – 0.05
BP Target Control	0.13	.10	-0.06 – 0.32
Positive Social Exchanges	0.40	.28	-0.16 – 0.95
Negative Social Exchanges	0.11	.32	-0.53 – 0.75
Covariates			
Age	-0.02	.02	-0.07 – 0.02
Gender	-0.26	.62	-1.50 – 0.97
Weekend	-0.14	.30	-0.72 – 0.44
Variance components			
Residual	4.48	.42	3.73 – 5.39
Intercept	2.25	.57	1.37 – 3.69
Pseudo R^2 within person	<.01		
Pseudo R^2 between person	.04		

Note: *$p < .05$, **$p < .01$, WP = within person, BP = between person, Reg = regulator

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Chapter 6: Discussion: Individual Differences in Extrinsic Emotion Regulation

Overview

Regulating the emotions of social partners is an important component of social interactions that has the potential to influence specific relationships and the quality of social networks more broadly (Niven, Garcia, van der Löwe, Holman, & Mansell, 2015). However, to date there has been relatively little research concerned with extrinsic emotion regulation, compared with the large body of research into intrinsic emotion regulation conducted over the past two decades (Nozaki & Mikolajczak, 2020). This thesis has added to the emerging field of extrinsic emotion regulation research in several important ways. Four broad research aims were addressed; (1) whether the age of the regulator influenced extrinsic emotion regulation strategy preference, (2) whether the age of the target influenced the strategies used by regulators, (3) whether individual strategy preferences were associated with the quality of social exchanges more broadly, and (4) whether there were individual differences in the flexible use of strategies, and whether flexibility in turn was related to age or the quality of self-reported social exchanges. Three studies were used to assess individual differences in extrinsic emotion regulation; an online questionnaire (Chapters 2 & 3), a flexibility assessment questionnaire (Chapter 4), and a daily diary study (Chapter 5). Initially, potential developmental differences were explored (Chapter 2) and associations between individual extrinsic strategy use and the quality of social relationships were examined (Chapter 3). Secondly, individual differences in extrinsic emotion regulation flexibility and their links to social relationship quality were examined across the three studies. Initially a binary proxy measure of flexibility was created and its associations with age were examined (Chapter 3). Next, a finer-grained measure of flexibility was created by coding open responses to three hypothetical scenarios, calculating size and breadth of repertoire, and

examining convergent and discriminant validity with theoretically related constructs (Chapter 4). Lastly, the concept of strategy-situation fit as a means of assessing extrinsic emotion regulation flexibility was examined (Chapter 5). Associations between the different conceptualisations of extrinsic emotion regulation flexibility and the self-reported quality of social exchanges were also explored.

Key Contribution

The examination of individual differences in extrinsic emotion regulation in this thesis provides some preliminary insight into the complex processes that influence the selection and implementation of different extrinsic emotion regulation strategies at different ages and across different contexts. As extrinsic emotion regulation typically involves two (or more) individuals, the characteristics of both the regulator and target may influence the process (Nozaki & Mikolajczak, 2020; Reeck, Ames, & Ochsner, 2016). Additionally, different situations may elicit different behaviours from regulators, and there may be person-situation factors that influence strategy use (Furr & Funder, 2018). To better contextualise the contribution of the present research, Figure 1 provides a working conceptual model, identifying some of the key concepts from previous theoretical perspectives (Gross, 1998; Reeck et al., 2016) and empirical studies (Little, Gooty, & Williams, 2016; Niven, Totterdell, Stride, & Holman, 2011) concerned with factors influencing extrinsic emotion regulation. The conceptual model of extrinsic emotion regulation includes factors related to the regulator, factors related to target, situational context, strategy use, proximal and distal outcomes (specific factors examined in this thesis are presented in bold type in Figure 1). Each of the factors will be touched on here briefly, then addressed in further detail in subsequent sections of the discussion.

Firstly, characteristics of the regulator may influence extrinsic emotion regulation. A central exploration in this thesis was the possible influence of the age of the regulator, recognising that developmental differences in the prioritisation of socioemotional goals (Carstensen, Fung, & Charles, 2003) and/or potential declines in resources (Urry & Gross, 2010)

could influence strategy preferences. Features of the regulator's relationship with the target may also influence extrinsic regulatory processes. In this thesis, relationship variables were included as covariates, and these emerged as significant predictors of strategy use. Specifically, the closeness of the relationship, the positive quality (e.g., target willing to listen) and negative quality (e.g., target being critical) of the relationship influenced strategy preference.

Secondly, characteristics of the target may also influence extrinsic emotion regulation. The consideration of developmental differences in this thesis also recognised the potential relevance of the target's age. As social partners tend to minimize social tension with older adults (Fingerman & Charles, 2010), and are less likely to blame or confront older adults when they commit perceived social transgressions (Miller, Charles, & Fingerman, 2009), it was anticipated that regulators of all ages would select different strategies for older targets than younger targets. Another target related factor considered in this thesis, is how upset the target may be in a regulatory situation and whether this influences the selection and implementation of different extrinsic emotion regulation strategies.

Thirdly, situational context is an important element of extrinsic emotion regulation. In this thesis, situational controllability, defined as the power to influence or change the course of events (Cheng, 2001; Folkman, 1984), was considered. Controllability has been highlighted as an important factor in the coping and intrinsic emotion regulation research, with using problem-focused strategies in more controllable situations, and emotion-focused strategies in less controllable situations, considered to be more adaptive than vice-versa (Cheng, 2001; Haines et al., 2016; Troy, Shallcross, & Mauss, 2013).

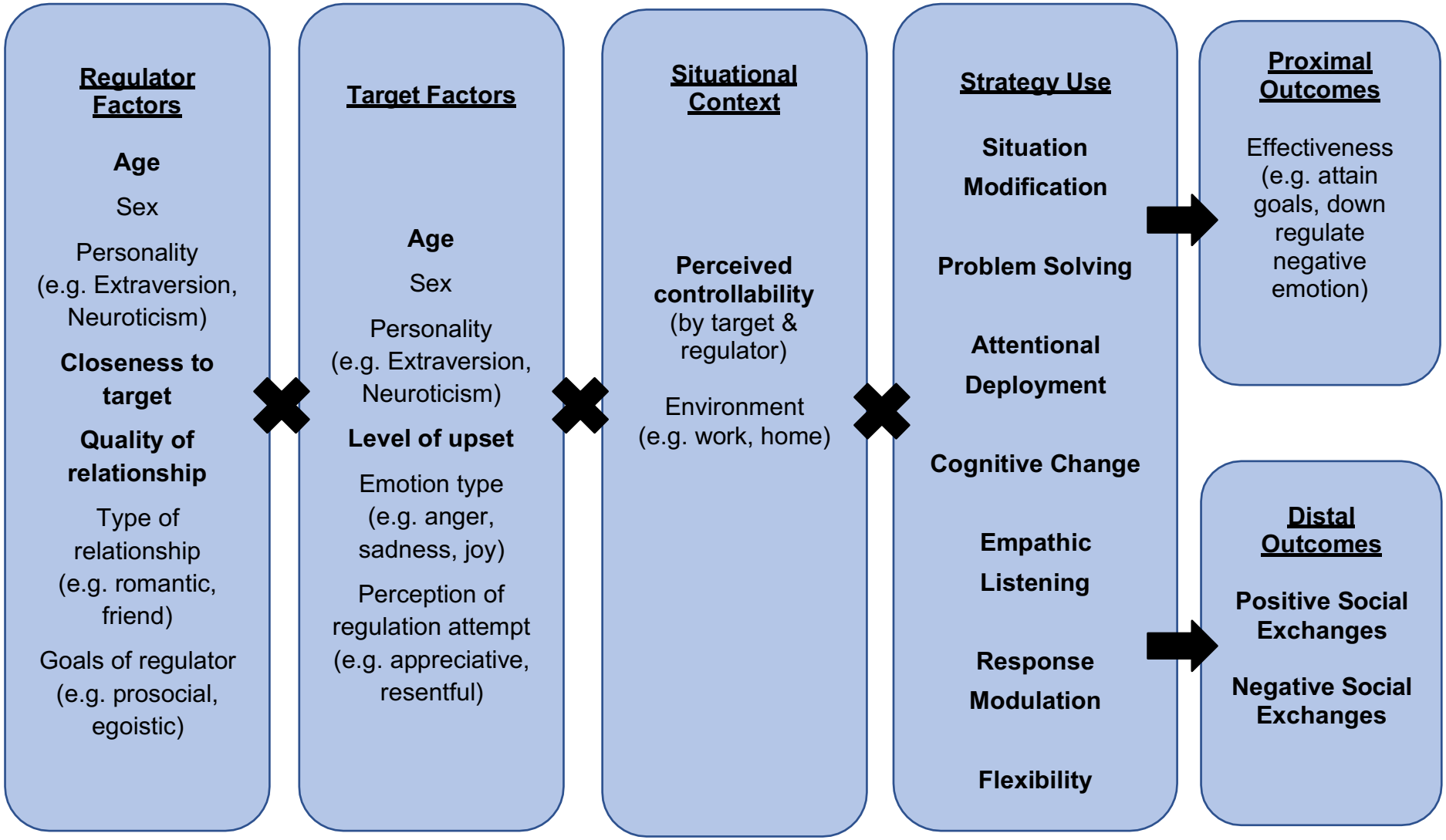
Strategy use is the fourth factor considered in this conceptual model of extrinsic emotion regulation. The strategies examined in this thesis were primarily based on the process model (Gross, 1998) and included situation modification, attentional deployment, cognitive change and response modulation. Drawing on interpersonal affect regulation research (Niven et al., 2011), we also considered two additional types of strategies pertinent to extrinsic emotion regulation;

problem solving strategies (giving advice or suggestions to the target) and empathic listening (sympathetically listening to the target). Flexibility in strategy use, conceptualised as either (1) the ability to draw on a range of different strategies or (2) the ability to draw on the strategy (or strategies) that provides the best fit with the situational context in order to achieve regulatory goals, was also examined across the three studies. Initially a binary proxy measure was considered, then size and breadth of repertoire, followed by the concept of strategy-situation fit.

The outcomes of extrinsic emotion regulation can be broadly categorised into proximal and distal outcomes. Proximal outcomes were outside the scope of this thesis, but include the effectiveness of extrinsic strategy use, for example, the extent to which negative emotion was reduced in a target, or whether a regulator achieved their regulatory goal (e.g., calming a distressed target). In this thesis, distal outcomes were considered by examining participants self-reported experiences of positive and negative social exchanges. It was hypothesised that regulators who used more adaptive strategies and were more flexible in the use of strategies, may possess greater overall socio-emotional skills, which would be reflected in a higher quality of self-reported social exchanges more broadly.

Figure 1

Potential Factors Influencing Individual Differences in Extrinsic Emotion Regulation



In the following discussion, I will integrate key findings from the empirical studies described in previous chapters while also drawing on elements of the conceptual model outlined above. Firstly, I will consider (a) developmental differences associated with age of regulator, and (b) with age of target, and possible underlying reasons for these findings. Secondly, I will consider (c) other regulator factors, (d) other target factors, and (e) possible interactions of regulator and target factors, (f) potential interactions of regulator factors, situational contexts, and strategy use, (g) associations between strategy use and distal outcomes (social exchanges). Thirdly, I will (h) reflect on the methods used to assess flexibility in extrinsic emotion regulation, and associations between flexibility and the quality of social exchanges. Finally, I will (i) discuss practical implications, (j) discuss strengths and limitations of the current research, and (k) consider future directions in the study of extrinsic emotion regulation.

Developmental Differences in Extrinsic Emotion Regulation Associated with Age of Regulator

Initially, in the first online questionnaire study, I considered whether individual differences in extrinsic emotion regulation strategy use were influenced by developmental differences, reflected in the age of the regulator and age of the target (Chapter 2). Participants (regulators) responded to scenarios depicting a younger and an older social partner (targets) experiencing negative emotion and indicated the extent to which they would be likely to use different extrinsic emotion regulation strategies. Thus, the primary focus regarding regulator factors as depicted in Figure 1, was the age of the regulator.

It was anticipated that older regulators, compared to younger regulators, would select and implement different extrinsic emotion regulation strategies due to compensating for declining cognitive resources (Urry & Gross, 2010), and/or motivation to reduce exposure to negative emotions (Carstensen et al., 2003), and a prioritisation of positive emotional climates (Luong, Charles, & Fingerman, 2010). However, when examining the extrinsic emotion regulation

strategies endorsed by younger and older regulators in the first questionnaire study, no clear developmental differences emerged (Chapter 2). Although older regulators selected less situation modification, which could be interpreted in terms of their avoiding strategies more reliant on declining cognitive resources, in contrast to expectations, older regulators selected similar levels of cognitive change to younger regulators (Chapter 2). Cognitive change strategies are considered to be cognitively effortful (Martins, Sheppes, Gross, & Mather, 2016; Sheppes, Catran, & Meiran, 2009), yet older regulators showed no inclination to endorse these strategies to a lesser degree.

Our findings may indicate that older adults gain prudence through their experiences of managing social exchanges over the lifespan, and over time develop well-rehearsed schemas representing the strategies that are typically effective in achieving regulatory goals. If older adults wish to maintain a positive emotional environment, they may be prepared to expend the effort needed to employ more resource intensive strategies, such as extrinsic cognitive change, that help them achieve their goals, in the knowledge that such strategies are likely to be effective. Indeed, the endorsement of cognitive change strategies was associated with more frequent positive social exchanges for older, but not younger regulators (Chapter 3). The finding that older regulators did not use less cognitive change than younger regulators may indicate that cognitive change strategies provide a good fit for many older adults, who may be able to draw on their accumulated life experiences to help social partners change their perspective on a problem situation. This is consistent with older adults using self-regulatory strategies focused on readjusting their own goals or expectations as a means of adapting to situational constraints rather than striving to make changes to the environment (Brandtstädter, 2009; Lang & Heckhausen, 2006). Older adults may have fewer resources (e.g. less energy or capacity for cognitive control) than younger adults, and as a result may be less able to effectively make changes to problem situations in some contexts. However, they may draw on their strengths of accumulated socio-emotional experience (Blanchard- Fields, Mienaltowski, & Seay, 2007; Hess, 2006) to help social partners reappraise situations that induce negative emotions at a comparable

frequency to younger adults.

The findings from the first questionnaire study also indicated that there were no developmental differences in flexibility in extrinsic emotion regulation (Chapter 3). Flexibility was initially operationalised as low flexibility (low overall strategy endorsement or endorsement of one type of strategy) or high flexibility (endorsement of 2-3 types of strategies) using a method consistent with several previous approaches (Eldesouky and English (2018), Southward, Altenburger, Moss, Cregg, and Cheavens (2018), Artistico, Cervone, and Pezzuti (2003)). Older adults did not demonstrate higher flexibility as anticipated, however this may have reflected the way flexibility was measured (a proxy measure of breadth of repertoire). If older adults become more adept at regulating social partners' emotion through accumulated experience, this may in fact be reflected not in the endorsement of a broader range of strategies, but in the ability to apply the strategy or strategies that provide the best fit with contextual demands. It is possible that older adults, as a result of accumulated expertise, have a greater capacity to exercise flexible extrinsic regulation in the form of strategy-situation fit; however, this was not assessed in the first questionnaire study.

Alternatively, our lack of consistent findings in regard to developmental differences in regulators' extrinsic emotion regulation strategy use could simply reflect that such differences are in reality less evident than might be assumed based on some aspects of lifespan developmental theory. In intrinsic emotion regulation research, it has been previously proposed that there are age-related differences, and in many cases age-related advantages in strategy use (Blanchard-Fields, Stein, & Watson, 2004; Charles & Carstensen, 2010). However, more recent work has shown that such differences may be less robust and consistent than earlier work suggests. For example, in a recent lab-based study, where 225 participants freely engaged in tasks where they could spontaneously use a range of intrinsic emotion regulation strategies, younger and older adults showed more similarity than difference in strategy preference (Livingstone & Isaacowitz, 2019b). Similarly, in an experience sampling study, 149 participants reported their intrinsic

emotion regulation attempts over ten days, and few age differences emerged, with the authors concluding that age differences in intrinsic emotion regulation may be "more a matter of degree than of type" (Livingstone & Isaacowitz, 2019a, p11). Another study using a daily diary method, found that older adults did not demonstrate higher use of putatively adaptive strategies, nor were older adults more flexible in strategy use (breadth of repertoire) than younger adults (Eldesouky & English, 2018). Additionally, a systematic review and meta-analysis on laboratory studies where participants were instructed to regulate their emotions elicited by emotion-inducing stimuli, (e.g., pictures or film clips), found little evidence for age related differences (Brady, Kneebone, Denson, & Bailey, 2018). Another recent systematic review showed that there were few clear age differences in intrinsic strategy use, and moderator variables, such as type of emotion being regulated and sense of control, influenced these differences (Allen & Windsor, 2017).

Taken together, our findings regarding age differences and emerging research concerned with intrinsic emotion regulation, point to the likelihood that regulator factors (Figure 1) aside from age may be more important in accounting for individual differences in extrinsic emotion regulation strategy use. For example, regulator factors such as personality, relationship factors (e.g., type and quality of relationship) and specific regulatory goals, may be more strongly associated with strategy use than the age of the regulator. Indeed, in the first questionnaire study, we found that relationship variables, including closeness of relationship and positive quality of relationship, were consistently more important predictors of strategy use than age. I return to discussion of these issues later in this chapter. Additionally, examining developmental differences by using cross-sectional designs and comparing extreme age groups has been proposed as being a flawed methodology (Freund & Isaacowitz, 2013). Such comparisons can confound age, cohort differences and time and overestimate developmental differences.

Developmental Differences in Extrinsic Emotion Regulation Associated with Age of Target

With regard to the target factors outlined in Figure 1, developmental differences, as

reflected in the age of the target were also considered. It was anticipated that older targets may be perceived by regulators as being less able to utilise cognitively effortful strategies compared to younger targets, as older adults are perceived as being warm and friendly, but less competent than younger adults (Fiske, Cuddy, Glick, & Xu, 2002). In turn, it was expected that this perception might influence strategy endorsement, whereby regulators would less strongly endorse cognitively effortful strategies (i.e., cognitive change) and more strongly endorse attentional deployment when targets were older. The findings showed that regulators used less cognitive change strategies when targets were older as anticipated. However, contrary to expectations, attentional deployment was also endorsed less for older targets. In fact, overall, our findings showed a pattern of slightly lower endorsement of all extrinsic emotion regulation strategies for older targets compared to younger targets (Chapter 2); however, these differences were small. Three possible explanations that could account for the findings were provided. Firstly, older targets may have been perceived as less competent compared to younger targets, and regulators may have been less inclined to suggest strategies that they felt older adults may struggle to implement. However, this does not account for the lower endorsement of the less cognitively effortful strategies, such as attentional deployment. Secondly, older targets may have been perceived as having lower reciprocity potential (Vigil, 2007), compared to younger targets. Consequently, regulators may be less inclined to invest time and effort into extrinsic emotion regulation with older social partners who are regarded as being less likely to reciprocate with actions that could support future goals. Alternatively, older targets may have been seen as more competent due to their age, and able to regulate their own emotions without input from a regulator. Older adults tend to be less reactive to interpersonal stress (Birditt, Fingerman, & Almeida, 2005), more effective when solving interpersonal problems (Blanchard- Fields et al., 2007), and have developed skills over their lifetimes in managing emotion (Magai, Consedine, Krivoshekova, Kudadjie-Gyamfi, & McPherson, 2006). Thus, older targets may have been perceived as requiring extrinsic emotion regulation to a lesser degree to younger targets.

Although older adults may be seen as having acquired socio-emotional skills over their lifetime (Magai et al., 2006), it is probable that negative perceptions of older adults being less competent may carry more weight in influencing social behaviour. Age-related stereotypes have a mixture of positive and negative elements, and mixed stereotypes of high warmth and low competence evoke feelings of pity and sympathy toward older adults (Fiske et al., 2002). Older adults are often treated as less competent than their younger counterparts, being spoken to in a louder, slower voice or with patronising baby-talk (Nelson, 2005), experiencing physical and psychological distancing from younger people (North & Fiske, 2012), and experiencing "compassionate ageism" e.g., special access to medical treatment (Binstock, 2010). Although, such treatment is often well-intentioned and benevolent in nature, it still reinforces the stereotype that older adults are frail and dependent on others (North & Fiske, 2012), and these negative stereotypes have a stronger effect on others' beliefs and behaviours than positive stereotypes (Meisner, 2012). Therefore, in relation to extrinsic emotion regulation strategy endorsement for older targets, one might speculate that the perception of lower competence in older targets was more influential than any positive perceptions, and consequently influenced regulators' responses in the current research. As discussed in the Future Directions section, further research is needed to elucidate the possible role of age-based stereotypes in influencing extrinsic emotion regulation.

Additional Regulator Factors in Extrinsic Emotion Regulation

As noted above, multiple individual difference factors could influence regulatory processes, and several such factors may be more influential than age. Extrinsic emotion regulation is a more complex process than intrinsic emotion regulation as it involves two (or more) individuals (Nozaki & Mikolajczak, 2020) and the relationship the regulator has with the target may influence regulatory efforts. Although relationship variables were not the focus of the present thesis, they emerged as significant predictors of the endorsement of strategies across the

studies reported here. In the first questionnaire study (Chapter 2), regulators were asked to rate the closeness of the relationship between themselves and the target they had brought to mind in the presented scenario. They also rated the positive quality of the relationship (e.g., how willing the target was to listen to the regulator) and the negative quality of the relationship (e.g., how much the target was critical of the regulator). The closeness of relationship between regulator and target and the positive quality of the relationship influenced the endorsement of the adaptive strategies (situation modification, attentional deployment, cognitive change). In contrast, the negative quality of the relationship predicted the endorsement of response modulation, generally considered to be a less adaptive strategy.

Indeed, the effects of the relationship variables were generally stronger than the effects of the age of the regulator or target in the first questionnaire study which focused on developmental differences. In the daily diary study (Chapter 5), which included a more homogenous (younger) age group, the closeness of the relationship also influenced strategy-situation fit. Specifically, the interaction between problem-focused strategies (situation modification, problem solving) and controllability of the situation was moderated by the closeness of the relationship between the regulator and target. Higher strategy-situation fit was more evident in less close relationships, than in closer relationships. This may indicate that exchanges with less close social partners may be more often guided by more deliberate and objective evaluations of the situation, whereas exchanges with closer social partners are guided by more automatic thinking processes and established patterns of interaction (Reis, Collins, & Berscheid, 2000). This notion is somewhat consistent with social psychology research on forgiveness, which has demonstrated differences in the process of forgiveness between close and non-close social partners. In a series of studies, Karremans and Aarts (2007) found that the inclination to forgive was a relatively automatic process for close social partners, but a more effortful process in less close relationships.

Regulatory patterns are also likely to differ according to the type of relationship (e.g., family, friend, spouse). In a recent review on emotion regulation and relationship context,

Lindsey (2020), highlights how different types of relationships impact on intrinsic and extrinsic emotion regulation processes. The foundations of emotion regulation occur in the parent-child relationship, friendships help individuals develop and practice regulatory processes such as anger regulation, and romantic partnerships with secure attachment styles typically feature more adaptive emotion regulation strategies, and less maladaptive strategies (Lindsey, 2020). Similarly, an empirical study on adult attachment style and intrinsic emotion regulation strategy use, found that highly secure individuals used more cognitive change within their relationship and highly avoidant individuals tended to use more response modulation strategies (Winterheld, 2016). Individuals in close, long- term relationships are also likely to have established relational schemas that arise from long-term patterns of interacting which influence socio-emotional perceptions and interactions (Baldwin, 1992). On the other hand, relationships with peripheral acquaintances and work colleagues are likely to involve different patterns of interacting. Exchanges between close friends tend to be more frequent, more beneficial and occur across a wider range of situations than exchanges with less- close friends (Hays, 1989). Taken together, these findings suggest that relationship context is likely to be a key influential factor in extrinsic emotion regulation. Although recent work has detailed the definition and stages of extrinsic emotion regulation processes (Nozaki & Mikolajczak, 2020; Reeck et al., 2016), little attention has been focused on the relational factors that may influence these processes. Future research could focus on the category of relationships between regulator and target (e.g. relative, friend, partner), the length of the relationship, or attachment style (e.g., secure, anxious, avoidant).

Other regulator variables not considered in this thesis could also influence extrinsic emotion regulation. Although not a focus of these studies, sex of regulator may also influence regulatory attempts. Women and men react differently to emotional stimuli, with women experiencing emotion more intensely than men (Šolcová & Lačev, 2017). Women are also more reactive to interpersonal tension (Birditt & Fingerman, 2003) and more concerned with solving interpersonal problems (Strough, Berg, & Sansone, 1996), than men. Another regulator factor not

studied in this thesis, is the impact of the regulator's personality traits on regulatory attempts. Personality traits influence the processes of intrinsic emotion regulation (Barańczuk, 2019), intra- and interpersonal emotion regulation (Hughes, Kratsiotis, Niven, & Holman, 2020) and coping (Carver & Connor-Smith, 2010). Extraversion is associated with being proactive in emotion regulation and using strategies such as situation modification and cognitive change (Hughes et al., 2020). Conscientiousness is also associated with engaging with problems and using situation modification strategies (Carver & Connor-Smith, 2010). Individuals high in Agreeableness tend to have less interpersonal conflict, yet are more distressed when interpersonal conflict does occur (Suls, Martin, & David, 1998), they are sensitive to others' experiences and attempt to improve the emotion of their social partners (Hughes et al., 2020), and are more likely to utilise social support as a coping method (Carver & Connor-Smith, 2010), than those lower in Agreeableness. Individuals high in Neuroticism are reactive to negative emotion and likely to attempt to reduce it by using disengagement strategies such as avoidance, denial (Carver & Connor-Smith, 2010), and response modulation (Hughes et al., 2020). Lastly, the goals of the regulator may also influence the regulatory process. A regulator may have prosocial motivation and a compassionate desire to help others, or a regulator may have egoistic motives related to promoting their own self-interests (Niven, 2016; Zaki, 2020).

Additional Target Factors in Extrinsic Emotion Regulation

In this thesis, another target factor controlled for was how upset a target may be in a situation where extrinsic emotion regulation processes take place. In the first questionnaire study, the level of upset as perceived by the regulator, was measured. Level of upset was associated with higher endorsement of situation modification, attentional deployment and cognitive change (Chapter 2). Targets may vary in the way they react in stressful situations. Individuals tend to be more anxious when situations are perceived to be out of their control (Endler, Speer, Johnson, & Flett, 2000; Hay & Diehl, 2010). Additionally, reactivity to stressful situations may vary as a function of the age of the target, with older adults generally less

reactive to stress (Birditt et al., 2005; Hay & Diehl, 2010).

Other characteristics of targets not examined in this thesis that may influence extrinsic regulatory processes are sex and personality of the target, type of emotion experienced, and perception of regulatory attempt. Regulators may respond differently to women and men experiencing emotion due to stereotypical beliefs regarding women being more emotional than men (Hutson-Comeaux & Kelly, 2002), and the tendency to attribute women's emotional reactions to trait-like characteristics, but to attribute men's emotional reactions to situational factors (Barrett & Bliss-Moreau, 2009). The personality of a target may also contribute to extrinsic emotion regulatory processes. Individuals high in Extraversion or Agreeableness tend to have more frequent social interactions and higher quality of social interactions, (Nezlek, Schütz, Schröder-Abé, & Smith, 2011) and receive more positive social support in workplace settings (Bowling, Beehr, & Swader, 2005), than those lower in these traits. The type of discrete emotion (e.g. sadness, anger, joy) the target is experiencing may also influence the extrinsic emotion regulation processes. In intrinsic emotion regulation, there are differences between regulating positive and negative emotion, with negative emotion more difficult to regulate than positive emotion using both reappraisal (cognitive change) and suppression (response modulation) strategies (Nezlek & Kuppens, 2008). Thus, it is likely that there are corresponding differences when regulating positive or negative emotions in social partners, or different negative emotions, e.g., sadness versus anger. How the regulation attempt is appraised by the target may also influence the regulatory processes, as a target could appreciate the actions of the regulator, see the attempt as manipulative, or as undermining their own emotion regulation abilities (Reeck et al., 2016).

While considering individual differences in regulators is central, the characteristics of the target cannot be overlooked. Taking target factors into account is necessary in extrinsic emotion regulation research to fully encompass the dynamic nature of extrinsic regulatory processes and more fully understand the factors that contribute to variation in the use of extrinsic emotion

regulation strategies.

Potential Interactions between Regulator and Target Factors

As discussed previously, personality traits of both the regulator and the target may influence extrinsic emotion regulation processes in terms of the selection of strategies and their ultimate effectiveness in achieving regulatory goals. However, beside the main effects of personality traits such as Extraversion and Agreeableness, the interaction of personality traits could also influence regulatory behaviours. In a study on personality and social interactions, Cuperman and Ickes (2009) found that the personality traits of an individual influenced social behaviours, as did the personality traits of their social partner. However, there were also significant interactions between the personalities of both individuals. For example, dyads who had similar levels of Extraversion (either high or low) had better social interactions than dyads with dissimilar levels of Extraversion. However, dyads who had similar, low levels of Agreeableness had less pleasant social interactions. Thus, in extrinsic emotion regulation there may be interactions of personality traits, over and above the individual effects of the regulator and target's personalities. For example, if both the regulator and target are high in Extraversion, they are likely to have conversations that are smooth and natural (Cuperman & Ickes, 2009), and this may facilitate extrinsic regulation strategies such as cognitive change, which rely on a regulator communicating alternative perspectives to the target. Conversely, if the regulator is low in Extraversion (an introvert) but the target is high in Extraversion, their conversations may be more awkward and strained (Cuperman & Ickes, 2009), which may reduce the effectiveness of extrinsic strategies that rely on effective communication, such as offering alternative perspectives or distracting the target's attention.

Additionally, the interaction of sex of regulator and sex of target may also be important. There may be differences in extrinsic strategy use between same-sex and other-sex dyads, and between males regulating emotion in females and females regulating emotion in males. For example, in a study of 756 individuals in same-sex and different-sex marriages, the outcome of

managing the emotional needs of a romantic partner differed depending on the sex of the individual and the sex of their spouse. Managing emotion in a male partner had a more negative effect on the partner than managing emotion in a female partner, regardless of being in a same- or different-sex marriage (Umberson, Thomeer, Pollitt, & Mernitz, 2020). These examples of interactions between regulator and target factors, underscore the complexities that may need to be considered to gain a comprehensive understanding of individual differences in extrinsic emotion regulation.

Potential Interactions between Regulator Factors, Situational Context, and Extrinsic Emotion Regulation Strategy Use

Following on from the consideration of regulator and target factors, and their potential interplay, other complex processes of moderation among antecedent factors could further influence individual differences in extrinsic emotion regulation. There may be individual differences between regulators (regulator factors), however a regulator may also vary their regulatory actions in different situations (situational context), and this may influence how they select and implement extrinsic strategies (strategy use). Across the three studies, I examined how individual differences in extrinsic emotion regulation strategy preference varied between and within individuals. Many studies in intrinsic emotion regulation have focused on differences between individuals, for example the habitual use of reappraisal (cognitive change) and suppression (response modulation) (Eldesouky & English, 2018; Gross & John, 2003; John & Gross, 2004; Livingstone & Isaacowitz, 2018). More recently, intrinsic emotion regulation research has examined differences within individuals, across situations that varied in perceived controllability (Haines et al., 2016; Troy et al., 2013).

In the first questionnaire study, the focus was on developmental differences, and I considered differences between younger and older regulators and variation within regulators when regulating emotion in a younger and older target. I also examined differences between individuals in specific strategy use, flexibility, and their quality of social exchanges. In the

second flexibility assessment study, I examined the within person variation between different hypothetical scenarios with ambiguous levels of controllability and calculated a measure of flexibility, which was used in comparing between person differences in flexibility. The third study used a daily diary methodology and multi-level modelling which allowed the examination of the proportion of variance in the use of different strategies accounted for between and within individuals. Interestingly, most of the variance of the putatively adaptive strategies occurred within individuals, suggesting that situational context significantly influenced the use of situation modification, problem solving, attentional deployment, cognitive change, and empathic listening. Thus, when defining effective extrinsic emotion regulation, the interplay between regulator, situation and strategy needs to be considered.

In contrast to the putatively adaptive strategies, variance in the use of response modulation occurred primarily at the between person level. This suggests that relative to situation modification, attentional deployment, and cognitive change, response modulation may represent a strategy that depends more on habitual patterns of responding than the specific demands of particular situations. If response modulation is more trait-like, this may explain the consistent associations found between response modulation and negative social exchanges. As response modulation is considered to be an "unhealthy" strategy in intrinsic emotion regulation (John & Gross, 2004), and had negative outcomes in extrinsic emotion regulation in organisational settings (Little et al., 2016; Little, Kluemper, Nelson, & Ward, 2013), my findings support the notion that response modulation may not be an optimal strategy when building or maintaining quality social relationships.

Associations between Extrinsic Emotion Regulation Strategy Use and Distal Outcomes (Quality of Social Exchanges)

An important consideration in individual differences in extrinsic emotion regulation strategy use is the possible associations with interpersonal functioning and relationships. Effective extrinsic emotion regulation has been shown to be important in building trust and

maintaining social relationships (Lopes et al., 2011; Niven et al., 2015), and influences behaviour in organisational settings (Little et al., 2016; Little et al., 2013). A central aim of this thesis was to extend the examination of possible associations between extrinsic emotion regulation strategy use and the quality of social relationships more broadly. In the first online questionnaire study, the frequency of positive social exchanges (e.g., support, companionship) and negative social exchanges (e.g., neglect, criticism) were examined in terms of their associations with individual extrinsic emotion regulation strategy preferences, as well as flexibility in extrinsic emotion regulation strategy use (Chapter 3). Contrary to predictions, there were no main effects of the adaptive strategies (situation modification, attentional deployment, cognitive change) on positive social exchanges in adjusted models. However, interactions revealed several reliable associations that were conditional on the age of the regulator. Results showed that situation modification was associated with positive social exchanges, but only for younger regulators. In contrast, cognitive change was associated with positive social exchanges, but only for older regulators. In the daily diary study (Chapter 5) the use of cognitive change in everyday situations was modestly, but positively correlated with positive social exchanges. However, the age of participants in this study was younger overall ($M = 22.86$, $SD = 7.89$). The inconsistent finding that cognitive change was associated with positive social exchanges for older regulators in the first online questionnaire study, but with younger regulators in the daily diary study, may reflect the different methods of assessing strategy use. Using rating scales in a questionnaire may capture what individuals think they may (or should) do in a given situation, or reflect more habitual responding. In contrast, daily diary methodology is believed to more accurate in capturing actual strategy use in everyday situations soon after it occurs (Bolger, Davis, & Rafaeli, 2003; Ohly, Sonnentag, Niessen, & Zapf, 2010). Thus, it is likely that the daily diary findings more accurately represent strategy use, providing some support for the general effectiveness of extrinsic cognitive change for promoting relationship quality among younger adults.

Across the studies, a consistent pattern of positive associations between response

modulation and negative social exchanges emerged. In the first questionnaire study, response modulation was positively correlated with negative social exchanges (although this association became non-significant after adjustment for covariates in multiple regression analysis). An age interaction further showed that the use of response modulation was associated with more frequent negative social exchanges for younger, but not older regulators. In the daily diary study, response modulation was also associated with negative social exchanges. Taken together, these findings suggest that habitual use of extrinsic response modulation may not be an optimal strategy for cultivating healthy social relationships- at least among younger adults. This is consistent with findings in intrinsic emotion regulation, where intrinsic response modulation is considered an "unhealthy" strategy with negative social and emotional outcomes (Butler et al., 2003; John & Gross, 2004). However, the finding that the association between response modulation and negative social exchanges was stronger for younger regulators, than older regulators, may suggest that older adults develop skills through experience that allow them to use extrinsic response modulation in discerning ways that do not negatively impact their social relationships. Alternatively, social partners may be less likely to take offence over older adults using response modulation. Older adults are more likely to be forgiven for social transgressions (Miller et al., 2009) and less likely to be confronted during negative interactions (Fingerman, Miller, & Charles, 2008). Therefore, older regulators may not be perceived as offensive or blamed to the same degree as younger adults when they suggest that targets should "put on a brave face" and hide the expression of their emotions.

Assessment of Flexibility in Extrinsic Emotion Regulation Strategy Use and Associations with Distal Outcomes (Quality of Social Exchanges)

In this thesis, the examination of strategy use factors in extrinsic emotion regulation, went beyond looking at associations with the individual strategies and considered flexibility in strategy use. The results from a series of studies, represent the first program of research that we are aware of to directly examine the concept of flexibility in extrinsic emotion regulation strategy use.

Across the three studies, flexibility in extrinsic emotion regulation was operationalised based on previous approaches taken in the literature on intrinsic emotion regulation (Aldao, Sheppes, & Gross, 2015; Bonanno & Burton, 2013; Southward et al., 2018), and coping (Bonanno, Pat-Horenczyk, & Noll, 2011; Cheng, 2001).

Of key interest were associations of extrinsic emotion regulation flexibility with self-reported quality of social exchanges. Using data from the first online questionnaire, a binary proxy measure of flexibility was calculated, representing low and high flexibility. We found no differences between younger and older regulators in their classifications on this flexibility index (Chapter 3). These analyses also showed that although individual strategies were not significant predictors in adjusted models, those classified as being higher in flexibility reported more frequent positive social exchanges. This initial finding regarding flexibility suggested that the greater endorsement of a range of strategies may indicate a degree of flexibility in extrinsic regulation that is more beneficial for positive social exchanges than the habitual use of any specific strategy per se.

A further examination of flexibility (Chapter 4) made use of open-ended responses to scenarios which were coded and classified into categories of extrinsic emotion regulation strategies, consistent with approaches taken in previous research on flexibility in intrinsic emotion regulation (Southward et al., 2018). Open responses were used to enhance external validity, as there were no limits on how participants could answer and they were not prompted to provide particular answers through being presented with a list of possible strategy options. Two indices of flexibility, size and breadth of repertoire, were calculated, and their associations with the related constructs of emotional intelligence, interpersonal communication competence and trait Friendliness were examined. Breadth of repertoire was modestly associated with the altercentrism (interest in others) subscale of the interpersonal communication competence measure, but with no other variables used to assess convergent validity. Size of repertoire was also modestly associated with altercentrism, and two other interpersonal communication

competence subscales; empathy and supportiveness, and with the emotional intelligence subscale, managing the emotions of others. Thus, the evidence for convergent validity between our indices of flexibility and related constructs was limited, with only five significant associations out of a possible 16. The modest evidence supporting convergent validity could indicate that size and breadth of repertoire in extrinsic emotion regulation is not as similar to specific dimensions of emotional intelligence (e.g., appraisal of emotions) and interpersonal communication competence as originally anticipated.

Alternatively, our operationalisation of flexibility based on size and breadth of strategy repertoire may not represent an optimal method for assessing flexibility in extrinsic emotion regulation. Simply using a larger number of strategies or having access to a more diverse array of strategies may not necessarily be more adaptive, especially if a smaller number of strategies (or a single strategy) are more appropriate to the demands of a specific situation. Having a larger repertoire to draw on may be a necessary, but not sufficient condition to be effective in extrinsic emotion regulation. Having a larger repertoire may enable a regulator to more readily select from a range of possible strategies in finding the one(s) that best "matches" the situations. However, extending recent work in the domain of intrinsic regulation (Haines et al., 2016) it may be that the skill of effectively "matching" strategies to situations better represents the concept of flexibility in extrinsic emotion regulation.

To further examine the concept of flexibility in extrinsic emotion regulation, the final daily diary study considered the "match" between strategies and situations (strategy-situation fit), in the context of everyday social interactions (Chapter 5). It was anticipated that the perceived controllability of the situations would influence strategy selection, with problem-focused strategies more likely to be endorsed for situations that were regarded as more controllable, and emotion- focused strategies more likely to be endorsed in situations regarded as less controllable. Although regulators demonstrated better strategy-situation fit with less close social partners by selecting problem-focused strategies for more controllable situations, when regulating emotion

in closer partners there was no correspondence between strategy selection and controllability ratings. It is possible that established patterns of interacting may have influenced strategy selection for closer social partners. In close relationships, relational schemas develop over time and with repeated interactions. These relational schemas define stereotypical patterns of behaviour when interacting with close social partners (Baldwin, 1992; Koerner & Fitzpatrick, 2002). Through repeated experiences with close social partners, individuals develop implicit social cognitions, referred to as automatic attitudes. These spontaneous and instinctive automatic attitudes are activated in interactions with close social partners, influencing individuals' judgements and behaviour within their close relationships. In particular, automatic attitudes develop in regard to emotional experiences, and as emotional experiences in close relationships are common, automatic attitudes regarding emotions become more established and may be more likely to drive behaviour (including extrinsic emotion regulation) than fluctuating situational contexts (Faure, McNulty, Hicks, & Righetti, 2020). The daily diary study findings that closeness of relationship influenced strategy- situation fit align with the findings of the first questionnaire study, where the closeness and the quality of the relationship between regulator and target were significantly associated with strategy endorsement. Overall, the findings of this thesis suggest that when regulating emotion in close social partners (compared to less close social partners), regulators may be more likely to engage in habitual patterns of behaviour driven by relational schemas and automatic attitudes, rather than using strategies that more directly align with the specific demands of a given situational context.

Regulators who demonstrated greater strategy-situation fit by more consistently reporting use of problem-focused strategies in more controllable situations, also reported less frequent negative exchanges. This may suggest that regulators that "match" problem-focused strategies to more controllable situations may also have greater skills in managing social interactions more broadly. Thus, a regulator's overall socio-emotional skills may be another regulator factor that influences regulatory processes. One might speculate that regulators who demonstrate greater

strategy-situation fit, may also be more effective in down-regulating negative emotion in their social partners and/or have greater skills in selectively avoiding negative interactions. For example, if an individual finds reappraising the meaning of a situation is an effective means of down- regulating their own negative emotion in situations low in controllability, they may be more likely to suggest alternative view-points to an upset social partner when they are faced with a situation they cannot change. To date, there is no research on whether individuals tend to use similar strategies in both intrinsic and extrinsic emotion regulation. Although Niven et al. (2011) found that there was an overall correlation between intrinsic and extrinsic affect improving ($r = .68$), specific regulation strategies were not examined.

Additionally, regulators who possess greater socio-emotional skills and demonstrate greater strategy-situation fit, may also be more adept at avoiding negative social exchanges. Selectively choosing which situations to engage in or avoid, is a form of intrinsic emotion regulation that individuals may use in order to regulate their own emotion (Sims, Hogan, & Carstensen, 2015; Webb, Lindquist, Jones, Avishai, & Sheeran, 2017). Thus, the potential intersection of intrinsic and extrinsic emotion regulation and similarities between intrinsic and extrinsic strategy use could be an informative avenue of future research.

When situations were perceived as less controllable, regulators demonstrated strategy-situation fit by more often implementing empathic listening, but contrary to expectations did not implement the other emotion-focused strategies of attentional deployment or cognitive change. Empathic listening may have been implemented more as it may have been perceived to be less effortful than the other emotion-focused strategies and facilitated the conservation of the regulator's resources (Hobfoll, 2002). Additionally, in situations perceived as being less controllable, individuals tend to be more anxious, and use more emotion-focused coping and less problem- focused coping, than in more controllable situations (Endler et al., 2000). Thus, in the situations where there was less perceived control, it is possible the targets would have on average shown higher levels of distress. When a social partner is distressed, listening to them and

validating their emotion tends to be better accepted than attempts to problem solve or cheer them up, which can leave a social partner feeling invalidated and unsupported (Notarius & Herrick, 1988). In a study on active listening, participants discussed distressing events with individuals trained in active listening techniques (showing acceptance, empathy, asking open questions). Active listening had positive influence on participants' awareness of emotion and improved their affect, however active listening had no effect on improving the ability to problem solve or provide relationship assurance (Bodie, Vickery, Cannava, & Jones, 2015). This may suggest that the role of empathic listening is best suited to situations where controllability is low and may be an effective way to down-regulate negative emotion in targets, rather than attempting to use strategies that require a target to more actively engage with a problem situation. If a target is very upset or distressed, the regulator may realise that strategies such as problem solving or cognitive change may not be optimal, and instead select more passive strategies such as empathic listening. Therefore, the perceived level of the target's distress may need to be taken into account in future studies when assessing the effectiveness of individual strategies. Moreover, effectiveness could be operationalised as increases or decreases in both positive and negative affect. This may help ascertain whether some strategies in some situations may come with a greater risk of negatively impacting on a target. Taken together, consideration of the findings reported in this thesis within the context of additional theory and research concerned with intrinsic emotion regulation (Haines et al., 2016) and coping (Park et al. 2001), highlights how interactions between target factors (e.g., level of target upset), situational factors (e.g., level of controllability) and strategy use may influence regulatory processes in multiple and complex ways. For example, when situations are appraised as being low in controllability, targets are likely to be more upset and this may lead to regulators preferring empathic listening as a method of reducing negative emotion in the target over other putatively adaptive strategies.

However, the use of empathic listening in situations perceived as less controllable was not associated with more general self-reported positive or negative social exchanges. This finding is

broadly consistent with results of coping studies showing no overall effect for the use of emotion-focused coping with less controllable stressors in predicting positive mood, whereas problem-focused coping in controllable situations did predict positive mood (Park, Armeli, & Tennen, 2004; Park, Folkman, & Bostrom, 2001). Park et al. (2001) concluded that models of coping are complex and may need to include situational factors such as domain of situation (e.g., interpersonal, academic), how intense and how important the situation is to the person, and person factors such as their level of resources and experience.

Empathic listening is largely passive in nature and may require less effort from a regulator than both active problem-focused strategies such as situation modification or problem solving and potentially more effortful emotion-focused strategies such as cognitive change and attentional deployment. Regulators who employ empathic listening, may have overall a more passive approach to extrinsic emotion regulation and interpersonal problem solving. If a regulator is predominately passive in their social relationships, they may not receive as many positive reciprocal social exchanges from their social partners. Generally, individuals reciprocate in a balanced way, responding with exchanges of a similar kind and at a similar frequency (Chen, Chen, & Portnoy, 2009). Therefore, regulators who typically use empathic listening in less controllable situations may not be perceived as providing as much support as regulators who use more active strategies (e.g., situation modification) in more controllable situations. Consequentially, regulators who typically use empathic listening may not experience more frequent positive social exchanges or less frequent negative exchanges, in comparison to regulators who typically use problem-focused strategies.

To date, the series of studies reported in this thesis represent the first to examine flexibility in extrinsic emotion regulation. There is some evidence that the endorsement of multiple types of strategies is related to more frequent positive social exchanges, however these associations were not strong, and may reflect the operation of additional regulator factors not controlled for (e.g., personality). Strategy-situation fit appears to offer a more nuanced approach

to capturing the concept of flexibility, and the findings reported here suggest that individuals showing greater strategy-situation fit also reported less frequent negative social exchanges. However, as discussed throughout this chapter, potential interactions between regulator and target factors and situational contexts are complex, creating significant challenges for the ecologically valid study of strategy selection, flexibility in strategy use, and ultimately effectiveness in extrinsic regulation (Cohen & Arbel, 2020; Nozaki & Mikolajczak, 2020; Reeck et al., 2016). As a first step, including a comprehensive assessment of the range of additional regulator, target and situational factors as outlined in Figure 1 is likely to be a worthwhile endeavour for future studies.

Practical Implications

This thesis contributes to a new and emerging field concerned with research into extrinsic emotion regulation. Given relatively few empirical precedents in the area, aspects of the study design (adapted from previous work on intrinsic emotion regulation and other studies of socio-emotional functioning and the coping literature) were refined through the course of the project, and aspects of the research were in part exploratory. Despite this, we offer some promising- if tentative- suggestions for practical application arising from the findings.

The associations found between situation modification, cognitive change, and positive social exchanges (Chapter 3), may suggest that these strategies play an adaptive role in healthy social relationships. These findings could help inform the implementation of extrinsic emotion regulation strategies in clinical and residential care settings. For example, older adults with a trauma history (Cations et al., 2020) or dementia (Low, Cations, Koder, & Blair, 2020) may have difficulties in regulating their own emotion, and may benefit from extrinsic emotion regulation from carers or residential care staff. Staff could help manage negative emotion in residents by making changes to a situation when possible, redirecting the residents' attention, or encouraging a resident to reappraise the situation. In models of person-centred care implemented in aged residential care settings, staff are encouraged to assess whether residents' challenging behaviours

have underlying emotional reasons that could be addressed (Woods, 2001). One method of addressing negative emotion (distress, confusion) in residents with dementia, is to make changes to the environment where appropriate (e.g., reducing distracting stimuli), rather than placing the burden of change on the individual with dementia (Woods, 2001). This is similar to situation modification strategies in extrinsic emotion regulation, and as situation modification is less cognitively effortful for targets than other strategies (e.g., cognitive change), this may be more suited to older adults with dementia. Additionally, staff could avoid instructing residents to "cheer up" or "put on a smile" when the resident is experiencing negative emotion, as response modulation appears to be a less adaptive strategy, as indicated by the associations with negative social exchanges, and may have less positive outcomes for residents. As the field develops and our understanding of extrinsic emotion regulation is further enhanced, carers and staff could be educated in the use of the more adaptive extrinsic emotion regulation strategies, which may not necessarily involve more investment of time than response modulation strategies, but may have better outcomes for both carers, staff and residents.

Knowledge regarding extrinsic emotion regulation strategy choice could also be useful in interventions aimed at improving individuals' interpersonal skills. Some individuals have difficulty with managing interpersonal interactions and managing emotion in others (Dixon-Gordon, Haliczer, Conkey, & Whalen, 2018), including those who have experienced adverse childhood events (Poole, Dobson, & Pusch, 2018), and individuals with Borderline Personality Disorder (Bateman, 2012). Individuals with Borderline Personality Disorder have difficulty with emotion regulation, interpersonal functioning, impulsivity and suicidal ideation. Psychological treatment can include inter-personal therapy to improve the regulation of interpersonal relationships (Bateman, 2012) or Dialectical Behaviour Therapy (DBT) which includes teaching interpersonal and intrinsic emotion regulation skills (Linehan, Cochran, & Kehrer, 2001). For example, the DBT skill Distract is similar to intrinsic attentional deployment, and Check the Facts is similar to intrinsic cognitive change strategies (Neacsiu, Bohus, & Linehan, 2014). Although

there are interventions aimed at improving skills in intrinsic emotion regulation for individuals with Borderline Personality Disorder and Asperger's syndrome, little attention has been focused on skills related to extrinsic emotion regulation (López-Pérez, Ambrona, & Gummerum, 2016).

Individuals with Borderline Personality Disorder often have intense and unstable relationships with others (Bateman, 2012), therefore learning to use adaptive ways of managing emotion in their social partners could help alleviate some interpersonal tensions. It may also be helpful for family and/or partners of people with Borderline Personality Disorder to learn how to implement extrinsic emotion regulation strategies in an effective way, for example, by drawing their attention to positive aspects of a situation (attentional deployment), which is aligned with the DBT mindfulness skill of Control the Focus of Attention (Neacsiu et al., 2014). Therefore, a better understanding of extrinsic emotion regulation could help individuals adaptively manage emotion in social partners who have difficulties managing their own emotion.

Additionally, having the knowledge of how to "match" extrinsic emotion regulation strategies to situational context could also help individuals wanting to regulate emotion in their social partners. When a target is distressed by a situation that is low in controllability, selecting emotion-focused strategies may be more effective than problem-focused strategies. For example, a target may be faced with permanent constraints due to illness, accident or age-related declines, and needs to adjust to changed circumstances. While problem-focused strategies such as situation modification could solve some practical problems in such a situation, and attentional deployment could offer temporary distraction, cognitive change strategies are likely to be a better long-term solution for down-regulating negative emotion. Thus, regulators could encourage a target to see the problem from a different perspective or to see it in a more positive light. This is similar to accommodative coping (Brandtstädter, 2009), where individuals change their goals, attitudes and expectations in line with their resources when circumstances cannot be changed, rather than trying to change circumstances to help achieve their goals.

Strengths and Limitations

The studies in this thesis have provided important preliminary information on the correlates of extrinsic emotion regulation strategy use. Two questionnaire studies were followed by a fourteen-day daily diary study to capture strategy preference and strategy use in everyday social interactions. The use of hypothetical scenarios in the first two studies had advantages and disadvantages. Assessing participants' reactions to standardised scenarios has a long history in social psychological (Cheng & Cheung, 2005; Southward et al., 2018) and lifespan developmental (Fingerman et al., 2008; Miller et al., 2009) research, and reduces potential individual variation (or 'noise') resulting from idiosyncratic life circumstances that may arise when participants are asked to recall their own experiences.

However, the strategies participants endorsed in response to scenarios may not accurately reflect the strategies they use in everyday situations. Therefore, the use of a daily diary over fourteen days in the third study, allowed a more ecologically valid examination of extrinsic emotion regulation strategies participants used in everyday life, although this methodology introduces variation between participants' experiences, losing the standardisation of scenario-based research. Examining the concept of extrinsic emotion regulation flexibility across the studies allowed a comprehensive exploration of the different conceptualisations and measurements of flexibility. Moving from a two-level index of flexibility, to the broader concepts of size and breadth of repertoire, and then the more nuanced concept of strategy-situation fit provided information on factors influencing flexibility and associations with distal outcomes in this novel area of extrinsic emotion regulation research. Findings show that the age of the regulator was not associated with flexibility (Chapter 3), however, relationship variables emerged as influential factors in flexible extrinsic regulatory processes. Greater flexibility, operationalised as better strategy-situation fit, was demonstrated in less close relationships compared to closer relationships (Chapter 5). Thus, relationship factors need to be considered in future flexibility research. Modest associations between flexibility in extrinsic emotion regulation

and more frequent positive social exchanges and less frequent negative social exchanges, suggest flexibility in strategy use may be more adaptive than any specific strategy per se. The two-level (Chapter 3) and breadth of repertoire (Chapter 4) flexibility indices were associated with more frequent positive social exchanges. Additionally, when situation modification and giving advice were used in situations perceived as being more controllable (indicating better strategy-situation fit), this was associated with less frequent negative social exchanges (Chapter 5). These findings provide some evidence that flexibility in extrinsic emotion regulation may be beneficial for regulators and may be a facet of greater overall socio- emotional abilities.

Future Directions

Extrinsic emotion regulation is a complex, multifaceted series of processes involving regulator and target factors, situational context, strategy selection and implementation (Nozaki & Mikolajczak, 2020; Reeck et al., 2016). In this thesis, regulator factors, such as relationship variables emerged as being significant in the selection of extrinsic emotion regulation strategies. As discussed, regulatory behaviour may vary as a function of the relationship type, with different patterns of strategy implementation between close and less close social partners. Thus, future work could consider how the type, closeness and/or length of a relationship may influence strategy choice and implementation. Incorporating the personality traits of both regulators and targets into extrinsic emotion regulation research could also add valuable knowledge regarding the factors contributing to individual differences. As personality traits appear to influence intrinsic emotion regulation processes (Hughes et al., 2020), the personalities of the regulator and target are also likely to influence extrinsic emotion regulation. A further factor to consider that may offer insight into potential developmental differences, is the stereotypical perceptions regarding older adults. How older targets are perceived (e.g., low in competence), may influence the strategy selection by regulators. Thus, measuring age-related stereotypical beliefs would help clarify any developmental differences in extrinsic emotion regulation.

The field of extrinsic emotion regulation could also benefit from further research that takes situational context into account. In this thesis, perceived controllability of a situation, emerged as an important predictor of the adaptive strategies. Additional situational factors could be incorporated in future work, for example, the environment (e.g., home, workplace) or context (e.g., stressful, relaxed), or how the regulatory attempt is perceived by the target (e.g., helpful, interfering). Ultimately, the interactions between person-related factors and situational contexts may provide the most nuanced findings, as person-situation interactions are emerging as essential considerations in understanding individual differences in behaviour (Furr & Funder, 2018).

In the studies of this thesis, the experience of extrinsic emotion regulation was only assessed from the perspective of the regulator. Future work could incorporate the experience of targets, by using dyads (Horn, Samson, Debrot, & Perrez, 2019) or feedback from the social partners of the participants (Lopes et al., 2004). For example, considering both the regulators' and targets' appraisal of the situations, the appropriateness of extrinsic emotion regulation strategies implemented, and the quality of their relationships, would allow a more comprehensive examination of the factors influencing individual differences in extrinsic emotion regulation. Examining extrinsic emotion regulation from the targets' perspectives would also allow the assessment of effectiveness in extrinsic regulatory attempts (e.g., reduction of negative emotion in target), which was beyond the scope of this thesis.

Further work could also explore the goals of the regulator in their regulatory efforts. A regulator may attempt to down-regulate negative emotion in a social partner in order to reduce their partner's distress because they care about their partner's experience (prosocial motives), or in order to reduce their own discomfort and exposure to negative emotion (instrumental motives) (Niven, Henkel, & Hanratty, 2019). Motives in extrinsic emotion regulation can be complex, for example, recent work regarding extrinsic emotion regulation attempts in workplace settings, proposed three underlying theoretical dimensions of motivation based on self-determination theory; autonomy, relatedness and competence (Niven, 2016). Regulators may follow their own

interests (high autonomy) or may need to follow external suggestions (low autonomy), they may act to maintain relationships with others (high relatedness) or to accomplish their own goals (low relatedness), and may be concerned with improving performance (high competence) or with pleasure (low competence). Niven's (2016) classification suggests eight possible categories of motivation, including impression management (using emotion regulation to influence others' impression of oneself), instrumentality (using emotion regulation to benefit one's own performance) and compassion (using emotion regulation to benefit others' pleasure). This classification illustrates the complexity of underlying motivation when two (or more) individuals are involved in emotion regulation processes and highlights a possible framework for future research beyond organisational settings.

Conclusion

In examining individual differences in extrinsic emotion regulation, these studies have contributed several findings to this emerging field. There were few consistent and robust findings pointing to developmental differences, suggesting that (1) regulators of all ages may be similar in their extrinsic emotion regulation strategy preferences, or (2) that other variables, such as relationship closeness and situational context, may moderate relationships between age and strategy preference. Results from these studies suggest that extrinsic situation modification, attentional deployment, and cognitive change might be considered as generally adaptive processes that occur within social interactions. It is possible that interpersonal relationships could benefit from regulators judiciously choosing to implement these strategies. On the other hand, response modulation appears to be a less beneficial strategy in extrinsic emotion regulation, parallel to findings in intrinsic emotion regulation, and may be a strategy to generally avoid when the goal is to build and maintaining close relationships.

The exploration of flexibility in extrinsic emotion regulation provided mixed results, with findings suggesting that the operationalisation of flexibility as size and breadth of repertoire may

not adequately capture this construct. However, the concept of strategy-situation fit gave insight into how regulators match strategies to situational context and appears to be a promising avenue for future research. Developing clearer, more comprehensive theoretical perspectives on the operationalisation of flexibility and appropriate methods of assessing flexibility would help advance knowledge in emotion regulation and other similar fields. Overall, the findings reported here offer some new insights into how individuals of different ages regulate emotion in their social partners in various situations, and how extrinsic emotion regulation may be an important part in healthy social relationships more broadly. These novel preliminary considerations may provide potential avenues for researchers to explore extrinsic emotion regulation processes in the future.

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