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How we ripple:
The interplay of psychological flexibility, wellbeing and relationship quality

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Abstract

The beneficial links between positive features of romantic relationships and health and wellbeing have been widely explored at both the individual level and the couple level. Deepening our understanding of how wellbeing and relationships are connected can inform interventions designed to facilitate growth in these areas. In addition, a growing body of evidence supports the idea that psychological flexibility is a useful concept in the development of wellbeing interventions. To this end, this thesis seeks to deepen our understanding of how individual wellbeing and psychological flexibility are associated with relationship quality at both the individual and the couple level, through a series of six studies. Studies 1-2 begin by discriminating between commonly used measures of psychological flexibility, wellbeing and relationship quality as a baseline for testing hypothesised associations between these constructs. The findings identified that measures largely represented discrete constructs. Studies 2-5 then formed the basis for understanding structural associations first at the individual and then the dyadic levels, with largely consistent findings. At the individual level, more psychologically flexible people reported higher levels of relationship quality directly and also through the mediating effects of higher positive affect and lower negative affect. Within dyads, psychological flexibility predicted relationship quality at both the actor and partner level two months later. There were variations in the way that affect mediated the relation between psychological flexibility and relationship quality, particularly at the partner

level, with negative affect having a more pervasive and enduring impact on partner experiences of relationship quality. Finally, this research concludes with an experimental manipulation of psychological flexibility in study 6. Overall, this research illustrates that a psychologically flexible response style is not only important for individual functioning but also for partner experiences, with implications for relationship functioning over time. The malleability of psychological flexibility makes it an important area for future research as one way in which relationships may be supported both within individual's themselves and at the dyadic level.

Lay Summary

Individual health and wellbeing can be understood in many ways and relationships have been found to provide an important contribution to health and wellbeing across different contexts. Healthy romantic relationships have been linked to factors such as enhanced levels of support, a sense of belonging and a place from which to process and make sense of the world.

This thesis takes a closer look at how individual wellbeing might be important for relationship quality, exploring how one person's wellbeing might have implications not only for their own experiences of relationship quality but also for their romantic partner's experiences of wellbeing and relationship quality. One approach to understanding wellbeing is offered by contextual behavioural science and the construct of psychological flexibility which focuses on the consequences and implications of behaviour in a given context. Psychological flexibility describes a response style which enables people to both focus on and accept present moment experience and also to identify and behave in accordance with important life goals. This construct underpins Acceptance and Commitment Therapy which can be viewed as a set of operational methods that can be used to influence psychological flexibility. Psychological flexibility has been widely demonstrated as trainable for many types of people and this thesis investigates its value to romantic relationships.

This work therefore begins by developing precision in understanding the constructs which underlie commonly used measures of psychological flexibility, individual wellbeing and relationship quality, before moving on to explore the utility of psychological flexibility and how it may have relevance for relationship quality. Ultimately it identifies a structural model which best explains the associations between constructs, showing that when one person is psychologically flexible, both they and their romantic partner experience higher relationship quality. Affect was also identified as playing an important role this context, over time. In conclusion, this research shows how individual level experiences are important for other people, in this case a romantic partner.. This knowledge may be applied, both in helping to develop therapeutic approaches for people in struggling relationships but also more broadly, to understand and bring together relationships and wellbeing research in new ways, affording an opportunity for synthesis across traditionally separate research fields.

Declaration

I declare that this thesis, presented for the qualification of Doctor of Philosophy, is an original report of my own research, has not been submitted for any previous degree or professional qualification, and has been composed entirely by me except where collaboration is indicated. I confirm that the work submitted is my own, except where jointly authored publication materials have been included. My own contributions and those of other authors in these instances have been explicitly indicated.

Parts of this work have been peer-reviewed and published in the journal *Personal Relationships*. Specifically, the work presented in Chapters 2, 3 and 4 is reflected in 'Exploring the links between psychological flexibility, individual wellbeing and relationship quality', by Karen Twiselton (myself), Sarah Stanton (thesis primary supervisor), David Gillanders (secondary supervisor) and Ewan Bottomley (colleague). This work was conceived in collaboration with the first three authors. Additional data analytic support was provided by the fourth author. I carried out the data collection, analysis and writing.

Signed

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Chapter 1: Introduction

1.1 Overview of thesis

This thesis investigates if and how psychological flexibility may be important in deepening our understanding of how individual wellbeing and relationships are connected. This is accomplished through a series of six studies. It begins by examining the constructs which underlie standardised measures of psychological flexibility, individual wellbeing, and relationship quality before exploring the structural relationships between constructs firstly at the individual and then at the dyadic level and finishing with an experimental manipulation of psychological flexibility.

The Introduction provides a broad foundation for the rationale underpinning the five empirical chapters that follow. This is achieved by outlining the existing wellbeing and relationships literature before examining theory and evidence for the importance of psychological flexibility in this domain. Chapter 2 explores issues of measurement and develops precision in understanding distinctions between commonly used measures of wellbeing, relationship quality and psychological flexibility. Chapter 3 explores the structural associations between constructs at the individual level. These associations are then developed in Chapter 4 where dyadic level analyses are employed to investigate how psychological flexibility may be related to wellbeing and relationship quality in couples. In Chapter 5 dyadic findings are

replicated and extended to identify prospective links between constructs in couples over a 2.5 month period. The final empirical chapter, Chapter 6, outlines an individual-level short-term experimental manipulation of psychological flexibility to explore whether perceptions of individual wellbeing and relationship quality can be raised through a brief intervention designed to enhance psychological flexibility. Chapter 7 concludes this thesis by discussing implications for further understanding how the qualities and attributes that people bring to their relationships not only manifest in their own behaviour but also create reciprocal or ripple effects for partner experiences within the relationship. Understanding how specific individual experiences influence the experiences of close relationship partners is fundamental to deepening understanding of important relationship processes. The chapter concludes by setting out why synthesis of research from the domains of psychological flexibility, wellbeing and relationship quality, as undertaken in this thesis, can help to develop a shared language potentially enabling distinct bodies of research to merge and take on a new significance.

1.2 Individual wellbeing

The term 'wellbeing' is used widely and in different ways across a range of contexts and populations. Wellbeing is described from a variety of baseline positions denoting various aspects of individual functioning. Two widely used theoretical perspectives on wellbeing are offered by hedonic and eudaimonic philosophers. From the hedonic perspective, wellbeing is equated with the

seeking of pleasure and the avoidance of pain. Aligned with this view, the goal becomes to achieve pleasure and happiness, with wellbeing construed as the sum of hedonic moments. When combined with a person's experiences of overall life satisfaction, this reflects what is commonly known as subjective wellbeing (SWB; Kahneman, Diener, & Schwarz, 1999). The term SWB describes the degree to which thoughtful appraisal and affective reaction indicates that life is going well (Diener, Oishi, & Lucas, 2015). At the measurement level, SWB is comprised of three discrete components: *positive and negative affect* (PA and NA, respectively)*,* which reflect a person's emotional responses to the experiences in life, and *life satisfaction,* which incorporates cognitive appraisals regarding life in general (Diener et al., 2017; Diener, Suh, Lucas, & Smith, 1999). SWB has been found to be influenced by intra- and interpersonal circumstances (i.e., the way that people choose to think about and perceive what is happening around them both internally and in the external environment; Diener et al., 1999) and SWB can be maximised by maximising the number of pleasurable moments in life (Henderson & Knight, 2013). Added to this, the eudaimonic view of wellbeing originated with the work of Aristotle who regarded the expression of virtue as the true source of wellbeing (Ryan & Deci, 2001). Whilst emotions are viewed as an indicator of wellbeing, Ruini & Ryff (2016) argue that high PA and low NA do not necessarily mean that a person is psychologically healthy. Instead, wellbeing is conceptualized as the ability to successfully meet challenges and find meaning in life.

At the measurement level, eudaimonic wellbeing is conceptualised most clearly in the work of Ryff (1995) and is more commonly referred to today as psychological wellbeing (PWB; Ryff & Singer 1998). PWB is characterised by six key factors: *self-acceptance* (a longer-term self-evaluation that involves awareness and acceptance of personal strengths and weaknesses), *positive relations with others* (forming and maintaining meaningful interpersonal ties), *personal growth* (being open to new information and challenges), *purpose in life* (creating meaning and direction in life), *environmental mastery* (incorporating a sense of control and self-efficacy in daily functioning) and *autonomy* (self-determination, independence and the regulation of behaviour from within). Factors known to contribute to high levels of PWB include living a virtuous life and pursuing opportunities to realise inherent potential (Delle Fave & Bassi, 2009).

Where studies specify the type of wellbeing under consideration, such studies indicate that PWB is distinct from SWB. For example, a study of 3,031 people testing how wellbeing and mental health are connected, found that 40% experienced high levels of SWB, but that less than 20% reported high levels of PWB. Additional studies of large representative samples of adults show that although SWB and PWB are positively correlated (Waterman, 1993), variation in the constructs are best captured in two separate factors (Gallagher, Lopez, & Preacher, 2009; Keyes, Shmotkin, & Ryff, 2002). This suggests that the two components are important but distinct aspects of wellbeing (Keyes & Annas, 2009).

Wellbeing is often viewed as a contextual outcome in research, as resulting from problematic or life-enhancing circumstances, such as in an educational context (Gutman & Vorhaus, 2012), as a result of specific practices (Daykin et al., 2018) and within the relational domain through its linkages to factors such as loneliness or social support (Self, Thomas, & Randall, 2012). However, wellbeing is often referred to in broad terms and this can make it difficult to differentiate exactly what is referred to when these constructs are discussed. Some evaluative work suggests that PWB is itself not well-defined (van Dierendonck, Díaz, Rodríguez-Carvajal, Blanco, & Moreno-Jiménez, 2008), lacks consistency of measurement (Henn, Hill, & Jorgensen, 2016) and overlaps with SWB (Kashdan, Biswas-Diener, & King, 2008). The nuanced ways in which different forms of wellbeing are conceptualised and the potential ambiguity with measurement therefore make it important to clarify the constructs which underlie these scales, as part of a deeper exploration into how they may be associated with psychological flexibility and relationship quality.

1.3 Wellbeing and relationships

Individual wellbeing has been linked to relationships at many levels. Among these, the ability to self-regulate has been closely linked to both general levels of wellbeing (Hofer, Busch, & Kartner, 2011; Leist & Müller, 2013; Sonnentag, 2002) and to specific aspects of wellbeing such as achievement (Carver & Scheier, 2001). Self-regulation abilities themselves are associated

with an ability to behave in an adaptive manner towards desired goals (Wrosch, Scheier, Miller, Schulz, & Carver, 2003), with self-control viewed as a form of self-regulation involving the advancement of one goal over another when two goals come into conflict (Inzlicht, Werner, Briskin, & Roberts, 2021). Failure to self-regulate can be understood as either *under-regulation* which is linked to deficiencies of standards, monitoring or strength whilst *mis-regulation* is understood as a result of false information or misdirected effort. With significant implications for thoughts, feelings and behaviour (Singh, Surjeet; Sharma, 2018), studies have shown that self-regulatory abilities are important for close relationships (Luchies, Finkel, & Fitzsimons, 2011), through an enhanced ability to deal with partner transgressions (Finkel & Campbell, 2001) alongside greater relationship cohesion (Tangney, Baumeister, & Boone, 2004). Further, interventions which may be viewed as promoting self-regulation such as have been found lead to improved relationship satisfaction. For example, Mindfulness Based Stress Reduction (MBSR) has been shown to enhance self-regulation (Bishop, 2002; Gawande et al., 2019) with benefits also identified at the couple level (Khaddouma, Coop Gordon, & Strand, 2017). The ability to focus on important goals through self-regulation therefore forms an important aspect of healthy relationship functioning.

Higher levels of individual wellbeing have also been linked to relationship quality through an ability to show acceptance in difficult circumstances such as one partner's ill health (Pakenham & Samios, 2013) or when experiencing

relationship difficulties (Jacobson, Christensen, Prince, Cordova, & Eldridge, 2000), leading to improvements or higher levels of relationship satisfaction. This suggests then that an ability to influence experiences of individual wellbeing may have beneficial effects for relationships. This section therefore turns to research on specific aspects of wellbeing in romantic relationships to identify factors that shape relationship quality.

1.3.1 Subjective wellbeing in relationships

Often viewed as a highly important driver of SWB, social relationships are thought to provide six types of support: instrumental support, where people provide direct assistance to each other; informational support, related to providing guidance in difficult times; motivational support, which supports individual persistence towards goals; esteem support, enabling people to feel accepted and valued; status support, providing an outward indication of the value of the other person; and finally, social companionship, reflecting the emotional benefits of a pleasant relationship (Lucas & Dyrenforth, 2006). Higher SWB has been explicitly linked to both individual and partner reports of higher levels of relationship quality (Moore & Diener, 2019), showing specific effects for higher PA and life satisfaction and lower levels of NA. Understanding the association between SWB and relationship quality therefore requires consideration of the interplay between particular aspects of SWB and relationship quality.

1.3.1.1 Affect in relationships

Positive emotions have been found to be influenced by social relationships (Tay & Diener, 2011) and in turn, the association between PA and sociability has been widely studied. Watson, Clark, McIntyre, & Hamaker (1992) differentiated forms of sociability using experience sampling to study three types of social activities: social entertainment, active participation, and social responsibilities. They report that each aspect of sociability was correlated with PA. They concluded that socialising was a broad experience not related to a few specific interpersonal events. People experiencing high PA tended to recall pleasant and rewarding events and consequently, tended to evaluate others more favourably. This in turn leads to an expectation of further positive social interactions and an increased readiness for social and prosocial behaviour. The reciprocity between PA and social experiences means that positive social interactions tend to be self-sustaining. At the interpersonal level, affective characteristics of couple interactions have been found to predict relationship quality and stability such that positive affect is linked to enhanced relationship adjustment whereas negative affect was linked to poorer adjustment over a 2.5 year period (Kim, Capaldi, & Crosby, 2007). Romantic relationships provide one regular and consistent opportunity for the benefits of PA to be realised.

One of the ways that the benefits of PA may take effect have been found to occur when people communicate positive personal events with romantic

partners (Gable, Impett, Reis, & Asher, 2004; Gable & Reis, 2010). Known as capitalisation, when these communications receive an active, positive response then both the relationship and the person sharing the information benefit, in the form of increased self-esteem, SWB, positive emotions and reductions in loneliness. In turn, capitalisation has been found to promote thriving in relationships by serving to amplify good events and successes (Feeney & Collins, 2015), highlighting how PA benefits relationships. PA has also been found to benefit relationships in the form of increased the likelihood of accommodation rather than retaliation during conflict (Pronk, Buyukcan-Tetik, Iliás, & Finkenauer, 2019), at least in part linked to an enhanced tendency towards forgiveness and self-control (Finkel & Campbell, 2001), thus supporting relationship functioning.

Whereas PA appears to be associated with sociability, forgiveness and self-control, NA alternatively has been associated with self-focussed attention (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Mor & Winquist, 2002). In their meta-analysis of 226 studies, Mor & Winquist (2002) found this effect is particularly strong in clinical and female-dominated samples. An internal focus on unfavourable comparisons to an ideal self was linked with depression and generalised anxiety, whilst considerations of others' interpretations of events was associated more strongly with social anxiety. In itself, NA has been linked to lower relationship quality for both men and women (Levenson, Carstensen, & Gottman, 1994). However, it may be the ability to express and recognise emotions more broadly which is fundamental

to relationship quality (Brackett, Warner, & Bosco, 2005). In contexts where couples co-experience emotions, findings indicate that the effects of both PA and NA are amplified and have a greater impact on the couples overall relationship quality (Brown et al., 2021). This may provide insight into one reason that an ability to self-regulate NA is particularly important for couple functioning.

The ability to express and recognise emotions has been found to be important in providing responsive partner support (Gregory, Anderson, & Gable, 2020) and in turn, responsiveness, whereby relationship partners express caring, understanding and validation of each other, has been linked to higher relationship quality (Canevello & Crocker, 2010). Relationship partners are recognised as highly important in facilitating the downregulation of NA and effectively doing so forms one characteristic of higher quality relationships. When people feel their partner is responsive to their needs then they are able to share their vulnerabilities and this in turn helps to down-regulate NA, also aiding feelings of security (Slatcher & Selcuk, 2017). Further, it is the *perception* of partner behaviour which is key to these effects: where partner *behaviour* may be typically understood to be helpful, where this is not perceived as responsive, then it does not serve similar beneficial effects as behaviour which is understood to be responsive. Therefore, whilst relationship behaviours are one factor that can successfully downregulate NA, this seems at least partly contingent on couples' ability to recognise

partner behaviour as supportive and also on partners ability and motivation to support and promote relationship wellbeing (Campos & Schoebi, 2019).

NA is thought to impact on behaviour through an inward focus on sources of turmoil and a lack of engagement in the social world (Diener et al., 1999; Simons, Emery, Simons, Wills, & Webb, 2017). High levels of NA are associated with an interaction style where the person is not able to respond effectively. This has significant implications for the way that people behave and engage with a romantic relationship partner, such as destructive behaviour during conflict, with potential downstream implications for relationship quality. However, negative emotional states can also be adaptive (Kashdan, Barrett, & McKnight, 2015) with people who are able to differentiate between negative emotions with more granularity, less likely to be overwhelmed by them. Better differentiation of negative emotions has been associated with a reduced likelihood to retaliate aggressively when hurt and with higher levels of equanimity in the face of rejection (Kashdan, Goodman, Mallard, & DeWall, 2016; Pond et al., 2012). NA may also differentially impact behaviour for men and women, with ruminative cognitive style more prevalent in women (Johnson & Whisman, 2013). Rumination and venting are recognised as poor anger regulation strategies, with people who struggle to identify feelings more prone to impulsive aggression (Teten, Miller, Bailey, Dunn & Kent, 2008). A person's ability to specifically identify and regulate NA effectively is likely to have implications for how NA contributes to their relationship quality whilst the sociability, forgiveness and

self-control characteristic of PA is likely to support the establishment and maintenance of relationships.

1.3.1.2 Life satisfaction in relationships

In contrast to the emotion-driven aspects of SWB, life satisfaction involves cognitive judgments about quality of life according to the person's chosen criteria (Shin & Johnson, 1978). In a 30-year longitudinal study, life satisfaction was a key predictor of relationship trajectories, alongside depressive symptomatology (Roberson, Norona, Lenger, & Olmstead, 2018). People who experienced multiple relationship transitions reported the lowest life satisfaction in comparison to the highest life satisfaction among those in stable relationships. Further, in a meta-analysis of 43 dyadic longitudinal datasets, life satisfaction has also been found to predict relationship quality, alongside NA (Joel et al., 2020), highlighting the importance of general life satisfaction in the relationship context. At the couple level one partner's general life satisfaction has also been found to be predictive of couple relationship quality and their partner's life satisfaction over time (Gustavson, Røysamb, Borren, Torvik, & Karevold, 2016). This suggests that when people experience a broader satisfaction with life that this has implication for the quality of their relationships overall.

1.3.2 Psychological Wellbeing in relationships

Aspects of PWB have also been found to predict relationship quality. In addition to the work on self-regulation outlined in section 1.4, above, research has identified links between aspects of wellbeing linked to personal growth, autonomy and relationship quality through the literature on self-expansion (Aron, Aron, Norman, McKenna, & Heyman, 2000; Carson, Carson, Gil, & Baucom, 2007; Emery, Walsh, & Slotter, 2015; Gordon & Baucom, 2009). Self-expansion involves a motivation to enhance resources, abilities and identities with novel and challenging activities viewed as having the potential to lead to swift increases in knowledge or skills (Aron & Aron, 1996). As such, self-expansion shares characteristics of both the personal growth and autonomy aspects of PWB. Research on self-expansion often points to the importance of relationships and relationship partners for supporting expansion both at the individual and relationship levels. Individual expansion was found to be important for marriage quality via an association with PA (Gordon & Baucom, 2009), whilst engaging in novel activities and opportunities for relationship-expansion with a partner were related to higher levels of sexual desire. Shared expansion activities contribute to higher ratings of overall relationship satisfaction and sexual desire (Muise et al., 2019).

Similarly, research on the importance of autonomy in couple relationships has identified several links between PWB and relationships. Links have been

identified between having a responsive partner and increased autonomy and engagement with the environment (Selcuk, Gunaydin, Ong, & Almeida, 2016). The authors identified that people were more likely to take on challenges and pursue personal growth when they were in supportive relationships with a responsive partner. When partners felt a stronger sense of connection in their relationship, this was linked to higher levels of accommodation, particularly when participants experienced higher levels of autonomy (Kluwer, Karremans, Riedijk, & Knee, 2019). Components of PWB such as *personal relationships with others* may yield a direct link to relationship quality, romantic relationships providing a specific context in which relationships with others can be developed and grow. The combination of research in this area therefore demonstrates reciprocity in how PWB is important for relationship quality and how relationship quality is important for PWB. Deeper understanding of how these components are linked may be useful in allowing a more cohesive understanding of how aspects of wellbeing may be relevant for relationships and how psychological flexibility may be important in this context.

1.3.2.1 Potential Covariates with PWB

Although PWB is generally construed as a fairly static and stable construct (Ryff & Singer, 2006), systematic differences have been found to occur between some of the subscales of the PWB scale. For example, environmental mastery and autonomy are thought to increase with age,

whilst purpose in life and personal growth are thought to decrease and no age differences have been identified for self-acceptance and positive relations with others (Ryff & Keyes, 1995). In one longitudinal study of wellbeing in later life, Bennett (2005) explored how PWB was impacted by marriage, widowhood, and marital status change. Findings showed contextual factors such as widowhood that were more prevalent in older participants, influenced PWB. Effects were independent of gender but were influenced by the age at which widowhood occurred such that if participants were widowed at a younger age then subsequent declines in wellbeing were stronger. Similarly, gender differences have also been reported for PWB with women scoring higher on positive relations with others and personal growth whilst correlations with other aspects of wellbeing show modest effect sizes (Ryff & Keyes, 1995).

In seeking to determine the differential impacts of SWB and PWB on couple relationships, Selcuk, Gunaydin, Ong, & Almeida (2016) conducted a 10-year longitudinal study which explored how perceived partner responsiveness (PPR) was able to predict PWB in participants over time but that a similar effect was not observed for aspects of SWB. Defined as the extent to which people feel cared for, appreciated and understood by their partner (Harry T. Reis, Clark, & Holmes, 2004), PPR has been closely linked to relationship quality, serving to buffer the effects of stress (Stanton, Selcuk, Farrell, Slatcher, & Ong, 2019), down regulating negative affect and providing a sense of security (Slatcher & Selcuk, 2017) which is thought to contribute to

wellbeing (Selcuk et al., 2016). The association of PPR with PWB but not SWB adds weight to the idea that each aspect of wellbeing serves a specific and distinct function and is influenced by different factors. Additionally, research has demonstrated that when individuals achieve goals aligned with their values, they experience greater PWB which then has downstream effects on social functioning (Ryan, Huta, & Deci, 2008). The two types of wellbeing, then, may feed into relationship quality in different ways, reiterating the importance of precision when investigating how wellbeing and relationship quality are connected.

1.4 Psychological Flexibility

The term *psychological flexibility* derives from a Behavioural tradition and describes an approach to psychological health and wellbeing which prioritises the utility of behaviour in a given context alongside the ability to predict and influence that behaviour (Biglan & Hayes, 1996, 2015). Psychological flexibility is a response style which has been found to impact aspects of cognitive, behavioural, emotional and physiological functioning (Kashdan & Rottenberg, 2010). It is comprised of six core components in three key areas. These include; *Openness to experience*, which incorporates, *Acceptance* – the ability to sit with difficult experiences without trying to avoid them, and *Defusion* – where the person is able to separate themselves from their experiences without getting stuck in them. Secondly, *Behavioural awareness*, which describes, *present moment awareness* - being in touch

with and self-aware of own experiences. The second aspect of Behavioural awareness is *Self as Context* – the ability to keep a perspective of the self as separate from one's experiences. Finally, the third component of psychological flexibility is <u>*Valued Action*</u>, which includes *Values* – a continued connection to the areas of life that are important, giving direction to behaviour, and *Committed Action* - the ability to behave in accordance with important aspects of life (Hayes, Luoma, Bond, Masuda, & Lillis. 2006; Rolffs, Rogge, & Wilson, 2018). Combining the constructs of openness to experience and behavioural awareness enable parallels to be drawn with the construct of mindfulness, whilst the combination of behavioural awareness and valued action, are thought to underpin the process of behaviour change (Hayes, Pistorello, & Levin, 2012).

Whilst psychological flexibility might appear substantially similar to other constructs such as trait mindfulness, empirical research shows that these are related but distinct constructs (Rogge & Daks, 2021). One way to distinguish between psychological flexibility and mindfulness is through studies which seek to identify their utility for effecting behaviour change. Comparisons have been drawn in community settings such as in an examination of the mechanisms of change of a yoga intervention (Dick, Niles, Street, Dimartino, & Mitchell, 2014), of physical activity (Kangasniemi, Lappalainen, Kankaanpää, & Tammelin, 2014) and how each supports valued action (Finkelstein-Fox, Pavlacic, Buchanan, Schulenberg, & Park, 2020). There are also many studies of clinical samples which suggest that the concepts are

related but distinct, with psychological flexibility being able to account for a greater proportion of variance in constructs such as depression and anxiety (White et al., 2013) and in their ability to both predict disorder (Gloster, Klotsche, Chaker, Hummel, & Hoyer, 2011). Whilst both mindfulness and psychological flexibility offer a contribution to the understanding of onset and maintenance of disorder (Masuda & Tully, 2012) and wellbeing, the utility of psychological flexibility lies in the extent of its capacity to predict and influence behaviour in both clinical and community samples.

Although the manifestation and practice of mindfulness and psychological flexibility are thought to be similar, a further way to distinguish between the two constructs lies in their epistemological origins. Whereas psychological flexibility positions it within a behavioural tradition, the wider concept of dispositional mindfulness derives from the Buddhist belief system. The behavioural underpinnings and utilitarian focus of psychological flexibility within specific contexts means that in practical terms, psychological health is accessible not only through a mindfulness practice but also through a focus on valued goals and behaviour (Polk, Schoendorff, Webster, & Olaz, 2016), linked to an enhanced capacity across other facets of psychological flexibility. This highlights that whilst mindfulness represents a form of awareness, psychological flexibility incorporates that form of awareness combined with additional processes in order to regulate behavioural responding.

Greater psychological flexibility is associated with an enhanced ability to recognize and adapt to situational demands (Waugh et al., 2011), shift mindsets and behaviour to accommodate social and personal functioning (Kashdan & Rottenberg, 2010), maintain and balance life demands (Gloster, Meyer, & Lieb, 2017), and identify and commit to behaviours congruent with deeply held beliefs (Hayes & Strosahl, & Wilson, 2016), all of which are critical to healthy psychological functioning.

At the individual level, psychological flexibility has been identified as valuable to many aspects of wellbeing and the health benefits of psychological flexibility have been extensively demonstrated across many areas (Kashdan & Rottenberg, 2010). Studies of emotion regulation show specific effects for the ability to modify emotions to best match a situation, particularly in contexts of high cumulative stress (Westphal, Seivert, & Bonanno, 2010). Further, being able to reappraise situations is linked to an enhanced ability to regulate emotions and to higher levels of wellbeing (Gross & John, 2003).

Aligned with the valued action aspect of psychological flexibility, negative emotions can be of instrumental value in achieving valued goals (Tamir, 2009; Tamir, Mitchell, & Gross, 2008), in specific circumstances (Kalokerinos, Tamir, & Kuppens, 2017). More broadly, however, negative emotions are thought to limit people's responsivity to the demands of a situation because they encourage a restricted view of the world reliant on automatic, rigid and habitual thinking (Kashdan & Rottenberg, 2010), whereas positive emotions are thought to broaden a person's repertoire of

potential responses (Fredrickson, 1998) and thus enable people to respond more flexibly in a given situation, including in a relationship context.

In addition to emotion regulation, psychological flexibility has also been shown to enhance the capacity to self-regulate through its ability to influence attention and other aspects of executive control such as working memory (Kashdan & Rottenberg, 2010). People who are more psychologically flexible have a greater capacity to attend to present moment experiences even when those experiences may be unpleasant (Silberstein, Tirch, Leahy, & McGinn, 2012). In turn, this enables them to attend to the requirements of the situation more responsively and in a non-judgmental manner.

The beneficial effects of the mindfulness-like component of psychological flexibility can be seen in both within community and clinical samples (see Levin et al., 2012, for a meta-analysis of component studies), whilst more broadly, psychological flexibility has been shown to moderate the relationship between stress and a wide-range of physical, psychological and well-being outcomes (Gloster et al., 2017). This capacity to regulate emotions is particularly valuable as psychological flexibility has also been widely found to be trainable, meaning that it has broad-spectrum utility across many contexts and it is recognised as a public health target (Gloster et al., 2017), with training in psychological flexibility leading to beneficial effects. Whilst measures such as the CompACT (Francis, Dawson, & Golijani-Moghaddam, 2016) construct psychological flexibility to be stable and trait-like, other measures such as the Work Acceptance and Action Questionnaire (WAAQ:

(Bond et al., 2011) or the State Cognitive Fusion Questionnaire (Bolderston et al., 2019) demonstrate context-sensitive effects on functioning and distress. Further, people are thought to operate with a similar level of psychological flexibility across a range of contexts and life situations, related to their overall level of psychological health and functioning. Measures of psychological flexibility are able to discriminate between people who are psychologically healthy and those who may require treatment support (Gloster et al., 2011), therefore having both trait-like and state (or context dependent) qualities. Understanding how psychological flexibility may specifically contribute to relationship quality and wellbeing may therefore be valuable in helping to support healthy relationship functioning and its associated benefits.

1.4.1 Psychological flexibility in relationships

A wealth of literature highlights links between aspects of psychological flexibility and relationship quality (e.g. Khaddouma, Coop Gordon, & Strand, 2017; Rogge, Cobb, Lawrence, Johnson, & Bradbury, 2013). Karremans, Schellekens and Kappen (2017) proposed a theoretical model highlighting how mindfulness may be related to pro-relationship motivation and behaviour, coping with relationship distress, and relationship cognition. This model outlines not only how mindfulness shapes basic mechanisms of individual level functioning but also how each partner's relationship-specific thoughts, feelings and behaviours are reciprocally linked to each other and to

their interdependent and reciprocal levels of relationship satisfaction. Further, the model describes how mindfulness enhances awareness of basic mechanisms including emotion regulation, executive control and self-other connectedness. This in turn enhances pro-relationship behaviour, the ability to cope with distress and relationship cognition, and the associated interpersonal behaviour in turn affects a partner's responses. Finally, relationship responses are shown to have consequences for both one's own relationship satisfaction (i.e. actor relationship satisfaction) as well as one's *partner's* relationship satisfaction (i.e., partner relationship satisfaction).

As an integral aspect of mindfulness, an enhanced ability to regulate emotions enables people to recognise emotions without getting enmeshed in additional thoughts about the experience of that emotion (Simpson, Collins, Tran, & Haydon, 2007). This has been found to be particularly helpful in response to relationship stress where emotion regulation supports people in responding constructively and is also predictive of general relationship wellbeing and positive evaluations of a partner, following conflict (Barnes, Brown, Krusemark, Campbell, & Rogge, 2007). In a study of conflict strategy (Harvey, Crowley, & Woszidlo, 2019), mindfulness was found to predict likelihood of compromise during conflict for both genders and this in turn was predictive of the individual's own experience of relationship satisfaction. In addition, men's mindfulness was predictive of women's relationship satisfaction, whilst women's mindfulness was predictive of lower male dominance and reactivity during conflict and higher levels of men's

relationship satisfaction. These gender differences suggest that mindfulness may have different benefits for men and women, and it may be that this also extends to effects for full scale psychological flexibility.

The acceptance facet of psychological flexibility also has links to relationship processes. Galhardo, Cunha, & Pinto-Gouveia (2011) investigated how couples manage infertility, finding that those who developed higher levels of self-acceptance and more self-compassionate attitudes towards themselves had more adaptive coping strategies and a better-adjusted marital relationship. Moreover, Pakenham & Samios (2013) explored the dual roles of mindfulness and acceptance in couples coping with multiple sclerosis and found actor effects of both mindfulness and acceptance on relationship satisfaction whilst partner effects only emerged for acceptance on relationship satisfaction. This supports the idea that mindfulness and acceptance serve specific functions in the way that they impact on relationship functioning.

Similarly, research on the impact of low levels of acceptance has identified that accepting a partner's shortcomings is a more sustainable way of coping with actual/ideal partner discrepancies and that low convergence between ideals and reality can lead to attempts to regulate the partner (Overall, Fletcher, & Simpson, 2006). Regulation attempts can lead to more negative relationship evaluations in the partner being regulated, over time. Overall and colleagues suggest this may be due to reduced perception of acceptance

and appreciation, reactance and loss of autonomy in the partner being regulated. This then shows that not only is acceptance itself helpful in supporting relationship quality but also highlights the ways that low levels of acceptance can undermine relationship quality.

Although there are few specific studies on the role of valued action within relationships, the significance of individual and relationship value goals can be observed in studies of conflict management (Zacchilli, Hendrick, & Hendrick, 2009). Zacchilli and colleagues identify six strategies that couples use in conflict situations which may apportion value differently in relationships. These include compromise, domination, submission, separation, avoidance, and interactional reactivity. Harvey et al. (2019) describe each of these in terms of the balance of individual and relational goals prioritised by the person in navigating relationship conflict. Compromise was linked most clearly to relational satisfaction and was indicated by a high concern for the goals of both partners and their collaborative efforts to accomplish mutually agreed solutions.

Investment in intrinsic goals is also characteristic of the valued action facet of psychological flexibility. Relationships are therefore important vehicles through which people can satisfy individual goals such as for autonomy and competence (Baumeister & Leary, 1995). Relationship partners are viewed as providing an important context and opportunity to achieve these goals. Research has also demonstrated that partner support of personal growth is

linked to relationship quality and goal-related behaviour (Aron et al., 2013; Strong & Aron, 2006). Further research supports the idea that when people are open to experience that they are more likely to capitalise on opportunity to find meaning and expand the self (Higgins, 2006; Kashdan & Steger, 2006; Silvia, 2001). This research therefore provides some support for the idea that strengthening an individuals' valued action could contribute to relationship quality through enhancing their collaborative efforts towards both their own and their partner's self-identified goals and values.

Overall then, the accumulation of this research affords an insight into why psychological flexibility as a whole may be important beyond the individual and into the interpersonal domain.

1.5 Why synthesise?

This thesis attempts to synthesise research about individual and relationship level processes. In doing so it combines ideas from different theoretical paradigms which come with different aims and objectives. The risk in this approach is a lack of interest in the contribution of the findings from other paradigms, which may appear inconsequential to researchers operating within specific areas. The hope is that by embedding what is known from different perspectives in 'new' areas, a shared language emerges where existing literature can be viewed in a new light and the contributions made from different backgrounds develop a significance that was not previously recognised. From the perspective of wellbeing researchers, clearly mapping

how aspects of individual wellbeing are differentiated both from each other and from relationship quality and psychological flexibility, at the measurement level, is helpful in contextualising how wellbeing may be supported and maintained at both the individual and partner levels. For contextual behavioural scientists, exploring the interpersonal effects of psychological flexibility may afford an insight into how people influence each other and the importance of people as contexts themselves. And finally, at the relationship level, where research explores the interplay of social factors which contribute to relationship quality and how relationship quality impacts on the individual, psychological flexibility affords a lens through which these processes may be understood and offers a potential mechanism for enhancing and maintaining relationship quality.

Chapter 2: An initial exploration of individual and relational wellbeing

This chapter is drawn from its published form (Twiselton, Stanton, Gillanders, & Bottomley, 2020), and is derived from the first element of Study 1 of that paper and supported by a grant from the University of Edinburgh to Dr Sarah Stanton.

2.1 Introduction

This chapter describes an approach to understanding the potential overlap between scales which measure psychological flexibility, individual wellbeing and relationship quality, designed to underpin subsequent investigation of structural relationships between constructs . It offers an insight into the way constructs are operationalised with the aim of enhancing understanding of commonality between scales. This foundational work will use correlational analyses and Exploratory Factor Analysis (EFA) to identify the constructs underlying commonly used measures, forming the basis for further investigation in subsequent chapters. This chapter begins with an overview of the characteristics and development of scales pertaining to key constructs to enable a rounded understanding of each of the key measures used throughout this thesis. The measures are then analysed using an EFA and interpreted to identify the constructs underlying these measures.

2.1.1 Psychological Flexibility

A range of measures capture aspects of psychological flexibility such as acceptance (Bond et al., 2011; Gámez et al., 2014), cognitive fusion (Gillanders et al., 2014), present moment awareness (Brown & Ryan, 2003), self as context (Gird & Zettle, 2013), values (Smout, Davies, Burns, & Christie, 2013; Trompetter et al., 2013) and committed action (McCracken, Chilcot, & Norton, 2015). However, it is only more recently that measures of full-scale psychological flexibility have started to emerge and such full-scale measures are particularly useful when trying to capture how the merits of the construct overall, in a broad sample, compared to specific clinical contexts, in which psychological functioning is often assessed.

Measures such as the AAQ-II (Rochefort, Baldwin, & Chmielewski, 2018; Tyndall et al., 2019; Wolgast, 2014) suggests that its items are particularly effective at measuring distress and psychological inflexibility, but less effective when it comes to measuring the acceptance and functional outcomes characteristic of psychological flexibility. There are also questions regarding the discriminant validity of the AAQ-II compared to measures such as the Brief Experiential Avoidance Questionnaire (BEAQ: see Tyndall et al., 2019 for critique) and the Multidimensional Experiential Avoidance Questionnaire (MEAQ: (Rochefort et al., 2018). These suggest that the AAQ-II is more adept at measurement of NA and neuroticism in contrast to experiential avoidance. Whilst an absence of psychological health

incorporated into understandings of low psychological flexibility, focus at a community level and how to optimise functioning, may therefore require an alternative measure.

The Comprehensive Assessment of Acceptance and Commitment Therapy processes scale (CompACT: Francis, Dawson, & Golijani-Moghaddam, 2016) was developed specifically to measure psychological flexibility, responding to limitations of more traditional measures such as the Acceptance and Avoidance Questionnaire II (AAQ-II, Bond et al., 2011). The CompACT was devised to inform on general processes of psychological flexibility. Francis et al. conducted a Delphi study in which ACT experts rated items of the existing measures of Psychological Flexibility processes and provided free text rationales for why each item was either a good or poor indicator of its intended process. After three rounds of such revisions, the Delphi process resulted in a 37-item scale. This was further refined using Classical Test Theory methods in a sample of 377 non-clinical adult participants. The resultant CompACT questionnaire is a 23-item scale that measures aspects of psychological flexibility, delineated in a three-factor structure: Factor 1: *openness to experience* comprised eight acceptance items and two defusion items; Factor 2: *behavioural awareness* comprised five items measuring contact with the present moment and mindfulness items; and Factor 3: *valued action* incorporated eight items reflecting a motivation to work towards personally relevant goals. The CompACT has been found to explain up to two times the variance in current functioning,

compared to measures of inflexibility alone and with reports of good predictive and convergent validity (Rogge, Daks, Dubler, & Saint, 2019). These findings contributed to the decision to prioritise the CompACT for use in the current series of studies forming this thesis.

2.1.2 Relationship Quality

A similar range of factors guided the selection of the Perceived Relationship Quality Components inventory (PRQC: Fletcher, Simpson, & Thomas, 2000) as for psychological flexibility. Aspects of relationship quality can be captured by many measures, each offering a different insight into aspects of relationship functioning. Differentiating between *perceptions* of, and *enacted* relationship quality was also a further consideration which influenced the choice of scale. Authors such as Debrot et. al. (2012) and Reis, Maniaci and Rogge (2014) identify that the perception of behaviour in a relationship context is of equal or even greater importance than enacted behaviour in terms of partner experiences of relationship quality. This prioritisation of perceptions influenced the selection of the PRQC to assess relationship quality. The PRQC was designed to measure subjective attitudes and evaluations held by a person about their romantic relationship. Fletcher et al. (2000) identified six components of relationship quality: *commitment, trust, passion, satisfaction, intimacy,* and *love*. Fletcher et al. used factor analysis to explore how these components may be related, testing a range of models in a sample of 200 students (63.5% female). Within the commonly used 18-

item version, three items are used to measure each of six subscales. EFA compared several factor structures and identified that a model where all components contribute individually to a first order factor structure and a second order factor of full-scale perceived relationship quality, afforded the best statistical fit. Fletcher et al. concluded that it made sense to think of perceived relationship quality as multi-faceted rather than as a single unidimensional construct. Further, the authors proposed that differences in patterns of scoring for items provide support for a distinction between passionate and companionate love. This interpretation of their data fits with commonly held understandings of the nature of relationship quality (e.g. Mikulincer & Shaver, 2019; Sternberg, 2019). Further the PRQC has a wide utility within relationships research enabling more direct comparisons and understanding to be drawn in relation to the extant literature on relationship quality

2.1.3 Psychological Wellbeing

PWB is predominantly measured using the Psychological Wellbeing Scale (PWBS: Ryff, 1989a). There are several versions of this scale ranging from 18-120 items. Positive and reverse-scored items combine in six subscales: *self-acceptance,* reflecting a generally positive attitude towards the self and accepting of both positive and negative qualities; *positive relations with others,* including warm and trusting relationships, concern for their welfare and the capacity for strong empathy, affection and intimacy; *autonomy,*

indicated by a self-determination and independence, ability to resist social pressure and evaluation of self by personal standards; *environmental mastery,* a competence in managing the environment, making effective use of opportunities and creation of contexts suitable to personal needs and values; *purpose in life,* a sense of direction, the belief that life has purpose and aims for objectives for living; and finally *personal growth* as indicated by feelings of continued development, an openness to new experience and a recognition of improvement in the self over time.

The factor structure of this measure has sparked controversy. Common points of contention include that reverse-scored items load differently to positively scored items (Henn et al., 2016) and that levels of discriminant validity are problematic between sub-scales (Hsu, Hsu, Lee, & Wolff, 2017). There is also a debate about the methodology used in evaluating the scale, with Exploratory Structural Equation Modelling (ESEM: Asparouhov & Muthén 2009; Marsh, Morin, Parker, & Kaur, 2014) postulated as yielding better fit and smaller factor correlations than Confirmatory Factor Analysis (CFA: Joshanloo, 2016; Joshanloo, Bobowik, & Basabe, 2016). Joshanloo and colleagues suggest that prior research in this area using CFA has over-estimated the correlation between PWB and SWB, serving to highlight the importance of the current attempt to differentiate these constructs and what each contributes to an overall understanding of wellbeing. In their own work on this measure, Ryff and colleagues recommend that seven items per

subscale are used to balance participant burden with adequate depth of measurement of the PWB subscales (Ryff, 2013).

The combined evaluative work on the PWBS highlights the potential complexity of determining how PWB performs in terms of its internal reliability and discriminant validity. Despite potential shortcomings, the PWBS has been used as a measure of PWB in several large-scale studies (e.g. Hsu et al., 2017; Miller, Kilgo, Archibald, & Pascarella, 2017) and is recognised to include aspects of wellbeing not captured by SWB, specifically its focus on wellbeing as resulting from as derived from a sense of meaning and goal-orientation (Disabato Goodman, Kashdan, Short, & Jarden, 2016). Similarly, PWB has been positively correlated with demographic factors such as age and socio-economic status and with factors such as life experience, emotional intelligence and personality traits (Ryff & Singer, 2013), highlighting the importance of the current work in developing a clear picture of exactly what is measured by the PWBS.

2.1.4 Subjective Wellbeing

Subjective wellbeing (SWB) has been associated with a range of positive outcomes in the domains of health, income and social behaviour (De Neve, Diener, Tay, & Xuereb, 2013) and a range of measures are used to assess SWB, depending on the context.

Among the many measures of SWB, a widely used and well validated single-component measure is the Satisfaction with Life Scale which captures the cognitive component of SWB (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009; Mackenzie, Karaoylas, & Starzyk, 2018) whilst the PANAS offers a well-established measure of affective elements of SWB (Argyle & Martin, 1991). Conceptualising SWB in this way enables an exploration of the utility of each component and its potential association(s) with psychological flexibility and relationship functioning. Discriminating between cognitive and affective components of subjective wellbeing has been recognised as helpful in developing precision of understanding (Kahneman & Krueger, 2006), self-reports of subjective wellbeing are also influenced by circumstances. For example, Schwarz and Clore (1983) reported that reports of subjective wellbeing are affected by factors such as the weather with reports of higher SWB on nicer days. Reports of SWB are therefore thought to vary over relatively short time frames based on perceptions of aspects of the current environment such as the weather. Such effects can be partially addressed by ensuring a larger recruitment to studies, thereby accommodating individual fluctuations in self-report in establishing broader patterns and trends within the data.

Many studies of SWB and relationships are cross-sectional in nature, negating the possibility of predicting the direction of associations. However, in a study exploring the associations between life happiness and marital happiness across the life course, findings suggest that life happiness is

predictive of martial happiness (Kamp Dush, Taylor, & Kroeger, 2008). A further notable study explored self-report predictors of relationship across 43 longitudinal couples studies (Joel et al., 2020). This study found that positive affect, negative affect and life satisfaction were all predictive of interpersonal behaviour which was in turn predictive of relationship quality. The combination of these studies highlights both the potential importance of subjective wellbeing as a predictor of relationship quality and the importance of ensuring that both cognitive and affective elements are measured separately in order to isolate their relative contributions to relationship quality.

Comparisons between measures of wellbeing (Goodman, Disabato, Kashdan, & Kauffman, 2018) indicate that the model of SWB offered by Diener (1984) capture the same type of wellbeing as newer conceptualisations such as that offered by Seligman (2011) and his model, PERMA. Further, Goodman and colleagues conclude that wellbeing is best constructed as a unidimensional construct with different facets (cognitive and affective) but that as these tend to be highly correlated, that they tend to tap into the same type of wellbeing. This informed the decision to prioritise the conceptualisation of wellbeing using Diener's SWB model.

2.1.4.1 Life Satisfaction

One measure of global life satisfaction, the Satisfaction with Life Scale (SWLS: Diener et al 1985) measures a component of SWB which the authors

describe as reflecting a cognitive-judgmental process. In assessing the validity of the SWLS, 176 undergraduates were administered the 5-item scale in a group setting with a repeat application after two months. A single factor emerged. A second student sample (n=163) were used to explore the correlations between this and other measures of wellbeing, reporting a moderate degree of correlation between scales. The authors went on to assess the psychometric properties of the SWLS in an older adult population (n=53, 43% female, mean age =75) drawn from a range of sources. Interviews enabled an independent estimate of life satisfaction although these were thought to be influenced by affective content and were administered by experimenters. A range of studies have explored the validity of the scale in different populations, more recently in Italian adolescents (Fabio, Gori et al. 2016), individuals with Parkinson's disease (Rosengrenn, Jonasson et al 2015), women experiencing fertility problems (Maroufizadeh, Ghaheri & Samani, 2016) and people with traumatic brain, spinal cord or burn injury (Antmann, 2019). Findings therefore indicate that the SWLS is a valid and reliable measure across a wide range of samples.

2.1.4.2 Positive and Negative Affect

The Positive and Negative Affect Schedule (PANAS: Watson, Clark, & Tellegen, 1988) measures PA and NA and was distilled from exploratory work initially using up to 65 representative mood descriptors. Basic psychometric data was gathered from a student sample, university

employees and adults in the general population (total n=4217) and participants were asked about their emotions across a range of time points. Test-retest reliability was assessed across different groups, indicating that PA and NA were reliable and discrete sub-scales. Similarly, analyses indicated that the PANAS is reliable, precise and that it provides measures of both PA and NA across a range of populations and over time. Finally, Watson et al., (1988) report that when used with short-term instructions, the PANAS is sensitive to mood fluctuations whereas a trait-like stability is exhibited when longer term instructions are used (e.g. in general, or over the past year). PA and NA tend to be measured independently rather than merged into a single overall score for affect, research suggesting that the two components are orthogonal in nature (e.g. Seib-Pfeifer, Pugnaghi, Beauducel, & Leue, 2017). Debate exists over the factor structure of the measure with suggestions that NA may be separated into two separate factors reflecting emotions labelled '*fear*' and '*distress*' (Ebesutani et al., 2011; Seib-Pfeifer et al., 2017). Studies of variation in PA and NA suggest that within person variation in both, may be triggered by factors such as cognitive appraisal, engagement patterns and coping strategies in response to trigger events (Dunkley, Ma, Lee, Preacher, & Zuroff, 2014). PA as measured by the scale, has been associated with higher levels of social activity, raising sociability (D. S. Berry & Hansen, 1996) whilst NA is linked to internal and social conflict (Diener et al., 2017). The PANAS was therefore selected for use in this study as providing a comprehensive measure of PA

and NA, due to it's capacity to differentiate PA and NA and enable a more precise understanding of the role of each aspect within the current context.

2.1.5 Summary

The methods used in the construction and validation of each of the key measures highlight a range of important considerations. Whilst measures such as the PANAS and the SWLS are more established and have undergone little change over time, the CompACT is a relatively recent measure. A degree of semantic similarity appears to exist between the subscales of the CompACT and those of the PWBS, particularly around an orientation towards purposeful goals, albeit the number of subscales of the PWBS may reflect a broader range of underlying constructs. The factor structure of the PRQC also appears to share some qualities with markers of individual wellbeing such as the *positive relations with others* subscale of the PWBS. Unpacking if and how these scales are distinct and distilling the key components of wellbeing is important in the search for understanding how individual wellbeing and relationship quality may be connected and how each may be raised. EFA is ideally suited to the task of revealing any shared variance that may underlie these measures (Floyd & Widaman, 1995). Identification of commonality and shared variance serve as a prelude to more in-depth consideration of potential linkages between markers of individual wellbeing and relationship quality with this thesis. This chapter therefore analyses scales of psychological flexibility, individual wellbeing and

relationship quality using EFA, to assess the commonality and distinctions between measures before delving deeper into the structural relationships between constructs in subsequent chapters.

2.2 Method

Data reported here were drawn from a larger project available on the Open Science Framework at https://osf.io/5tsh2/ All study procedures were approved by the Psychology Research Ethics committee at the University of Edinburgh.

2.2.1 Participants

Data for this study were derived from the larger study which comprised three separate samples, each collected using online surveying methods. Two out of three sub-samples contained all measures of interest. Sample size recommendations for EFAs appear to be inconsistent in the literature with recommendations ranging from 3-20 participants per item (Williams, Onsman, & Brown, 2010). Sampling requirements are dependent on several aspects of the specific data for analysis, including the level of communality, the complexity of the data structure and the level of over-determination of the factors (MacCallum, Widaman, Zhang, & Hong, 1999). A total of 1203 participants were available, from which 923 were ultimately included, and this was sufficient to detect effects based on a total of 90 items across scales of

interest in the present study. Sample size determinations were based on the assumption of a moderate level of communality of items required to determine a single factor and a sample size of 900 participants reflected common ratio recommendations of 1:10 (Gaskin, Lambert, Bowe, & Orellana, 2017; MacCallum et al., 1999).

The sample represents a composite of two data collection points: the first was administered through Prolific Academic (n=308) and the second was administered through Amazon's Mechanical Turk (n=615). The same recruitment and sampling procedures were observed for both samples. From the initial sample of 1203, 194 participants were omitted who did not complete one or more of the key measures, 25 participants indicated that they were single and one participant who checked that they did not consent to the study. Of the remaining sample, 60 failed at least one of three attention check items. Attention check items were derived by prior convention and read 'For this item, please respond <a specific number on the scale range provided>'.

The ratio of variance was assessed by comparing the variance of the two samples. This was less than 1.5 times different on all key scales and demographics. Samples were therefore considered to be equivalent (von Neumann, 1941), enabling data to be combined, enhancing both the power of the study and the generalisability of findings. The final combined sample

(n=923) was composed of 83% white participants, 65% female and participants ranged in age from 18-73 years (M $_{years}$=37.52, SD $_{years}$=11.72). Relationships ranged in length from 1 month-52 years (M $_{years}$=9.84, SD $_{years}$= 10.15) and 89.7% of the sample reported being heterosexual.

2.2.2 Procedure and Materials

Participants completed all parts of the study online. They first provided demographic information, after which they answered a battery of questionnaires (Appendix A). The order of measures, and items within measures, was randomized and counterbalanced. The subset of scales used for the present analyses are described below. After completion of all study questionnaires, participants viewed a debriefing screen and were compensated. The full study took approximately 20-25 minutes to complete.

2.2.3 Measures

Psychological flexibility. Participants rated their psychological flexibility using the CompACT (Francis et al., 2016) which conceptualises psychological flexibility in line with a three factor structure, focussed on conceptual alignment with the processes underpinning psychological flexibility. The CompACT is a 23-item measure rated on a 7-point scale (0 = *strongly disagree*, 6 = *strongly agree*) containing 10 items that assess *openness to experience* (e.g., "I can take thoughts and feelings as they come, without attempting to control or avoid them"), five items that assess *behavioural*

awareness (e.g., "I rush through meaningful activities without being really attentive to them," reverse-scored) and eight items that assess *valued action* (e.g., "I behave in line with my personal values"). Overall psychological flexibility scores were computed by averaging responses across all items, with higher scores indicating greater psychological flexibility (M = 3.72, SD = 0.88, ω = .91). Mean scores were also generated for each of the individual three factors, in a similar manner, allowing for a more precise exploratory analysis of the relationship of psychological flexibility to other key constructs.

Affect. To gauge affect, participants completed the PANAS (Watson, Clark, & Tellegen, 1988), a 20-item measure rated on a 5-point scale (1 = *very slightly/not at all*, 5 = *extremely*) containing 10 items that assess PA (e.g., "enthusiastic," "proud") and 10 items that assess NA (e.g., "hostile," "guilty"). Following prior recommendation (Diener et al., 2017), PA and NA were explored separately, enabling the researchers to analyse the contribution of each element to individual wellbeing (M_{PA} = 3.22, SD_{PA} = 0.88, ω = .92; M_{NA} = 1.90, SD_{NA} = 0.89, ω = .93).

Life Satisfaction. To gauge life satisfaction, participants completed Diener, Emmons, Larsen & Griffin's (1985) SWLS, a 5-item measure rated on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*) that assesses how happy individuals are with their life in general (e.g., "In most ways my life is close to my ideal"; *M* = 4.62, *SD* = 1.52, ω =.93).

Psychological Wellbeing. Participants rated their PWB using 24 items from Ryff's (1989) PWBS. Items were rated on a 6-point scale (1 = *strongly disagree*, 6 = *strongly agree*); four items assess *self-acceptance* (e.g., "I like most aspects of my personality"), four items assess *autonomy* (e.g., "I'm not afraid to voice my opinions, even when they are in opposition to the opinions of most people"), four items assess *environmental mastery* (e.g., "I am quite good at managing the many responsibilities of my daily life"), four items assess *purpose in life* (e.g., "I enjoy making plans for the future and working to make them a reality"), four items assess *personal growth* (e.g., "I think it is important to have new experiences that challenge how you think about yourself and the world"), and four items assess *positive relations with others* (e.g., "I enjoy personal and mutual conversations with family members or friends"). Overall PWB scores were computed by averaging responses across all items, with higher scores indicating greater PWB ($M = 4.20$, $SD = 0.87$, $\omega = .93$). Mean scores were also generated for each of the six sub-factors, in a similar manner, allowing for a more precise exploratory analysis of the relationship of PWB to other key constructs.

Relationship quality. Participants rated their overall relationship quality using the Perceived Relationship Quality Components (PRQC; Fletcher, Simpson, & Thomas, 2000), an 18-item measure rated on a 7-point scale (1 = *not at all*, 7 = *extremely*) containing three items that assess six aspects of relationship

quality: *satisfaction* (e.g., "How satisfied are you with your relationship?"),

commitment (e.g., "How committed are you to your relationship?"), *intimacy*

(e.g., "How close is your relationship?"), *trust* (e.g., "How much do you trust

your partner?"), *passion* (e.g., "How passionate is your relationship?"), and

love (e.g., "How much do you love your partner?"). Overall relationship

quality scores were computed by averaging responses across items with

higher scores indicating greater relationship quality (M = 5.84, SD = 1.13, ω

= .91).

2.3 Results

Exploratory analyses revealed correlations between key constructs (Table

2.1) and considered how constructs varied with age.

Table 2.1 Correlations between constructs, including covariates

	PF	RQ	LS	PWB	PA	NA	Age
				Correlations			
Psychological Flexibility (PF)	-	.35**	.42**	.48**	.38**	-.54**	.22**
Relationship Quality (RQ)		-	.49**	.46**	.34**	-.29**	-.02
Life Satisfaction (LS)			-	.64**	.48**	-.38**	-.03
PWB				-	.52**	-.55**	.16**
PA					-	-.22**	.04
NA						-	-.22**
Age							-

**p<.01, *p<.05

Note: *Note.* Bold font indicates correlation over 0.30, indicating moderate correlation Cohen (1992).

Moderate correlations were found between the majority of constructs. Whilst age was significantly associated with psychological flexibility, PWB and NA, the strength of the correlations did not reach a sufficient level to merit prioritisation for further investigation.

ANOVA identified significant gender differences for psychological flexibility, PWB, PA and NA (Table 2.2) and therefore subsequent analyses were conducted separately by gender to assess whether this significantly influenced the factor structure that emerged in the EFA.

Table 2.2 - Gender differences on key constructs

	Female M (SD)	Male M (SD)	df	F	p
Age	37.40 (11.50)	37.78 (12.15)	1, 920	.219	.640
Psychological flexibility	3.68 (.85)	3.81 (.91)	1, 920	5.001	.026
Relationship quality	5.85 (1.13)	5.84 (1.13)	1, 920	.005	.944
Life satisfaction	4.56 (1.56)	4.74 (1.44)	1, 919	3.137	.077
PWB	4.15 (.87)	4.29 (.86)	1, 920	5.469	.020
PA	3.18 (.90)	3.30 (.84)	1, 920	3.907	.048
NA	1.97 (.89)	1.77 (.86)	1, 920	10.710	.001

In determining the number of factors to retain in the EFA, Hayton, Allen, & Scarpello (2004) recommend that Parallel Analysis (PA; Horn, 1965) is one of the most accurate factor retention methods. Velicer's Minimum Average

Partial test (MAP; Velicer, 1976), was also employed to determine how many factors to extract from the analyses. The combination of these methods suggested a 9-factor solution would be most effective for the current data when assessing the 90 focal items, generating comparison data for 100 datasets, with a 95% confidence interval.

Principal Axis Factoring (PAF) with an Oblimin rotation was used in the EFA, following the recommendations of Russell (2002). Although an Oblimin rotation tends to have a diminished interpretability compared to methods such as Promax which is computationally faster and is recommended for large datasets, Oblimin and PAF afforded the most interpretable solution for the current data and Oblimin is recommended where it is highly likely that the factors will correlate with each other (Rennie, 1997). PAF is also preferred where there are a large number of items and potential correlation between items as it accounts for covariation (de Winter & Dodou, 2012), making it the first choice in the current context.

Analyses were conducted for both the combined dataset and each sub-sample individually. In interpreting the pattern matrix, further consideration was given to the adequacy of item loadings. Although both the individual and combined samples are sufficiently sized to consider relatively low loadings, consideration was also given to the criteria for convergent validity which suggests that the average factor loading should be above 0.5 (Nunnally & Berstein, 1994). This was taken into account when interpreting the pattern matrix. Covariances which contributed a factor loading of 0.5 or above are presented in bold script, indicating their relative contribution. The initial

pattern matrices were then refined by removing low- and cross- loading items.

Table 2.3 provides the refined 9-factor pattern matrix for the combined data. This solution explained 60.6% of the variance in the data. Key findings from these analyses indicate discrete factors for each of the scales, with the exception of the PWBS. PWBS items predominantly loaded onto factors with items from the satisfaction with life scale and the behavioural awareness component of psychological flexibility. Item loadings for the PWBS, however, were comparatively low. A further discrete factor emerged from the PWBS predominantly from negatively loaded items on the personal growth subscale. This was given the label 'stagnation' but may equally reflect other aspects of low personal growth such as apathy. The other notable factor which loaded in an unexpected pattern is the passion subscale of the PRQC, with strong negative weightings onto a discrete factor.

Separate analyses by gender went on to reveal different 9–factor solutions for males and females when employing Oblimin rotation. Neither individual solution offered a similar degree of interpretability as the combined sample: the factor structure for both males and females containing both cross-loading and negatively weighted factors. PROMAX rotation was explored as an alternative with similar patterns of cross- and negative loadings for combined and gender specific analyses. Consistent throughout all analyses were the relative spread of item-loadings for items of PWBS compared to items of all

other measures which tended to converge in specific factors across

iterations.

Table 2.3 – Refined 9-factor solution

	Life satisfaction	Relationship Quality	Positive affect	Valued action	Openness to experience	Negative affect	Passion	Stagnation	Behavioural awareness
					Factor				
Cronbach's Alpha	.929	.967	.917	.878	.829	.928	.909	.811	.877

Satisfaction with life

In most ways my life is close to my ideal.	**.844**								
The conditions of my life are excellent.	**.791**								
I am satisfied with my life.	**.809**								
So far I have gotten the important things I want in life.	**.708**								
If I could live my life over, I would change almost nothing.	**.659**								

PWBS - Environmental mastery

In general, I feel I am in charge of the situation in which I live.	.468								
The demands of everyday life often get me down #	.311								
I have difficulty arranging my life in a way that is satisfying to me #	325								

PWBS - Self-acceptance

When I look at the story of my life, I am pleased with how things have turned out.	**.666**								

In many ways, I feel disappointed about my achievements in life # .424

PWBS - Purpose in Life

I have a sense of direction and purpose in life.   .416

PRQC - Satisfaction

How satisfied are you with your relationship?   **.695**

How content are you with your relationship?   **.707**

How happy are you with your relationship?   **.683**

PRQC - Commitment

How committed are you to your relationship?   **.864**

How dedicated are you to your relationship?   **.857**

How devoted are you to your relationship?   **.838**

PRQC - Close

How close is your relationship?   **.800**

How connected are you to your partner?   **.712**

PRQC - Trust

How much do you trust your partner?   **.721**

How much can you count on your partner?   **.737**

How dependable is your partner?   **.686**

PRQC - Love

How much do you love your partner?   **.845**

How much do you adore your partner?	**.783**	
How much do you cherish your partner?	**.821**	

<u>Positive affect</u>

Interested	**.758**	
Alert	**.601**	
Excited	**.753**	
Inspired	**.765**	
Strong	**.728**	
Determined	**.705**	
Attentive	**.649**	
Enthusiastic	**.805**	
Active	**.680**	
Proud	**.670**	

<u>Psychological Flexibility - Valued action</u>

I make choices based on what is important to me, even if it is stressful.	**.688**
My values are really reflected in my behaviour.	**.645**
I am able to follow my long term plans including times when progress is slow.	**.546**
I can keep going with something when it's important to me.	**.670**
I behave in line with my personal values.	**.715**

I undertake things that are meaningful to me, even when I find it hard to do so.	**.549**	
I act in ways that are consistent with how I wish to live my life.	**.661**	
I can identify the things that really matter to me in life and pursue them.	**.575**	

PWBS - Environmental mastery

I am quite good at managing the many responsibilities of my daily life.	.327	

Psychological Flexibility – Openness to experience

I try to stay busy to keep thoughts or feelings from coming #	**.606**	
One of my big goals is to be free from painful emotions #	**.633**	
I go out of my way to avoid situations that might bring difficult thoughts, feelings or sensations #	**.636**	
Even when something is important to me, I'll rarely do it if there is a chance it will upset me #	.492	
I work hard to keep out upsetting feelings #	**.731**	

PWBS - Self-acceptance

My attitude about myself is probably not as positive as most people feel about themselves #	.326	

Negative affect

Irritable		**.661**
Distressed		**.772**

Ashamed	**.694**	
Upset	**.824**	
Nervous	**.725**	
Guilty	**.675**	
Scared	**.869**	
Hostile	**.674**	
Jittery	**.674**	
Afraid	**.832**	

PRQC - Passion

How passionate is your relationship?	**-.758**	
How lustful is your relationship?	**-.821**	
How sexually intense is your relationship?	**-.849**	

PWBS - Personal growth

I think it is important to have new experiences that challenge how you think about yourself and the world.		-.462
When I think about it, I haven't really improved much as a person over the years #		-.320
For me, life has been a continuous process of learning, changing, and growth.		-.497
I gave up trying to make big improvements or changes in my life a long time ago #		-.397

PWBS - Purpose in life

I enjoy making plans for the future and working to make them a reality.   -.461

PWBS - Positive relations with others

I enjoy personal and mutual conversations with family members or friends.   -.331

Psychological Flexibility – Openness to experience

I get so caught up in my thoughts that I am unable to do the things that I most want to do #   -.353

Psychological Flexibility - Behavioural awareness

It seems that I am 'running on automatic' without much awareness of what I'm doing #   **-.757**

Even when doing the things that matter to me, I find myself doing them without paying attention #   **-.809**

I rush through meaningful activities without being really attentive to them #   **-.578**

I do jobs or tasks automatically, without being aware of what I'm doing #   **-.796**

I find it difficult to stay focused on what's happening in the present #   -.470

Scale abbreviations: PWBS = Psychological Wellbeing, PRQC = Perceived Relationship Quality, # indicates a reverse coded item, bold indicates an item loading > 0.5.

Although counter to the recommendations of the PA and MAP test, alternative options were also explored to identify possible enhanced interpretability of the solution, particularly relating to negative item weightings. A 6-factor structure was found to afford the most interpretable solution for the combined data and reflected the number of scales that were included in the EFA. Retaining consistency in the extraction and rotation, PAF and Oblimin rotation were used to explore this option.

Table 2.5 shows the refined pattern matrix for the 6-factor solution for the combined data set with individual items omitted where they cross-loaded (represented by items of PWBS: Environmental Mastery 1, 2 and 4, Self-Acceptance 3 and Purpose in Life 1) or had a factor loading of less than 0.3 (represented by CompACT items: Openness to Experience 7, 8, 10, Autonomy 1 and PWBS: Personal growth 1). This refined 6-factor solution was found to explain 55.1% of the variance in the data.

The primary difference in the 6-factor combined solution was that items for relationship quality loaded positively onto a single factor. In addition, the three sub-scales of psychological flexibility collapsed into two factors: openness to experience and behavioural awareness represented as a composite labelled 'mindful acceptance' whilst 'valued action' remained a discrete factor. As in the 9-factor solution, items of PWBS in the 6-factor solution represent relatively low weighting items on factors which reflect life satisfaction and psychological flexibility. The stagnation factor from the 9-factor solution was absorbed into mindful acceptance and assumed a positive weighting in the 6-factor solution.

Table 2.4 – Refined 6-factor solution

	Factor					
	Life Satisfaction	Relationship Quality	PA	Valued Action	Mindful Acceptance	NA
Cronbach's Alpha >	.923	.960	.917	.897	.896	.928

<u>Life Satisfaction</u>

In most ways my life is close to my ideal.	**.792**					
The conditions of my life are excellent.	**.747**					
I am satisfied with my life.	**.764**					
So far, I have gotten the important things I want in life.	**.672**					
If I could live my life over, I would change almost nothing.	**.664**					

<u>PWBS - Self-acceptance</u>

When I look at the story of my life, I am pleased with how things have turned out.	**.652**					
I like most aspects of my personality.	.313					

<u>PRQC - Satisfaction</u>

How satisfied are you with your relationship?		**.828**				
How content are you with your relationship?		**.795**				
How happy are you with your relationship?		**.815**				

<u>PRQC - Commitment</u>

How committed are you to your relationship?		**.808**				

How dedicated are you to your relationship?	**.832**
How devoted are you to your relationship?	**.809**

PRQC - Close

How intimate is your relationship?	**.682**
How close is your relationship?	**.863**
How connected are you to your partner?	**.805**

PRQC - Trust

How much do you trust your partner?	**.661**
How much can you count on your partner?	**.715**
How dependable is your partner?	**.660**

PRQC - Passion

How passionate is your relationship?	**.627**
How lustful is your relationship?	**.503**
How sexually intense is your relationship?	.464

PRQC - Love

How much do you love your partner?	**.839**
How much do you adore your partner?	**.870**
How much do you cherish your partner?	**.863**

Positive affect

Interested	**.734**

Alert	**.565**
Excited	**.770**
Inspired	**.765**
Strong	**.733**
Determined	**.689**
Attentive	**.628**
Enthusiastic	**.801**
Active	**.685**
Proud	**.668**

Psychological Flexibility: Valued action

I make choices based on what is important to me, even if it is stressful.	**.668**
My values are really reflected in my behaviour.	**.584**
I am able to follow my long-term plans including times when progress is slow.	**.514**
I can keep going with something when it's important to me.	**.716**
I behave in line with my personal values.	**.612**
I undertake things that are meaningful to me, even when I find it hard to do so.	**.643**
I act in ways that are consistent with how I wish to live my life.	**.532**
I can identify the things that really matter to me in life and pursue them.	**.628**

PWBS - Positive relationships with others

I enjoy personal and mutual conversations with family members or friends.	.387

PWBS - Autonomy

I judge myself by what I think is important, not by the values of what others think is important.   .360

PWBS - Environmental mastery

I am quite good at managing the many responsibilities of my daily life.   .452

PWBS - Personal growth

I think it is important to have new experiences that challenge how you think about yourself and the world.   .405

For me, life has been a continuous process of learning, changing, and growth.   .492

PWBS - Purpose in life

I enjoy making plans for the future and working to make them a reality.   .468

Psychological Flexibility - Openness to experience

I tell myself that I shouldn't have certain thoughts. #   **.593**

I try to stay busy to keep thoughts or feelings from coming. #   **.659**

One of my big goals is to be free from painful emotions. #   **.543**

I go out of my way to avoid situations that might bring difficult thoughts, feelings or sensations. #   **.608**

Even when something is important to me, I'll rarely do it if there is a chance it will upset me. #   **.537**

I work hard to keep out upsetting feelings. #   **.621**

I get so caught up in my thoughts that I am unable to do the things that I most want to do. #   **.576**

Psychological Flexibility - Behavioural awareness

It seems that I am 'running on automatic' without much awareness of what I'm doing. #   **.651**

Even when doing the things that matter to me, I find myself doing them without paying attention. #   **.671**

I rush through meaningful activities without being really attentive to them. #   **.520**

I do jobs or tasks automatically, without being aware of what I'm doing. #   **.588**

I find it difficult to stay focused on what's happening in the present. #   **.598**

PWBS - Autonomy

I tend to worry about what other people think of me. #   .474

I tend to be influenced by people with strong opinions. #   .469

PWBS - Positive relationships with others

Maintaining close relationships has been difficult and frustrating for me. #   .336

I have not experienced many warm and trusting relationships with others. #   .308

PWBS - Self-acceptance

My attitude about myself is probably not as positive as most people feel about themselves. #   .495

PWBS - Personal growth

When I think about it, I haven't really improved much as a person over the years.#   .355

I gave up trying to make big improvements or changes in my life a long time ago.#   .346

PWBS - Purpose in life

My daily activities often seem trivial and unimportant to me. #   .378

I don't have a good sense of what it is I'm trying to accomplish in life. #   .348

Negative affect

Irritable   **.648**

Distressed   **.777**

Ashamed   **.699**

Upset   **.834**

Nervous   **.715**

Guilty   **.665**

Scared   **.872**

Hostile   **.678**

Jittery   **.666**

Afraid   **.835**

Scale abbreviations: PWBS = Psychological Wellbeing, PRQC = Perceived Relationship Quality, # indicates a reverse coded item, bold indicates an item loading > 0.5.

Analyses by gender were repeated for the 6-factor solution and revealed distinct loading patterns for all scales apart from the PWBS, for males and females. Comparisons were conducted between the combined sample and samples 1 and 2 to assess parity and homogeneity across groups (Appendix B). The findings from these analyses mirrored the gender analyses in that the same discrete factors emerged consistently aside from the PWBS, supporting the construct validity of measures. A high degree of similarity was observed in the extraction patterns, indicating that combining samples across these analyses was acceptable.

2.4 Discussion

The aim of this chapter was to explore the variance within a range of commonly used measures of psychological flexibility, individual wellbeing and relationship quality to provide a solid foundation on which to further explore the interconnections of these constructs. Moderate levels of correlation were found between scales prompting further exploration of the underlying factors structure, using an EFA. A range of factorial solutions were explored, yielding different structures and affording differing degrees of interpretability (Preacher & MacCallum, 2003). Distinct loadings patterns were evident across analyses for the majority of scales with the exception of the PWBS which shared variance with items of psychological flexibility and life satisfaction in the combined sample.

Corroborating results from the MAP test and parallel analysis recommended a 9-factor solution for this analysis and this therefore formed the starting place for the EFA. Within the 9-factor solution, the most notable finding was that scales

predominantly loaded onto discrete factors, with overlap of items from different scales only for items of PWBS. Consistent with Francis et al., (2016), items from the individual sub-scales of psychological flexibility emerged on separate factors. However, items of behavioural awareness demonstrated negative item loadings. Items of the PRQC also showed a pattern of negatively loading items for the *passion* subscale. These negative weightings impacted the interpretability of the overall factor solution and were largely inconsistent with other findings in this area (Fletcher et al., 2000). Finally, negative, but low, item loadings were also attributable to the personal growth sub-scale of the PWBS, in contrast to items from all other subscales within this measure. This combination of negative factor weightings and the presence of cross-loading among items related to PWBS prompted further exploration to identify a more interpretable factor solution. The explained variance and face-value fit of items to factors indicated that a 6-factor solution provided a good alternative explanation for the data. The 6-factor solution merged items from two subscales of psychological flexibility: openness to experience and behavioural awareness, into a single positively weighted factor that was labelled mindful awareness. The negatively weighted items pertaining to the passion subscale merged with other items of relationship quality within the 6-factor solution to form a discrete factor comprised solely of items from the PRQC.

Further consideration of items of PWBS in the 6-factor solution revealed that items remained diffusely loaded. However, a clearer loading pattern emerged in the 6-factor solution, with PWBS items loading only to factors related to psychological flexibility and to satisfaction with life. The implications of this finding are that the shared variance within psychological flexibility and life satisfaction is the same as

that which underlies the construct of PWBS. Although the PWBS affords a well-established way to understand aspects of individual wellbeing, low weightings and cross-loading items mean it offers less utility than life satisfaction and psychological flexibility items both in terms of their ability to account for variance and the clarity of the constructs within this EFA. The diffusion of items of PWBS across different factors is also characteristic of other attempts to verify the broader factor structure of the PWBS and the ongoing debate regarding its internal factor structure (Henn et al., 2016; Springer & Hauser, 2006; van Dierendonck, Díaz, Rodríguez-Carvajal, Blanco, & Moreno-Jiménez, 2008). As a final consideration, the items of the PWBS were entered into a separate factor analysis to assess the properties of the scale within the current study. A method effect emerged in the 2-factor solution with reverse scored items on a single factor and positively scored items on the other. This added to concerns about how the scale was performing, aligned with previous research findings suggesting that participants respond differently to negatively worded items (Henn et al., 2016).

2.4.1 Gender differences

Although the same factors emerged for males and females, the order of factors which emerged differed in every analysis. Solutions for males and females incorporated items which were negatively weighted, in discrete factors, consistently. Additionally, the pattern matrices which emerged for females were more consistent with the combined pattern matrices for both the 9- and 6- factor solutions, which likely reflected the higher ratio of females to males in the combined sample. In addition to negatively weighted factors, given that each gendered pattern matrix also

contained a greater proportion of cross-loading items than the combined sample, the overall conclusion was that combining male and female samples afforded the best explanation for the variance inherent in each scale. However, subsequent components of this thesis aim to give due regard to gender differences and will be mindful to consider gender effects throughout.

2.4.2 Implications for further research

The combined findings from analyses in this chapter indicate that items of psychological flexibility, PA, NA, satisfaction with life and relationship quality represent distinct constructs. The decision to remove PWB from further analyses was driven by two factors: the findings in this chapter indicated that the PWBS did not measure a discrete construct with items from the PWBS contributing comparatively lower weighting to any identifiable factor solution. However, as of the items of the PWBS did load meaningfully onto factors underlying items of psychological flexibility and life satisfaction, removal of the PWBS does impact on the proportion of variance which is explained by the 6-factor solution. This decision was also guided by a desire to enhance precision in understanding (Levin et al., 2012) and the diffusion of items across the PWBS.

Balancing these issues, removal of the PWBS from further analyses did ultimately fit with the primary aim of this thesis to understand how psychological flexibility may contributed to relationship quality. Moving forward, this decision does have implications for the interpretability of subsequent findings and what can be understood about the role of individual wellbeing in this context. Although PWB does

map onto psychological flexibility and life satisfaction, caution is required in terms of how subsequent models comment on PWB, if psychological flexibility or life satisfaction serve different function in subsequent models or if either psychological flexibility or life satisfaction are not included.

In relation to findings on gender, although the same factors emerged for both male and female samples, the factors emerged in a different order for each gender, indicating a different weighting of factors. This may suggest that wellbeing and relationship quality function slightly differently for males and females. Additional analyses will be integrated into subsequent key analyses to determine how gender may be important. With this foundational work now in place, this thesis now seeks to further develop insight into the associations between psychological flexibility, individual wellbeing and relationship quality by turning to consider structural relationships.

Chapter 3: Structural relationships between psychological flexibility, wellbeing and relationship quality

This chapter is drawn from its published form (Twiselton et al., 2020) and is derived from the second element of Study 1 of that paper, which was supported by a grant from the University of Edinburgh, awarded to Dr Sarah Stanton.

3.1   Introduction

Chapter 3 seeks to develop the findings of the EFA in Chapter 2 by exploring the structural relationships between psychological flexibility and relationship quality at the individual level. Chapter 2 identified six discrete factors which reflected underlying constructs represented by scales of psychological flexibility, life satisfaction, PA, NA and relationship quality. The EFA findings guided the Structural Equation Modelling (SEM) used in Chapter 3 to understand how psychological flexibility may be associated with relationship quality and the role that components of SWB may contribute to these associations.

The models tested in this chapter reflect a primary aim to understand how psychological flexibility may be linked to relationship quality and how aspects of wellbeing may be important in this context, hypothesising that psychological flexibility will be associated with both higher levels of relationship quality and that SWB will play a role in this context. This builds on existing literature which shows that individual wellbeing facilitates healthy romantic relationship functioning (Epstein & Baucom, 2002; Ledermann, Bodenmann, Rudaz, & Bradbury, 2010; Smith, Vivian,

& O'Leary, 1990; Waldinger, Hauser, Schulz, Allen, & Crowell, 2004) and the importance of psychological flexibility for; individual wellbeing (Gloster et al., 2017), experiences of affect (Kashdan & Rottenberg, 2010) and relationship quality (Khaddouma et al., 2017; Rogge et al., 2013), such that when people are more aware of and committed to their relationship values and goals over a period of time then not only is this related to higher levels of marital satisfaction but also lower levels of relationship dissolution.

Moderation by age is also considered within this chapter. Studies of relationships across the lifespan indicate that as goals and values evolve in line with life stage and the prevailing circumstances, that relationships may be prioritised and experienced differently (Chopik, Edelstein, & Fraley, 2013; Gillanders & Laidlaw, 2014). These changes may have bearing on the associations between psychological flexibility and relationship quality. Similarly, this chapter also explores the possibility of moderation by PPR. Aligned with the findings of Rogge, et.al. (2013), when people are open to experience and attentive to what is occurring in their relationship, they may be better able to accurately perceive the behaviour of their partner, offering the opportunity for them to be more responsive themselves and also afford the opportunity for them to recognise when partner behaviour is responsive (validating, understanding and caring). Not only could this have direct benefits for relationship quality but also for experiences of affect. For instance, PPR has been found to influence experiences of affect reactivity (Stanton, Selcuk, et al., 2019) and is recognised as an important contributor to the downregulation of negative emotions (Slatcher & Schoebi, 2017). As PPR is widely recognised as a relational strength (Slatcher & Selcuk, 2017), PPR

is tested as a moderator in this study to establish if psychological flexibility offers something over and above PPR to the understanding of relationship quality.

3.2 Method

Data reported here were drawn from a larger project available on the Open Science Framework at https://osf.io/5tsh2/ All study procedures were approved by the Psychology Research Ethics Committee at the University of Edinburgh.

3.2.1 Participants

Sample size recommendations for SEM vary widely and are based on three major approaches (Wolf, Harrington, Clark, & Miller, 2013), including the degree of model specification, the power consistent with a good model fit and the Monte Carlo simulation method. This chapter employs the reactive Monte Carlo approach which analyses existing data to evaluate the fit of a hypothesised model. This approach works best when the amount of missing data is minimised (Marcoulides & Chin, 2013).

Participants for this study comprise the participants from samples 2 and 3 of the dataset used in Chapter 2. This sample included all potential covariates and enabled adequate power for sampling of structural relationships. As with sample 2 in the previous chapter, participants from sample 3 were excluded from the study if they left one or more questionnaire blank ($N = 148$) or if they failed attention check items ($N = 43$). All remaining participants were over 18, therefore meeting criteria and were in a romantic relationship. Samples 2 and 3 were compared for equivalence and no

significant differences were found based on demography or for the constructs of psychological flexibility, PA or life satisfaction. Significant differences were noted between groups for relationship quality ($t(1174) = -2.06$, $p = .02$) and NA ($t(1173) = -2.14$, $p = .02$). Groups were therefore analysed separately, and as a combined sample, to check for equivalence. The results were the same across samples and as such the findings from the combined dataset are presented.

The final sample ultimately comprised 1179 romantically-involved individuals (684 female, 492 male, 2 genderqueer, 1 unreported) who participated in this study in exchange for US \$0.75. Participants were 18-76 years of age ($M_{years} = 36.75$, $SD_{years} = 11.51$). Relationships ranged in length from 1 month-53 years ($M_{years} = 9.16$, $SD_{years} = 9.69$) with 62% in common-law/engaged or marital relationships and 69% cohabiting. The majority identified as heterosexual (89%) and Caucasian (81%).

3.2.2 Materials and Procedure

Materials largely mirrored those used in Chapter 2. However, sample 3 used the 6-item version of the Perceived Relationship Quality Components (PRQC: Fletcher, Simpson, & Thomas, 2000) with the intention of reducing participant load. The equivalent 6-items were used from sample 2, to ensure parity of analyses. As before, the order of measures and items within measures were randomised and counterbalanced. Participants completed all parts of the study online through Amazon's Mechanical Turk. Following completion, participants viewed a debriefing screen and were compensated. Each study took 20-25 minutes to complete.

Following previous analyses, gender differences were explored to assess whether the same structural models could explain the data as effectively for both males and females. For ease of interpretation, gender was collapsed into a binary variable for analyses (0 = female, 1 = male) with three participants who did not fall into these categories, excluded from analyses. Age was also included as a potential covariate, in line with literature suggesting that relationships evolve and vary across the lifespan both in term of the way they function and the goals and values associated with different life stages (Carstensen, Scheibe, Ram, Ersner-hershfield, & Brooks, 2011; Gillanders & Laidlaw, 2014; Shin An & Cooney, 2006).

Perceived Partner Responsiveness (PPR: Reis, Clark, & Holmes, 2004) was included as a potential moderator because of its known association with SWB and PWB (e.g., Selcuk et al., 2016) as well as relationship quality (Reis et al., 2004). It was therefore important to establish whether associations between psychological flexibility and those variables could be accounted for by responsiveness (e.g., individuals who perceive their partner as more responsive reporting greater psychological flexibility). Participants completed Reis, Crasta, Rogge, Maniaci & Carmichael's (2017) Perceived Partner Responsiveness scale (PPRS), an 18-item measure rated on a 9-point scale (1 = *not at all true*, 9 = *completely true*) that assesses how much participants believe their partner cares about, understands, and validates them (e.g., "My current romantic partner really listens to me," and "My current romantic partner values and respects the whole package that is the 'real' me"). PPRS scores were calculated by averaging responses across all items, with higher scores indicating greater PPR ($M = 6.97$, $SD = 1.67$).

3.3 Results

Correlational analyses (Table 3.1) indicated that there were low to moderate levels of correlation between all measures except for relationship quality and PPRS which showed moderate-high correlation.

Table 3.1: Correlations between study measures and including covariates

	Correlations						
	PF	PA	NA	SWL	RQ	PPR	Age
Psychological Flexibility (PF)	-	.33**	-.54**	.40**	.36**	.41**	.25**
PA		-	-.13**	**.51****	**.34****	**.40****	**.05**
NA			-	**-.32****	-.26**	-.26**	-.29**
Satisfaction with Life (SWL)				-	**.45****	**.47****	-.02
Relationship Quality (RQ)					-	**.74****	<.01
PPR						-	.02
Age							-

Note: Bolded font indicates a correlation of over .30, following Cohen's (1992) recommendation that effect sizes below 0.30 represent small effects in a sample of this size. ** p<.01 (2-tailed)

Table 3.2: *Results of Structural Equation Modelling including covariates for good fitting models*

Model	Predictor	Mediator(s)	Outcome(s)	Covariate	$\chi 2$(df), p	CFI	RMSEA
1	**PF**	**PA, NA**	**RQ**	**/**	**3.71(1), p=.054**	**>.99**	**.05**
				PPR	850.67(4), p<.001	.54	.42
				Age	70.30(4), p<.001	.93	.12
2	**RQ**	**PA, NA**	**PF**	**/**	**2.23(1), p=.135**	**>.99**	**.03**
				PPR	98.75(4), p<.001	.95	.14
				Age	147.76(4), p<.001	.85	.18
3	PF	LS	RQ		58.80(1), p<.001	.30	.22
4	RQ	LS	PF		58.80(1), p<.001	.89	.22
5	PF	PA, NA, LS	RQ		316.83(4), p<.001	.77	.26
6	RQ	PA, NA, LS	PF		322.68(4), p<.001	.78	.26

Note: PF: psychological flexibility, PA: positive affect, NA: negative affect, LS: life satisfaction, RQ: relationship quality, PPR: Perceived Partner Responsiveness. Model fit assessed as good where CFI>.95, RMSEA <.06 and p was nonsignificant (Hu & Bentler, 1999) as indicated in models 1 and 2.

A range of models were tested in line with the literature, exploring psychological flexibility as a predictor of relationship quality. Different combinations of life satisfaction and affect were tested as potential mediators given study findings which indicate their relevance to relationship quality. A good level of model fit was identified in two models: firstly a model where psychological flexibility predicted relationship quality via mediation by PA and NA and secondly a model where relationship quality predicted psychological flexibility via PA and NA. Table 3.2 shows the fit statistics for the tested models and also reveals the impact of PPR and age on model fit. Life satisfaction did not contribute to any good fitting models in this data.

Using SEM to test a mediation model with two parallel mediators, Model 1 (see Figure 3.1) revealed that psychological flexibility had both a direct association with relationship quality as well as an indirect relationship through higher PA ($\beta = .11$, *SE* $= .01$, $CI_{95\%}$ [.08, .14]) and lower NA ($\beta = .07$, *SE* $= .02$, $CI_{95\%}$ [.03, .12]) and lower NA ($\beta = .15$, $CI_{95\%}$ [.11,.19]). The *direct* effect of psychological flexibility on relationship quality became non-significant when PPR and age were accounted for. However, the *indirect* paths between psychological flexibility and relationship quality through affect remained significant even when PPR and age were accounted for, providing an indication that psychological flexibility was making a unique contribution to the variance within this model.
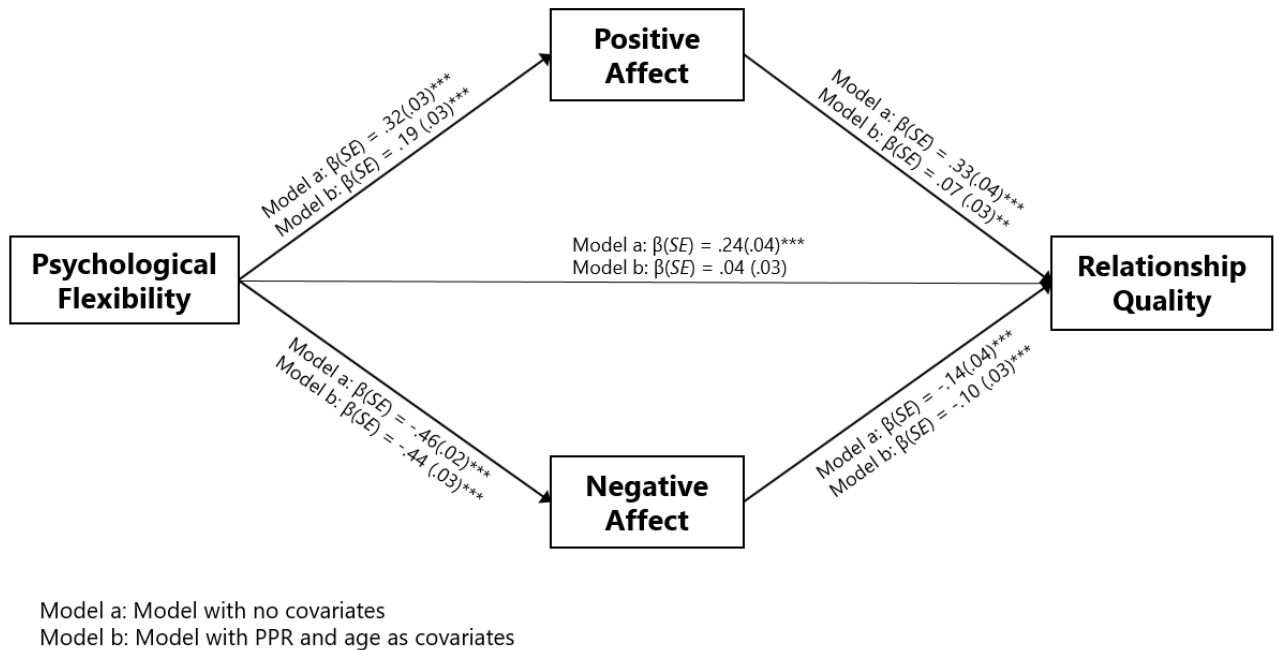
Figure 3.1: Relations between psychological flexibility and relationship quality via affect. Standardised effects are presented *= p<.05, **= p< .01, *** = p<.001

In the context of existing literature showing that relationship quality is predictive of individual wellbeing, this study also tested models where relationship quality predicts psychological flexibility and affect. Model 2 (Figure 3.2) revealed that higher relationship quality was directly linked to greater psychological flexibility, as well as indirectly linked via higher PA (β = .06, *SE* = .01, $CI_{95\%}$ [.04, .08]) and lower NA (β = .10, *SE* = .01, $CI_{95\%}$ [.08, .13], see Figure 3.2). The direct link between relationship quality and psychological flexibility became nonsignificant when the model controlled for age and PPR, however the indirect links through affect remained.
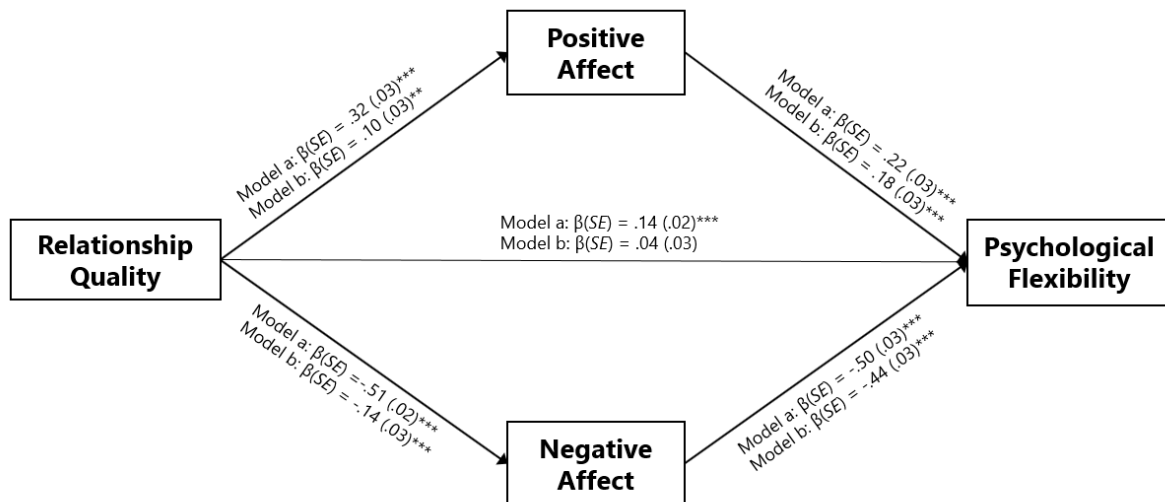
Model a: Model with no covariates
Model b: Model with PPR and age as covariates

Figure 3.2: Relations between relationship quality and psychological flexibility via affect. Standardised effects are presented. *= p<.05, *** p<.001.

Gender effects were assessed by running separate models for both males and females. All paths remained significant throughout, suggesting that the above models demonstrate consistent associations and explain the data equally well for both men and women.

3.4 Discussion

The aim of chapter 3 was to investigate whether people who are psychologically flexible also have better relationship quality and to determine how aspects of individual wellbeing may play into these links. Findings support the hypothesis that higher psychological flexibility would be linked to higher relationship quality and aspects of SWB were found to mediate these links.. Moderate correlations were identified between psychological flexibility, facets of SWB and relationship quality. The main finding was that psychological flexibility statistically predicted relationship

quality indirectly through higher PA and lower NA, when moderators age and PPR were taken into account. People that were more psychologically flexible experienced higher levels of PA and lower NA, which in turn were associated with higher levels of relationship quality when PPR and age were accounted for. This finding is theoretically consistent with two sets of literature: firstly, prior studies identify that NA and inflexibility go hand-in-hand and that PA broadens the array of thoughts and feelings a person may experience (Kashdan & Rottenberg, 2010; Stange, Alloy, & Fresco, 2017). A second set of literature demonstrates robust associations between affect and close relationship processes (Berry & Hansen, 1996; Berry & Worthington, 2001; Moore & Diener, 2019). Taken in context, the current findings provide direct evidence that PA and NA may be key mediators when examining how psychological flexibility and relationship quality are linked. Notably, however, this sample included only romantically-involved *individuals*, which precluded understanding of how both partners' psychological flexibility and individual wellbeing may interact to predict relationship quality.

One implication of this finding is that enhancing psychological flexibility in romantically-involved individuals may increase perceptions of the quality of their relationship and this is something that is further explored in Chapter 6. This may be of value among individuals presenting for therapy for whom relationship quality is an issue. This finding also has implications for understanding the explicit components of SWB that mediate the psychological flexibility to relationship quality links. Given that LS did not contribute to any well-fitting models, further exploration of how relationship quality is linked to LS is be warranted, in recognition of literature which identifies its relevance to relationship quality. It may be for instance that as a broad

construct, LS may in fact be a downstream consequence of higher levels of marital satisfaction and quality. It may be, for example, that occupational (Hessels, Arampatzi, van der Zwan, & Burger, 2018) or other familial factors (Richter & Lemola, 2017) play into the way that participants have responded to the LS component of this study. However, this is an area for future study.

On the basis of literature linking responsiveness to relationship quality (Fivecoat, Tomlinson, Aron, & Caprariello, 2015), wellbeing (Selcuk et al., 2016) and to psychological flexibility (Rolffs et al., 2018), responsiveness was included as a covariate in the modelling process. Controlling for responsiveness removed the direct associations between psychological flexibility and relationship quality and also reduced overall model fit, indicating that PPR absorbed some of the variance associated with psychological flexibility. However, the indirect links between psychological flexibility and relationship quality via PA and NA remained robust when responsiveness was included as a covariate. One potential explanation of this finding may be that psychological flexibility serves to enhance the ability to *perceive* partner responsiveness through enhanced in the moment and behavioural awareness. To determine whether this is linked to an increased openness to experience and behavioural awareness, further investigation would be needed.

Potential developmental factors were assessed through the inclusion of age, which did impact model fit somewhat, suggesting that relationship functioning may evolve with age. Similarly, although the findings of Chapter 2 identified that gender may be relevant in this context, the models identified in this chapter were robust, applying

equally to men and women. These findings suggest that the associations between psychological flexibility and relationship quality through affect are broadly applicable, in line with previous literature which indicates the widespread utility of psychological flexibility across a wide range of populations (Levin et al., 2012).

Moving forward, exploring interdependence and how psychological flexibility, affect and relationship quality may be linked in couples is particularly important following a wide range of studies which explore how one partner may mould and influence the behaviour and experience of the other. Increasing couple interdependence over time has been linked to relationship commitment (Agnew, Rusbult, Van Lange, & Langston, 1998) including cognitive, affective and behavioural components (Arriaga & Agnew, 2001). In turn, increased relationship commitment has been found to contribute to a wide range of relationship promoting behaviours including willingness to sacrifice, tendencies to accommodate not retaliate when a partner doesn't meet expectations, forgiveness, perceived superiority of own relationship over others, dismissing of tempting alternative partners and trust (Agnew & Etcheverry, 2006). Understanding both partners experiences is therefore important to develop a greater insight into the interplay of thoughts and behaviour within couples. Similarly, a psychologically flexible response style characterised by self-awareness, perspective-taking and valued relationship action may be beneficial not only to the individual in the relationship context but also potentially to a relationship partner.

As data in this study are cross-sectional, causality cannot be ascribed to the associations in these models. It would therefore be important to further explore the

interconnections between these constructs. For now however, attention turns to

explore how the model where psychological flexibility is linked to relationship quality

via affect may play out at the dyadic level.

Chapter 4: Cross-partner effects in psychological flexibility, affect and relationship quality

The study reported in this chapter is largely drawn from its published form (Twiselton et al., 2020), forming Study 2 of that paper and with thanks to a special issue of *Personal Relationships* journal for funding this study.

4.1 Introduction

This chapter seeks to explore how individual differences in psychological flexibility might be associated not only with individual but also partner differences in relationship quality. Specifically it explores the hypothesis that one person's psychological flexibility may be linked to their partner's experiences of relationship quality, potentially through the mediatory role of affect. The interdependence inherent in intimate relationships means that partners influence each other's cognition, affect, and behaviour (Agnew et al., 1998). Existing dyadic literature suggests that there may be cross-partner associations in individual wellbeing and relationship quality (e.g., Bodenmann, Meuwly, & Kayser, 2011). Similarly, a lack of present moment awareness has been linked to lower levels of relationship satisfaction (Khaddouma, Gordon, & Bolden, 2015; Lenger, Gordon, & Nguyen, 2017; Saavedra, Chapman, & Rogge, 2010) and also to less flexible responding in a relationship context (Galhardo et al., 2011; Leavitt, Lefkowitz, & Waterman, 2019; Pakenham & Samios, 2013). Because psychologically flexible individuals engage in valued action and approach the experience of emotions with mindfulness and acceptance of those feelings, this may give them an advantage in a variety of situations they may encounter with a

romantic partner. Specifically, when one partner values their relationship and is committed to its continuation and quality, they may be more likely to seek meaningful ways to maintain the relationship such as through resolving potentially harmful conflict (Harvey et al., 2019), nonreactivity (McGill, Burke, & Adler-Baeder, 2020), anxiety management (Hermes, 2018), empathy and forgiveness (Kimmes, Jaurequi, Roberts, Harris, & Fincham, 2020). This may well have implications for how a partner experiences the relationship, supporting the idea that psychological flexibility may therefore play a role at the dyadic level. This chapter examines how one's *own* psychological flexibility (i.e., actor psychological flexibility), as well as one's *partner's* psychological flexibility (i.e., partner psychological flexibility) are associated with actor and partner PA and NA and, in turn, actor and partner relationship quality. In doing so, it seeks to replicate the links that emerged in Chapter 3 and also explore the potential partner effects of psychological flexibility on relationship quality, both directly and via affect.

Although gender did not influence the patterns of associations that emerged in chapter 3, gender has been found to influence relationship quality across a range of dyadic contexts such as dyadic coping and relationship satisfaction (Hilpert et al., 2016), work-interrupting family behaviour (Russo, Ollier-Malaterre, Kossek, & Ohana, 2018) and job-insecurity (Blom, Verbakel, & Kraaykamp, 2020). Research has also identified dyadic effects for affect such as how non-verbal synchrony is related to affect, this link being stronger in females (Tschacher, Rees, & Ramseyer, 2014). Given these links, this chapter will also assess the interplay of psychological flexibility, affect and relationship quality in the dyadic context by gender, albeit that gender differences have not been observed at the individual level within the context

of this thesis so far. Similarly, age and responsiveness were not further included here due to the persistent associations in the base model in chapter 3, albeit they appeared to influence model fit and further exploration of these constructs would be valuable.

4.2 Method

4.2.1 Study Preregistration and Ethics

The methods and measures for this study were registered on the Open Science Framework, at https://osf.io/bt64q/ All study procedures were approved by the Psychology Research Ethics Committee at the University of Edinburgh.

4.2.2 Participants

Recommendations for minimum sample sizes in dyadic studies vary and are based on the complexity of the design (Garcia & Ledermann, 2019). In seeking to determine an appropriate sample size for this study, the existing literature offers some useful insights. Ledermann & Macho (2009) use SEM to conduct mediation analyses in distinguishable dyads with a sample size of 184 couples, with a single mediator and outcome. Ledermann, Bodenmann, Rudaz, & Bradbury (2010) alternatively, employ a sample of 345 couples, with outcome variables of marital communication and marital quality, offering insight into a more complex pattern of relationships between predictors, mediators and outcomes. Finally, Garcia & Ledermann (2019) recommend that 200 dyads is the minimum sample size for analyses. Although, this study employs the common fate model in SEM, the

combination of these study findings were therefore used alongside the robert-ackerman.shinyapps.io. to provide an estimation of power in the current study and the likelihood of detecting a true effect if it exists. For this calculation, a small actor effect size of $\beta = 0.15$ and partner effects of $\beta = 0.1$ were specified, in line with similar studies which reveal small effects (Fejfar & Hoyle, 2000). Correlation of actor and partner variables of 0.3 was predicted, in line with existing relationships literature (Candel & Turliuc, 2019). A desired power of 0.8, indicating an 80% chance of identifying effects was used to generate sample size calculations. This generates a sample size for actor effects of 170 dyads and a sample size of 379 dyads for partner effects. The funding opportunity that enabled this study to take place allowed for a sample of 200 dyads and the power for a 200-dyad study for these data are .86 for actor effects and .53 for partner effects. These calculations are for main effects only and do not take mediation effects into account. This means that whilst findings for main effects were adequately powered, both mediated and moderated effects need to be interpreted more tentatively.

The resulting sample comprised equal numbers of participants from 18-29, 30-39, 40-49, 50-59, 60+ age groups, 25% non-white participants and a cap of 10% on couples in relationships of less than 12 months. These parameters were included to enhance the representative quality of the data. A total of three couples had to be excluded because one partner failed to complete all measures, with the final sample consisting of 215 American couples who were recruited via Qualtrics Panel. Participants were 18-83 years of age (M_{years}=45.30, SD_{years}=15.14) and were in romantic relationships lasting 1-65 years (M_{years}=15.32, SD_{years}=14.38). The majority

(92%) were living with their partner, were in longer-term relationships (82%),

identified as heterosexual (98%) and were Caucasian (75%).

4.2.3 Materials and Procedure

Participants completed all questionnaires online with both partners asked to

complete the study in a single 30-minute session. Demographic information and a

restricted battery of questionnaires were administered, including: CompACT, PANAS

and PRQC alongside an additional measure added at the request of reviewers, and

not analysed here. The order of measures, and items within measures, were

randomized and counterbalanced. After completion of all study questionnaires,

participants viewed a debriefing screen and received compensation of $15 per

couple.

4.2.4 Analyses

The data analytic approach was guided by the Actor-Partner Interdependence Model

(APIM; Kenny, Kashy & Cook, 2006). The APIM posits that when individuals are

involved in a relationship, their outcomes result not only from their *own*

characteristics and inputs but also from their *partner's* characteristics and inputs.

Thus, for the purposes of this study, one person's relationship quality may be

associated with their own degree of psychological flexibility and individual wellbeing

(i.e., an *actor effect*) and also associated with their partner's degree of psychological

flexibility and individual wellbeing (i.e., a *partner effect*). Including partner effects

allows for the testing of mutual influence (i.e., interdependence) that occurs between

romantic partners, and statistically adjusts for this interdependence when assessing

actor and partner effects. Recent advancements in dyadic data analysis allow for the

testing of indirect paths linking predictors and outcomes through other variables using Actor Partner Interdependence Mediation Modelling (APIMeM: Ledermann, Macho, & Kenny, 2011). APIMeM uses the Monte Carlo method of bootstrapping for indirect effects, aligned with recommendations to overcome limitations associated with sampling distribution assumptions (Shrout & Bolger, 2002). APIMeM was used in this study and tested using SEM in MPlus v.8.4. To preserve statistical power, PA and NA were tested in separate mediation models. For ease of interpretation and to provide estimates of effect size, continuous predictors and mediators were standardised.

4.3 Results

The analyses initially examined bivariate correlations between study variables at both within and between partner level (Table 4.1). These show high levels of cross-partner correlations for psychological flexibility, affect and relationship quality. Psychological flexibility was also moderately correlated with NA at both the actor and partner levels whilst moderate correlations between PA and relationship quality emerged at both actor and partner levels.

Initial SEM analyses tested whether psychological flexibility directly predicted relationship quality at the actor and partner levels. This model revealed that psychological flexibility directly predicted relationship quality at the actor level (β = .08, SE = .03, $CI_{95\%}$ [<.01, .14]) but not at the partner level (β = .06, SE = .03, $CI_{95\%}$ [<-.01, .12]), with the model achieving a low level of model fit (CFI=.64, RMSEA .30). Mediation analyses were then used to assess whether a better explanation of the

data could be achieved by introducing PA and NA to the model, replicating the individual level modelling undertaken in Chapter 3. Results revealed good fit for models with PA as the mediator (CFI>.99, RMSEA <.01) and in models with NA as mediator (CFI >.99, RMSEA <.01). The results of the dyadic mediation models may be seen in Figures 4.1 and 4.2.

Table 4.1: Correlations between study variables

	PF-A	PF-P	PA-A	PA-P	NA-A	NA-P	RQ-A	RQ-P
Psychological Flexibility-Actor (PF-A)	-	.63**	.22**	.15**	-.54**	-.44**	.13**	.12*
Psychological Flexibility-Partner (PF-P)		-	.15**	.22**	-.44**	-.54**	.12*	.13**
PA-Actor (PA-A)			-	.71**	-.13**	-.06	.41**	.38**
PA-Partner (PA-P)				-	-.06	-.13**	.38**	.41**
NA-Actor (NA-A)					-	.82**	-.16**	-.12*
NA-Partner (NA-P)						-	-.12*	-.16**
Relationship Quality-Actor (RQ-A)							-	.84**
Relationship Quality-Partner (RQ-P)								-

Note. Bold font indicates a correlation of over 0.30, following Cohen (1992). ** indicates p<.01, * indicates p<.05.

$\beta(SE) = .02(.03)$

$\beta(SE) = .21(.03)^{***}$

Actor PA

$\beta(SE) = .28(.03)^{***}$

Actor Psychological Flexibility

Actor Relationship Quality

Psychological Flexibility to PA (Partner)
$\beta(SE) < .01(.03)$

Psychological Flexibility to Relationship Quality (Partner)
$\beta(SE) = .02(.03)$

PA to Relationship Quality (Partner)
$\beta(SE) = .17(.03)^{***}$

Partner Psychological Flexibility

$\beta(SE) = .21(.03)^{***}$

Partner PA

$\beta(SE) = .28(.03)^{***}$

Partner Relationship Quality

$\beta(SE) = .02(.03)$

Total Indirect Effect via PA
Actor Relationship Quality $\beta(SE) = .06(.01)$, $CI_{95\%}$ [.04, .10], Partner Relationship Quality $\beta(SE) = .04(.01)$, $CI_{95\%}$ [.01, .07]

Figure 4.1: Associations between psychological flexibility, PA and relationship quality. ***$p <$ .001.

The structural analyses in Figure 4.1 suggest that there was no direct effect of psychological flexibility on actor or partner relationship quality when mediation by PA was taken into account. However, actor psychological flexibility was indirectly linked to both actor and partner relationship quality via actor PA. In other words, when someone experienced greater psychological flexibility they experienced higher PA, and in turn, not only did they experience higher relationship quality but so did their partner.

Figure 4.2 shows that again, there was no direct effect of psychological flexibility on actor or partner relationship quality, when accounting for mediation by NA. However, actor psychological flexibility was indirectly linked to actor relationship quality via both actor and partner NA. In other words, when a person experienced greater psychological flexibility not only did they experience lower levels of NA but so did their partner and in turn, lower NA was associated with higher relationship quality for the person themself.
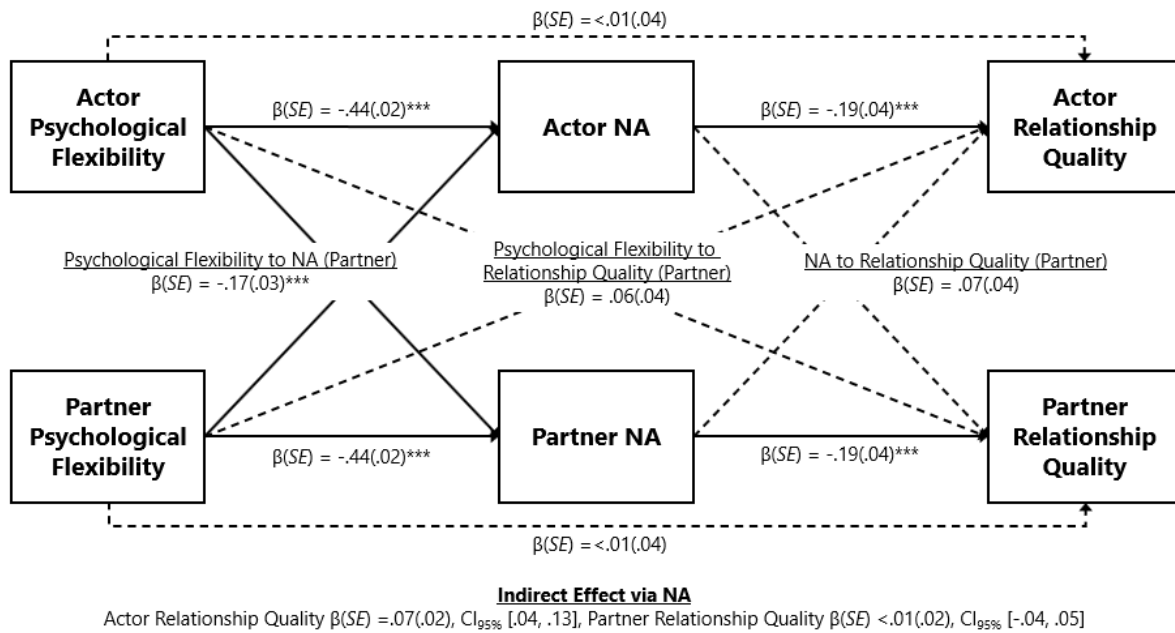
Figure 4.2: Direct and indirect associations of psychological flexibility, negative affect and relationship quality.

Finally, analyses investigated whether gender moderated the link between psychological flexibility, affect, and relationship quality. Results revealed that the inclusion of a psychological flexibility by gender interaction term in place of psychological flexibility did not alter model fit with PA as mediator (CFI > .99, RMSEA < .01) or NA as mediator (CFI > .99, RMSEA < .01). The Gender by Psychological Flexibility interaction was significantly associated with actor NA such that at low levels of actor psychological flexibility, men experienced higher levels of NA than women (p = .04). At high levels of psychological flexibility there were no gender differences (p= .28). No other interaction effects emerged.

4.4 Discussion

4.4.1 Introduction

The purpose of this chapter was to explore the hypothesis that one person's psychological flexibility may be linked not only to their own but also to their partner's experience of relationship quality, potentially through the mediatory role of experiences of affect. Dyadic associations between psychological flexibility, PA, NA, and relationship quality were therefore tested in this chapter. Consistent with Chapter 3, psychological flexibility was associated with actor effects but this only occurred when PA and NA were not included in the model. When PA and NA were introduced into the modelling, this improved model fit, but psychological flexibility was not directly associated with relationship quality at either the actor or at the partner level. Indirect associations between psychological flexibility and relationship quality via PA and NA did emerge: greater actor psychological flexibility was associated with higher actor PA and lower actor NA, and, in turn, higher actor relationship quality. Possibly the most interesting findings from the current work, were that different cross-partner effects emerged for PA versus NA. In the PA model, the cross-partner effect appeared on the path between PA and relationship quality, meaning that actor psychological flexibility was linked to *actor* PA, but that actor PA, in turn, was linked to both actor *and* partner relationship quality. In contrast, in the NA models the cross-partner effect appeared on the path between psychological flexibility and NA, meaning that actor psychological flexibility was linked to *both* actor and partner NA, but there were no cross-partner effects of NA on individual relationship quality. Finally, with only one exception, gender did not moderate the links between psychological flexibility, affect, and relationship quality. The

moderation effect which did emerge suggested that at low levels of psychological flexibility, males experienced higher levels of NA than females.

4.4.2 Understanding the current findings

The main finding from this study was that psychological flexibility was directly associated with relationship quality when taking a partner's experiences of psychological flexibility and relationship quality into account, albeit the effects were small. This finding is consistent with the literature that people experiencing higher psychological flexibility are more open to experience and act in line with important goals and values (Hayes et al., 2006), which are often relational (Polk et al., 2016), with implications for how they experience their romantic partner and their relationship (Harvey et al., 2019; Hermes, 2018; Khaddouma et al., 2015; Kimmes et al., 2020; Lenger et al., 2017; McGill et al., 2020).

However, the introduction of additional partner variables in the modelling may contribute to the direct actor effects of psychological flexibility on relationship quality becoming non-significant. Findings for mediated effects of PA and NA indicate that they both mediate the associations between psychological flexibility and relationship quality at the partner level, but in different ways. These findings are consistent with literature for both psychological flexibility in its relevance for experiences of affect (Kashdan & Rottenberg, 2010) and they are also consistent with studies which link affect to relationship quality such that when people experience higher PA and lower NA these contribute to higher relationship quality (Brown et al., 2021) at both actor and partner levels.

The partner effects that emerged between psychological flexibility and NA are

consistent with findings indicating difficulties in affect regulation at high NA when

people experience low levels of mindful awareness (Harvey et al., 2019; Hermes,

2018; McGill et al., 2020). At the partner level, an inability to modify emotions in

interactions with a partner may make these interactions more difficult to navigate and

impact on a partner's own affective experience through a reduced awareness of own

and partner behaviours and needs (Barnes et al., 2007; Mikulincer & Shaver, 2016).

Conversely, a lack of partner effects between NA and relationship quality may be

because psychologically flexible people experience less NA and as such this means

that they have happier relationship experiences.

Links between high PA and relationship quality at both actor and partner levels may

be explained through the more expansive and flexible approach to the world linked to

higher PA which in turn is linked to more effective relationship behaviour such as

compassion, forgiveness and conflict resolution skills (Karremans et al., 2017b).

Alignment with personal goals and values, characteristic of higher psychological

flexibility, may make people happier in themselves and as a consequence, enable

them to experience happier relationships, with downstream implications for partner

experiences of the relationship.

4.4.3 Limitations of the current findings

Overall, the findings from Chapter 4 dovetail with existing research (e.g., Berry &

Hansen, 1996; Kashdan & Rottenberg, 2010; Stange, Alloy, & Fresco, 2017)

suggesting how an active, flexible response style may predict higher-quality

relationships not only at the individual but also at the interpersonal level. However, aligned with the existing literature (Ledermann et al., 2010) it may be that the power of the mediation and moderation analyses is insufficient to suggest that these specific findings are robust. Replication studies are needed to further explore the associations between psychological flexibility and relationship quality through affect. It is also within this context that the gender effect for NA at low levels of psychological flexibility need to be interpreted.

Particularly high levels of within-scale correlation between actor and partner reports add to concerns about the generalisability and potential limitations of the findings. In comparison to similar dyadic studies (e.g. Reis, Maniaci, & Rogge, 2017), the current study has particularly high levels of correlation within scales between actor and partner. One potential explanation for this lies in the sampling technique used in this study which meant that it would have been possible for one partner to provide responses not only for themselves but also on behalf of their partner. Gender effects would be particularly susceptible to bias in these circumstances as a female presumably responds on behalf a male, or vice versa. As such, interpreting gender effects in this study is particularly challenging. Disparity between one partner's perceptions of the other and the individual's own reports are likely to provide a source of error in this situation (Debrot, Cook, Perrez, & Horn, 2012). Further support for this idea comes from the data in this chapter itself where 98% of the sample report as heterosexual yet there is a 244/170, female/male split in gender, instead of an equal balance of males and females indicative of heterosexual couples. There were a few cases where one or both partners reported as bisexual (n=4) or that their sexual orientation was not represented (n=2) and a further two participants did not

provide data on sexual orientation To further advance understanding of the interplay between psychological flexibility, affect and relationship quality, replication of these findings is therefore vital. Greater certainty about the gender and sexual orientation of the couples would be helpful in ascertaining whether distinguishability analyses via gender were appropriate for this sample, with potential implications for both the analyses and findings.

With these considerations in mind, attention now turns to undertaking this replication work and extending the findings of the current chapter to explore patterns and associations over time.

Chapter 5: Cross-partner effects in psychological flexibility, affect and relationship quality over time

This chapter involves secondary data analysis of the DRRAW I dataset and was supported by an ESRC grant awarded to Dr Sarah Stanton.

5.1 Introduction

Longitudinal studies of psychological flexibility and relationship quality have considered how the mindfulness component of psychological flexibility has contributed to relationship experiences. For example, short online mindfulness interventions have been found to impact on relationship quality over a 12-day diary study (Kappen, Karremans, & Burk, 2019). Cross-sectional studies have also shown that nonjudgment of and non-reactivity to inner experience is predictive of relationship satisfaction at the actor and partner levels respectively (Lenger et al., 2017). Acceptance and flexibility have been related to higher levels of relationship satisfaction when considering partner ideals (Campbell, Simpson, Kashy, & Fletcher, 2001), whilst acceptance has also been identified as inherent to constructs such as responsiveness (Stanton, Slatcher, & Reis, 2019) which is consistently related to relationship satisfaction (Adair, Boulton, & Algoe, 2018; Debrot et al., 2012; Fivecoat et al., 2015). Such cross-sectional findings complement the findings from the mindfulness literature and suggest the potential for longitudinal effects of psychological flexibility on relationship quality not only at the individual but also at the partner level.

Previous chapters found indirect effects between psychological flexibility and relationship quality via affect. This chapter develops that cross-sectional work by investigating how differences in affect contribute to the relation between psychological flexibility and relationship quality *over time*, for both individuals and for relationship partners. This chapter therefore hypothesises that individual psychological flexibility will influence not only actor experiences of relationship quality over time but they will also have bearing on partner level experiences. Affect has the potential to be important in how psychological flexibility might be associated with relationship quality over time and this study also explores whether affect maintains the same pattern of association, as in the previous work of this thesis.

An additional benefit of measuring affect and relationship quality over time are that longitudinal observations minimise the likelihood of initial elevation bias (Shrout et al., 2017). Longitudinal reports can therefore enable a more complete picture of individual functioning to emerge. Shrout et al. observe that an initial elevation bias is more common in measures with a potentially emotive load. Measuring affect and relationship quality over time should therefore enable a more accurate pattern of functioning to emerge.

This chapter involves secondary data analysis of data drawn from an existing 3-phase study, Diverse Romantic Relationships and Well-Being I (DRRAW I). Specific materials used in this study are available as part of Appendix A. Measures of psychological flexibility and affect were the same as those used in previous studies in this thesis. However, a different measure of relationship quality was employed within the DRRAW study, measuring relationship satisfaction, commitment and trust.

5.2 Method

5.2.1 Study Preregistration and Ethics

The methods and measures for this study were registered on the Open Science Framework at https://osf.io/ekv6x/. All study procedures were approved by the Psychology Research Ethics Committee at the University of Edinburgh.

5.2.2 Participants

Data for this study were derived from the DRRAW I project. The DRRAW I project explored emotional and relational diversity and wellbeing in romantic relationships. DRRAW I involved couples completing a study spanning 2.5 months. Participants received up to £50 depending on how much of the study they completed. The resultant sample were 100 romantic couples (87 heterosexual, 9 lesbian, 1 gay, and 3 other non-binary) recruited from the University of Edinburgh and surrounding community via social media posts, advertisements in local magazines, and at local wedding fairs. Participants were 18-64 years of age ($M_{years} = 24.15$, $SD_{years} = 6.61$) and were in relationships lasting 3 months to 36 years ($M_{years} = 2.84$, $SD_{years} = 4.41$). Most of the sample identified their ethnicity as White (85.50%). The majority (85.50%) of participants were casually or exclusively dating their current partner, and 14.50% were common-law, engaged, in a civil partnership, or married. A minority of couples (38.00%) were living together at the outset of the study.

5.2.3 Measures

As in previous chapters, participants completed a range of measures of psychological flexibility, affect and relationship quality. As this study was derived from the larger DRRAW study, some of the scales matched those used in previous chapters of this thesis, but there were also some variations. The primary measures used were as follows:

Psychological Flexibility (Phase 1): The CompACT (Francis et al., 2016) was used to measure psychological flexibility at baseline. This measure is described in Chapter 2. Reliability for this sample was good (Cronbach's α = .86).

Positive and Negative Affect (Phase 2): Participants completed a subset of items from the PANAS scale (Watson et al., 1988) to provide a measure of PA and NA. Reliabilities for each scale were: PA (Cronbach's α = .84) and NA (Cronbach's α = .80). Affect was measured at Phase 2 of the study and is represented in the analyses as an aggregations of all the daily diary reports, providing a global assessment rather than a state level measure as in the previous chapter.

Relationship Quality: This was measured in two different ways:
A composite score of relationship quality was derived from 3 items of the Perceived Relationship Quality Component (PRQC *Phase 2*: Fletcher, Simpson, & Thomas, 2000), measuring subscales of satisfaction, commitment and trust. Reliability for this sample was good (Cronbach's α = .86). As with measurement of affect, scores of relationship quality from the dairy study were aggregated at Phase 2.

A further composite measure of relationship quality derived from the Investment Model Scale (IMS *Phase 3*: Rusbult et al., 1998) and the Trust Scale (Rempel, Holmes, & Zanna, 1985), was used at Phase 3, see Appendix A for details. In the IMS, participants rated their relationship using a 9-point scale ranging in response from 'completely disagree' to 'completely agree' for 7 items of Commitment (e.g. 'I am oriented toward the long-term future of my relationship; for example, I imagine being with my partner several years from now') and 5 items of Satisfaction with relationship (e.g. 'Our relationship does a good job of fulfilling my needs for intimacy, companionship etc'). Reliability analyses indicated good reliability for both (Commitment: Cronbach's α = .86, Satisfaction: Cronbach's α = .88).

In the Trust Scale, participants rated their trust for their partner on a 7-point scale, ranging in response from 'strongly disagree' to 'strongly agree' (e.g., 'I have found that my partner is usually dependable, especially when it comes to things that are important to me') for a total of 17 items (Cronbach's α = .87).

5.2.4 Procedure

The DRRAW I project had three phases. Phase 1 involved an initial 2-hour lab session, where participants were asked to complete a series of questionnaires and a range of tasks. Psychological flexibility was measured at phase 1. In phase 2, which began the day after phase 1, participants completed a 15-min series of questionnaires every day for 14 consecutive days, including daily reports of affect and relationship quality, using the PRQC. The survey was sent at 4pm each day and participants were asked to complete the study by 11.59pm. Each survey included a time-stamped link that expired on the day to avoid participants completing multiple daily surveys at once. Throughout phase 2, participants were told to

complete the survey separately from one another. Phase 3 began 2 months following the end of phase 2 and involved participants completing a 45-minute survey online where they answered follow-up questions about their relationship quality through the Trust Scale and the IMS. Phase 1 and 2 of this study were completed during January – March 2020 and Phase 3 data was collected during April and May 2020.

5.2.5 Analyses

The data analytic approach was guided by the Actor-Partner Interdependence Model (APIM; Kenny, Kashy & Cook, 2006). As in Chapter 4, the Actor Partner Interdependence Mediation Model (APIMeM: Ledermann, Macho, & Kenny, 2011) was used to test indirect paths linking predictors and outcomes through other variables in line with recommendations regarding analysis of dyadic processes when exploring mutual influence (Iida, Seidman, & Shrout, 2018). In phase 2 of this study, 14 data points were aggregated for each participant from phase 2 diary scores for both measures of PA and NA and for measures of relationship quality. The complexity of data in the daily level dataset limited the ability of models to converge during analysis. As such, aggregations were used as a measure of phase 2 PA and NA and of phase 2 relationship quality to explore whether average affect over the dairy study mediated the relationship between psychological flexibility and relationship quality. Using individual daily scores in APIMeM models can be problematic when predicting a single outcome, leading to problems of convergence (Bolger & Laurenceau, 2013). In the current study, as the correlation between aggregated daily affect and daily affect was found to be greater than .75, the aggregated score provided an adequate substitute for daily affect scores.

Separate main analyses were conducted for outcomes at phase 2 and for outcomes at phase 3 of the study. Baseline psychological flexibility was tested as a predictor of phase 2 relationship quality, via both PA and NA at phase 2. This was followed by tests of association between psychological flexibility and phase 3 relationship quality via phase 2 PA and NA. These analyses enabled a comparison to the study presented in Chapter 4 and extended these findings to explore the stability of effects over time.

5.3 Results

The analyses initially examined correlations between study variables at both within and between partner levels (Table 4.1). Correlations over 0.3 are highlighted to emphasise moderate and larger effects in line with recommendations about the interpretation of effect sizes (Cohen, 1992). In the current sample the strongest associations were observed for actor effects between relationship quality at phase 2 and 3, followed by associations between actor and partner phase 2 relationship quality. This indicates that when one partner scored highly on relationship quality during the diary study that this was associated not only with their own reports of relationship quality at phase 3 but also with their partner's phase 2 relationship quality. These associations mirror those in Chapter 4 in their direction but offer more modest levels of correlation throughout. The structural relationships between constructs were further explored using SEM and standardised effects are presented in the following models.

Table 5.1: Correlations between actor and partner variables

	APF1	PPF1	APA2	PPA2	ANA2	PNA2	ARQ2	PRQ2	ARQ3	PRQ3
Actor Phase 1 Psychological Flexibility (APF1)	-	**.32****	.29**	.11**	-.29**	-.17**	.14**	.09**	.21**	.19**
Partner Phase 1 Psychological Flexibility (PPF1)		-	.11**	.29**	-.17**	-.29**	.09**	.14**	.19**	.21**
Actor Phase 2 PA (APA2)			-	.25**	**-.32****	-.17**	**.30****	.20**	.15**	.13**
Partner Phase 2 PA (PPA2)				-	-.17**	**-.32****	.20**	**.30****	.13**	.15**
Actor Phase 2 NA (ANA2)					-	**.34****	-.28**	-.20**	-.12**	.13**
Partner Phase 2 NA (PNA2)						-	-.20**	-.28**	-.18**	-.13**
Actor Phase 2 Relationship Quality (ARQ2)							-	**.48****	**.54****	.22**
Partner Phase 2 Relationship Quality (PRQ2)								-	.22**	**.54****
Actor Phase 3 Relationship Quality (ARQ3)									-	**.32****
Partner Phase 3 Relationship Quality (PRQ3)										-

** indicates p<.001. Bolded text indicates a correlation of over 0.3.

Starting with analyses for mediators and outcomes at phase 2 of the study, effects between psychological flexibility and relationship quality via affect (Fig. 5.1), replicated those in chapter 4 whereby actor psychological flexibility was associated not only with actor relationship quality via PA but also with partner relationship quality via actor PA. Analyses by gender identified that there was no moderation by gender in this study. As in Chapter 4, no direct association between psychological

flexibility and relationship quality emerged during the diary phase of the study.

Overall, these findings represent an exact replication of those in Chapter 4.

β(SE) = .07(.05)

| Phase 1 Actor Psychological Flexibility | β(SE) =.36(.05)*** | Phase 2 Actor PA | β(SE) =.24(.05)*** | Phase 2 Actor Relationship Quality |

Psychological Flexibility to PA (Partner)
β(SE) =.04(.05)

Psychological Flexibility to
Relationship Quality (Partner)
β(SE) = .02(.05)

PA to Relationship Quality (Partner)
β(SE) = .13(.05)**

| Phase 1 Partner Psychological Flexibility | β(SE) =.36(.05)*** | Phase 2 Partner PA | β(SE) =.24(.05)*** | Phase 2 Partner Relationship Quality |

β(SE) = .07(.05)

Indirect Effect via PA
Actor Relationship Quality β(SE) =.09(.02), CI$_{95\%}$ [-.02, .13], Partner Relationship Quality β(SE) = .06(.02), CI$_{95\%}$ [-.06, .09]
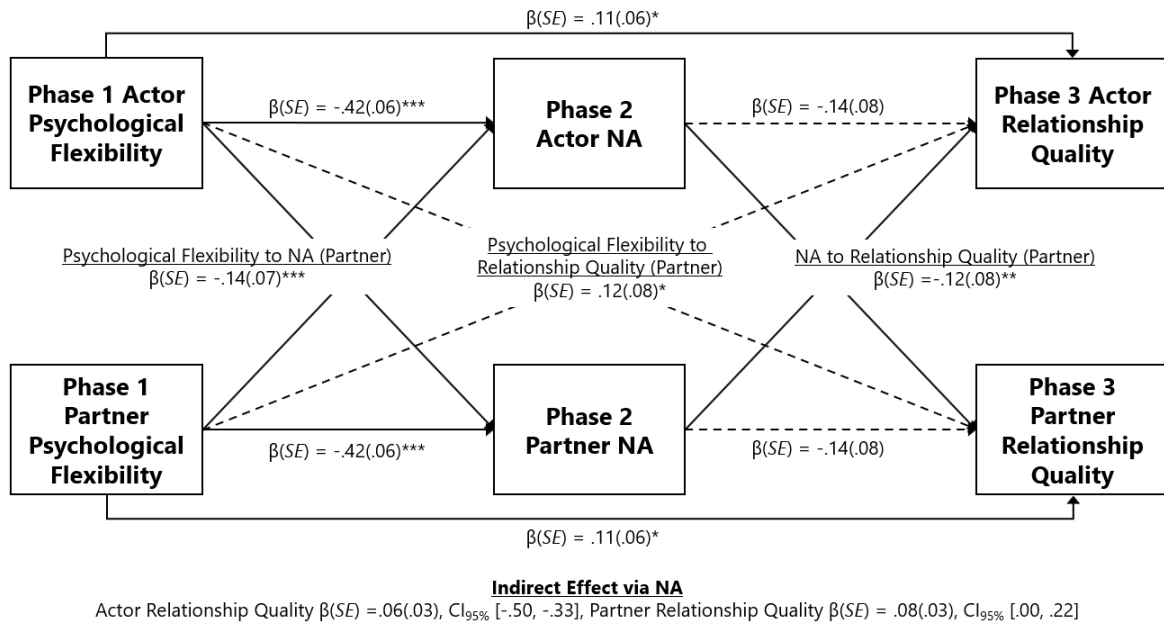
Fig 5.1: Direct and indirect associations of actor and partner psychological flexibility, positive affect (phase 2) and relationship quality (phase 2).

Moving on to analyses of the relationships between psychological flexibility, NA and relationship quality, actor and partner effects emerged between psychological flexibility and NA and also between NA and relationship quality at phase 2 (Fig. 5.2). Again, no direct association emerged between psychological flexibility and relationship quality during the diary study. However, one's own psychological flexibility predicted one's own *and* one's partner's NA over the next 14 days which, in turn, predicted one's own *and* one's partner's reports of relationship quality over the same time period. These findings largely replicate those in Chapter 4 but with the additional association between actor NA and partner relationship quality.

β(SE) = .03(.05)

Phase 1 Actor Psychological Flexibility   β(SE) = -.42(.04)***   Phase 2 Actor NA   β(SE) = -.24(.05)***   Phase 2 Actor Relationship Quality

Psychological Flexibility to NA (Partner)
β(SE) = -.14(.04)***

Psychological Flexibility to Relationship Quality (Partner)
β(SE) =-.06(.08)

NA to Relationship Quality (Partner)
β(SE) =-.22(.05)***

Phase 1 Partner Psychological Flexibility   β(SE) = -.42(.04)***   Phase 2 Partner NA   β(SE) = -.24(.05)***   Phase 2 Partner Relationship Quality

β(SE) = .03(.05)

Indirect Effect via NA
Actor Relationship Quality β(SE) =.13(.03), CI$_{95\%}$ [-.06, .10], Partner Relationship Quality β(SE) = .08(.05), CI$_{95\%}$ [-.12, .04]

Fig 5.2: Direct and indirect associations of actor and partner psychological flexibility, NA (phase 2) and relationship quality (phase 2).

Closer exploration of gender effects revealed no interaction of gender with psychological flexibility for NA. This does not replicate the findings of chapter 4 where lower psychological flexibility was associated with higher NA in men compared to women.

These patterns remain consistent at phase 3. Analysis of the relationship between psychological flexibility and relationship quality at phase 3 revealed that psychological flexibility had a direct association with relationship quality at both actor and partner levels. Associations between psychological flexibility and PA, and between PA and relationship quality, remained significant at the actor level but PA at phase 2 did not mediate partner effects between psychological flexibility at phase 1 and relationship quality at phase 3 (Fig. 5.3).
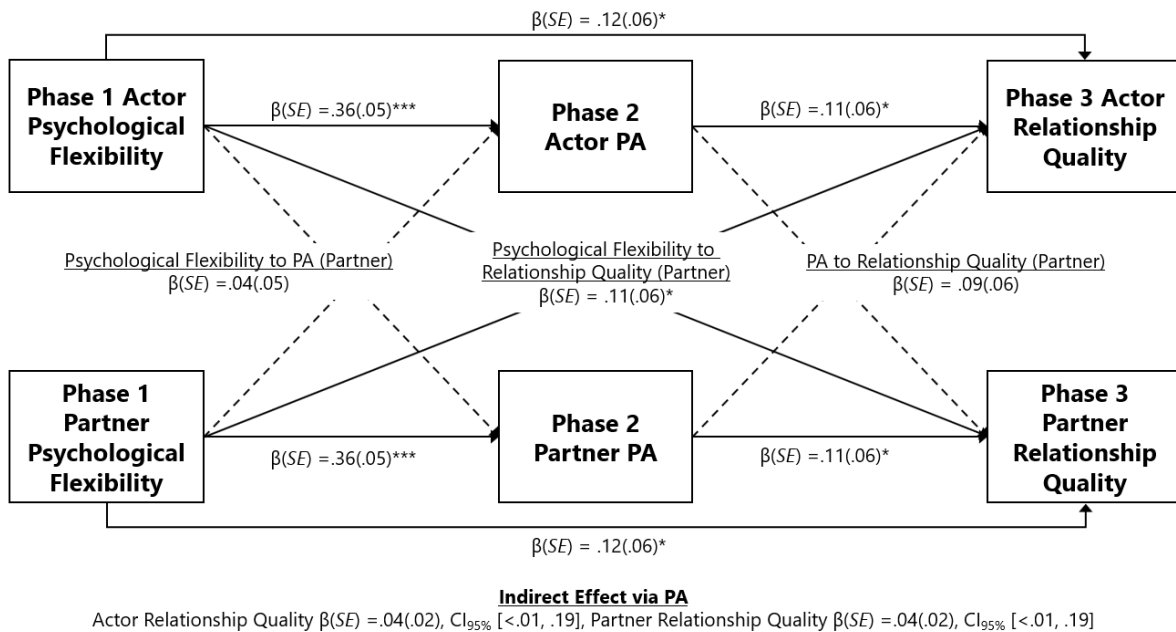
Fig. 5.3: Direct and indirect associations of actor and partner psychological flexibility, positive affect (phase 2) and relationship quality (phase 3).

Moving on to the associations of psychological flexibility with relationship quality at phase 3 via NA, Fig. 5.4 shows a direct effect of psychological flexibility on relationship quality at the actor level. Both actor and partner effects also emerged in the relationship between psychological flexibility and NA whilst only partner effects emerged between NA and relationship quality. This indicates that when someone is not psychologically flexible, both they and their partner experience higher levels of NA and that when a person experiences high levels of NA that their partner experiences lower levels of relationship quality two months later. Further, actor psychological flexibility is indirectly associated with their partner's experiences of relationship quality 2 months later through the mediating effect of NA.

Fig 5.4: Direct and indirect associations of actor and partner psychological flexibility, negative affect (phase 2) and relationship quality (phase 3).

Exploration of gender effects at phase 3 revealed that there were no interaction effects of gender and psychological flexibility for either PA or NA or for relationship quality indicating that the patterns reported throughout are equally applicable to both men and women.

5.4 Discussion

This study replicated and extended the findings of Chapter 4 by establishing that PA and NA mediated the relationship between psychological flexibility and relationship quality in different ways over time in a sample of 100 romantic couples.

5.4.1 Overview and implications of findings at Phase 2

Associations between psychological flexibility and relationship quality in the diary phase closely replicate chapter 4 findings for actor and partner effects with only two

identifiable differences between this and the previous chapter. Specifically, the current study found cross-partner associations between NA and relationship quality, over the 14-day diary phase, not present in the cross-sectional study. Also, PA did not mediate the effect of psychological flexibility on relationship quality at the partner level over a 2.5-month period suggesting that NA may be making a greater contribution to partner experiences of relationship quality over time.

One potential explanation for differences between the findings in chapter 4 and 5 may lie in the different sampling strategy. During Phase 2 of this study, measures of affect and of relationship quality represent aggregations of all the daily diary reports, providing a global assessment rather than a state level measure of these constructs. There are several implications of these differences for the interpretation of the findings. Firstly, aggregations do not reflect the variability in the measurement of a variable and studies suggest that the ability to regulate affect may be particularly important when a couple experiences conflict (Inzlicht et al., 2021). This means that there may be more variability in the affect and relationship quality of couples under pressure. This may have bearing on the results in ways that require further exploration and may be reflected in the differences in the findings between Chapters 4 and 5. However, the degree of consistency in findings between chapters may equally be indicative of the predictive value of psychological flexibility and it's bearing on experiences of affect and relationship quality. Measurement of psychological flexibility at the same time point as affect and relationship quality over time, would enable research to explore the links within individuals and within couples in greater depth and provide the best insight into how psychological flexibility influences emotion regulation and its implications for both individual and dyadic functioning.

Other factors which may also have had bearing on the results of Chapter 5 include initial elevation bias (Shrout et al., 2017). This describes a decrease in reporting in diary studies which employ repeated assessments. Specifically, participants are initially observed to be highly motivated to comply with study conditions and eager to report phenomena. This motivation is then seen to dissipate over time, in studies with repeated measurement. Such phenomena are particularly associated with people's reports of their internal states, particularly negative mental states and physical symptoms. Related, repeated observations or measures may be subject to a conversational norm (Shrout et al., 2017), such that participants report less of a construct over time, rationalising that because they have already reported a construct, they don't need to report it again. It may be that this interacts with a tendency for greater initial elevation bias in the current study. As people vary in their experiences of affect, so the way that they report affect may also vary in different ways over the course of a diary study. Similarly, simply asking people about their experiences of affect and relationship quality on a regular basis may raise their awareness of both their own and their partner's experiences, increasing the possibility for partner effects to emerge (Rosenman, Tennekoon, & Hill, 2011).

Finally, it may be that differences between the current study and the findings of Chapter 4 may be attributable to differences in the length and nature of the relationships between these two studies. In Chapter 4, 82% of couples identified as married or in longer term relationships, whereas 14.5% of couples identified as married or in longer term relationships in Chapter 5. In Chapter 5 it may therefore be that the partner effect between NA and relationship quality becomes significant because shorter-term relationships are more heavily reliant on perceptions of partner

present-moment behaviour to draw conclusions about their relationship quality. This idea is partially supported by work on implicit partner evaluations which suggests that these may variably effect perceptions of relationship problems over the years (Faure, Righetti, Seibel, & Hofmann, 2018). Longer term partners who are psychologically flexible, may have more contextual information to draw from in understanding and responding to their partner's behaviour, with implicit attitudes which reflect shared goals, meaning that NA has less of a direct effect on relationship quality in longer-term relationships.

It may be that the dating-style relationships and the life-stage characteristic of participants in the Chapter 5 sample has a bearing on what people gain from their relationships. For instance, if relationships afford an opportunity to be more attuned to cultural norms (Kuperberg & Padgett, 2016), people in younger cohorts may experience partner effects of NA on relationship quality by virtue of their higher use of social media and the increased feedback they gain about NA in this context (Kircaburun, Alhabash, Tosuntaş, & Griffiths, 2020; Liu et al., 2016). Although social media can make relationships vulnerable regardless of age (Abbasi, 2019; Arikewuyo, Efe-Özad, Dambo, Abdulbaqi, & Arikewuyo, 2020), the absence of the depth of contextual understanding which emerges in longer term relationships may lead to a heightened salience for information posted in social media among people in shorter relationships (Rueda, Lindsay, & Williams, 2015). However, relationship length is not likely to be the only factor relevant in this context. Individual differences in the sharing of information (Arikewuyo et al., 2020) and personality characteristics (Blackwell, Leaman, Tramposch, Osborne, & Liss, 2017) are also likely to influence the way social media may predict experiences of affect and relationship quality.

5.4.2 Overview and implications of findings at Phase 3

Different patterns of association were evident at phase 3 compared to both phase 2 and to those in chapter 4. Firstly, a direct actor effect emerged between psychological flexibility and relationship quality in both models. Further, in the PA model, a direct effect also emerged between actor psychological flexibility and partner relationship quality. This means that, over a 2.5-month period, psychological flexibility predicted not only one's own relationship quality but also that of their partner and that positive affect was significant for one's own experiences of relationship quality but not those of their partner. Alternatively, in the NA model, psychological flexibility directly predicted one's own relationship quality over a 2.5-month period but partner relationship quality effects only emerged when mediated by NA.

In addition to the impact of aggregations of measurement at phase 2 affect, discussed in section 5.4.1, there are a series of other important factors which need to be accounted for in interpreting the phase 3 findings. The time lapse between measurement of phase 1 psychological flexibility, phase 2 affect and phase 3 relationship quality, is significant due to the emergence of COVID-19 and ensuing lockdown in the UK in March 2020 between the data collection points for phase 2 and phase 3 of this study. This means that participants were subject to extremely unusual external events which would have been likely to have influenced their day-day circumstances and experiences (Daks, Peltz, & Rogge, 2020; Fluharty & Fancourt, 2020; Pierce et al., 2020; Pietromonaco & Overall, 2020). Phase 3 represents the point at which significant environmental changes had taken place for

all participants and this adds an additional component to the interpretation of findings at Phase 3. External stressors such as economic hardship, work stress, confinement, lack of child care, health concerns and bereavement represent some of the external stressors which may have placed couples under additional pressure during this period (Pietromonaco & Overall, 2020). How these challenges are experienced and navigated by couples is only just emerging in the literature. Initial factors which may be relevant include the possibility of greater social isolation in older adults (Tyrrell & Williams, 2020) or higher levels of mental distress among younger adults (Pierce et al., 2020). In the relationship context, adaptive relationship processes may become particularly important when couples have to navigate a sudden increase in daily challenges (Pietromonaco & Overall, 2020). These factors may influence the way that participants engaged with the current study at Phase 3 specifically. Further, cohabitation rose by approximately 10% among couples between Phase 1 and Phase 3 of the current study, suggesting that in addition to the enforced changes brought about by the COVID-19 pandemic lockdown, 10% of couples were also asserting their own volition and acclimatising to new living arrangements, during this time.

Higher levels of psychological flexibility have been associated with lower pandemic related adversity across work, home, financial, health and social domains (Kroska, Roche, Adamowicz, & Stegall, 2020) irrespective of age. As psychological flexibility was only measured at baseline in the current study, it is unclear if and how this might have been variably influenced during the pandemic. However, findings suggest that it is linked to higher levels of wellbeing and lower levels of depression, anxiety and COVID-related distress (Dawson & Golijani-Moghaddam, 2020; Mallett, Coyle,

Kuang, & Gillanders, under review). How the pandemic may have been influential in cohabitation decisions and the way that cohabitation was navigated by couples during this time are but a couple of the ways that this would be an interesting area for further study.

Despite these unusual circumstances, Phase 3 yields valuable findings about the prospective relations between psychological flexibility and relationship quality. Both psychological flexibility and phase 3 relationship quality are measured at a single time point and a new direct relation between psychological flexibility and phase 3 relationship quality emerged in Chapter 5, suggestive of a stability of effect over time. Direct relationships between psychological flexibility and relationship quality may be indicative of an underlying association between these constructs which only becomes observable in the absence of mediatory pathways via affect which could be absorbing variance in phase 2 relationship quality models.

A direct association between psychological flexibility and relationship quality would be highly consistent with research findings which emphasise the value of aspects of psychological flexibility such as present moment awareness (Khaddouma, 2018; Lenger et al., 2017; Saavedra et al., 2010) and cognitive defusion (Greer, 2017; Rolffs et al., 2018) for relationship quality. Specifically, such studies show that interventions designed to increase psychological flexibility have beneficial impact on relationship satisfaction (Khaddouma et al., 2017), reductions in relationship stress (Barnes, Brown, Krusemark, Campbell, & Rogge, 2007), decreasing daily conflict (Iida & Shapiro, 2017) and for couples coping with a range of health problems

(Birnie, Garland, & Carlson, 2010), thus indicating the importance of psychological flexibility across multiple aspects of relationship functioning.

5.5. Summary

The findings of this study replicate some of the findings of chapter 4, particularly at phase 2 of the study, capturing underlying trait-like tendencies in affect, generally regarded to be subject to both diurnal (within-person) and between person variation, thus adding to the idea that these are robust effects. The longer time period to phase 3 affords a different pattern however, with direct effects emerging between psychological flexibility and relationship quality not only at the actor but also at the partner level. Overall, the findings therefore support the hypotheses that individual experiences of psychological flexibility are able to predict relationship quality at both actor and partner levels, 2.5 months later. Partial support was found the mediating role of affect, 2.5 months later in that NA was found to play an important role in the links between psychological flexibility and relationship quality, when considering general trends in NA, during the diary phase of this study.

In terms of how these findings may ultimately be operationalised, variability in affect over time may underscore the importance of an open and aware response style, characteristic of psychological flexibility, affording people the opportunity to better navigate relationships successfully if they have a good grasp of both their own and their partner's fluctuating affective state, with implications for both reports of relationship quality and relationship functioning (Zamir, Gewirtz, Labella, DeGarmo, & Snyder, 2018). Similarly, being able to respond effectively to relationship demands

through behaviour that is aligned with relationship values and goals may be important in underpinning the interpersonal effects that have emerged in this study, aligned with previous research in this area (Yu & Chang, 2021).

One noteworthy difference between the studies of Chapters 4 and 5 was that correlations between constructs were lower in the current study (Chapter 5). This may be an effect of the different sampling strategy employed in data collection between studies, such that the sampling technique in the present study meant that partners were more likely to both respond individually to surveys, rather than one participant being able to complete the measures on behalf of both themself and their partner.

Lower levels of association between partners in the current study could also be attributable to differences in relationship types between the two studies. Participants in the current study were younger (M_{years} = 24.15, SD_{years} = 6.61 versus M_{years}=45.30, SD_{years}=15.14 respectively) and predominantly in dating style relationships, compared to the sample in Chapter 4. The implications of this difference require further investigation, However, it may be that the cognitive interdependence which evolves over time in longer term relationships (Agnew & Etcheverry, 2006) had less time to evolve in dating versus marital type relationships. The cumulative adaptation thought to occur through partners' progressive reinforcement of each other in a relationship over time (Aune & Aune, 2019), may account for more similar responses on measures in longer-term relationships, compared to shorter-term relationships where partners self-concept may initially be relatively independent. However, other

research in this area has also identified a tendency for people to align themselves with their partner's ideas and beliefs, in shorter term relationships (Slotter & Gardner, 2009), termed *anticipatory self-other integration*. This suggests that the way that couples inter-relate may vary, with consequences for relationship experiences and the variety of potential explanations of these effects reinforces the need for further study.

5.6 Study limitations and future directions

The findings from this study offer an insight into relationship functioning in couples predominantly among people in shorter-term, dating relationships. The findings of Chapter 5 focussed on replicating the findings of earlier chapters in a longitudinal sample and additional longitudinal studies would be useful to extend these findings to explore how daily fluctuations at the individual and couple levels operate. Different demands may contribute to both relationship pressure or health, following studies which identify that changes in social roles, personality development and emotion regulation may have implications for relationship functioning (Chopik et al., 2013). Exploring variation in psychological flexibility, affect and relationship quality within individuals and within couples would be helpful in understanding how these interactions take shape and this could be achieved with an experience sampling study both within and between couples, over time.

Of note, data collection for this study spanned the start of the COVID-19 pandemic with phase 3 data collection taking place from April-May 2020, coinciding with the start of national lockdown in the UK. Preliminary research in this area indicates that

the previously unparalleled levels of social change which have been identified are important for both individual (Kroska et al., 2020), and relationship functioning (Pietromonaco & Overall, 2020) with indications so far suggesting the importance of both a psychologically flexible response style and close supportive relationships for successful navigation of these particularly challenging times (Pauw et al., 2020; Pietromonaco & Overall, 2020). Understanding how psychological flexibility may support strong couple relationships and mitigate against the challenging impacts of the pandemic for couples at both acute and chronic phases, is likely to afford opportunities for deepening insight into the complex ways in which psychological flexibility may be beneficial at both individual and interpersonal levels. It may be that couples counsellors or others who provide advice around relationships can use such information to tailor interventions more specifically to the experiences of couples. One way this could be achieved is through a greater understanding of the importance of supporting people to both enhance their positive affect and manage negative affect in support of their relationships.

Chapter 6: Psychological flexibility in the lab

6.1 Introduction

So far, this thesis has explored the structural associations between psychological,

affect and relationship quality at both the individual level (in Chapters 2 and 3) and at

the dyadic level (in Chapters 4 and 5). Consistent with the aims of this thesis, to

explore the potential for psychological flexibility to be beneficial in the romantic

relationship context, this chapter extends that work. It outlines an individual-level

short-term experimental manipulation of psychological flexibility to explore whether

perceptions of relationship quality can be raised through a single 5-minute

intervention. The experimental manipulation aims to enhance the openness to

experience and behavioural awareness which is characteristic of people who are

psychologically flexible. As affect has been found to mediate the relationship

between psychological flexibility and relationship quality so far in this thesis, these

effects are also explored in this study.

Behavioural interventions which explore the effect of psychological flexibility on

relationship quality tend to focus on specific aspects of psychological flexibility such

as mindfulness (Adair et al., 2018; Barnes et al., 2007; Rogge et al., 2013), inflexible

thinking (Galhardo et al., 2011; Hermes, 2018), cognitive fusion (Wiggins, 2012), self

as context (Lenger et al., 2017; Lenger, Gordon, & Nguyen, 2019). Full-scale

psychological flexibility has also specifically been studied in the context of when one

partner is experiencing health difficulties. Examples include how spousal

mindfulness is associated with greater spousal support during chronic pain (Williams & Cano, 2014), coping with sexual concerns following cancer (Reese, Keefe, Somers, & Abernethy, 2010), cancer patient's values and relational distress (Ciarrochi, Fisher, & Lane, 2011) and spousal carers experiences of changes in the couple relationship during early stage dementia (O'Shaughnessy, Lee, & Lintern, 2010; Pakenham & Samios, 2013). Similarly, a commitment to personal goals and values has also been linked to positive relationship outcomes as seen in research indicating that partner support for self-expansion is linked to higher relationship quality (Carson et al., 2007). The combination of this research points to the value of raising psychological flexibility in romantic relationships across a wide range of circumstances, for both improvements in marital functioning and in the management of health concerns within couples.

Following meta-analytic work by Levin, Hildebrandt, Lillis, & Hayes (2012) which demonstrates that changes in components of psychological flexibility could be achieved in a single-dose intervention, this study explores whether a single-dose intervention designed to raise present moment awareness could have an effect on participant reports of their relationship quality.

6.2 Method

Data reported here were drawn from a larger project available on the Open Science Framework at: https://osf.io/fh5rg/. All study procedures were approved by the University of Edinburgh Psychology Research Ethics Committee. The larger project considered how psychological flexibility might be associated with emotion regulation,

using a behavioural task to measure conflict management skills, following a psychological flexibility intervention.

6.2.1 Participants

Participants were people in relationships, aged over 18 years and recruited as part of a larger undergraduate project, from a range of sources including Edinburgh University students recruited through a volunteer panel in return for course credit and members of the public recruited through a volunteer panel, via e-mail and through social connections of the researchers. Power was calculated using G*Power (Franz Faul, Erdfelder, Buchner, & Lang, 2009) and indicated a target sample size of 176 (α = .05, effect size = 0.25 at 95% power) for a mixed within/between groups ANOVA. Practical issues such as scheduling lab access and time restrictions on the project meant that a sample of 89 participants was ultimately recruited. Participants were excluded from analyses if they failed to give consent (n=1), did not complete one or more of the measures (n=7) or were not in a relationship (n= 14). This resulted in a final sample of 67 romantically-involved individuals (63% female) who participated in the study either voluntarily or in return for course credit. Participants were in relationships lasting 1 month to 46 years (M_{years} =2.98, SD_{years} =6.89) and were age 18-65 (M_{years} =24.51, SD_{years} =9.00) with 93% reporting being exclusively dating and 22% cohabiting. The majority identified as heterosexual (91%). Fifty-five percent were Asian, 39% Caucasian and 6% of bi/multi-racial descent.

6.2.2 Procedure and Measures

As in preceding chapters, participants completed measures of psychological flexibility (CompACT: Francis, Dawson, & Golijani-Moghaddam, 2016), PA and NA (Positive and Negative Affect Scale, PANAS: Watson, Clark, & Tellegen, 1988) and relationship quality (6-item Perceived Relationship Quality Components, PRQC: Fletcher, Simpson, & Thomas, 2000). Psychological flexibility was measured before and after the intervention whilst affect and relationship quality were measured following the intervention only. Measures were presented in Qualtrics and participants came into the lab to complete the study. Lab attendance was required to support participants access to study materials and to ensure they fully listened to their assigned audio intervention.

The data collection for this study took place as part of a larger experiment, which sought to examine how effective couples were at conflict management, by exploring how they would respond to a situation of conflict with their romantic partner (materials for this study are provided in Appendix C). An experimental manipulation in the form of an audio recording, designed to raise a participant's levels of openness to experience and behavioural awareness by increasing both present moment awareness and orientation to important values and goals (Gillanders, 2018), was administered to 50% of study participants. A control condition in the form of an audio interview with an occupational psychologist focussed on recruitment advice for job-hunters (Twiselton, 2013) was administered to all other participants, matched for duration and delivery style (computer-based, audio-format). Participants were randomly assigned to either the experimental or control condition, using software to

allocate to each condition. On completion of the study, participants viewed a debriefing screen and were thanked for their contribution. The full study took approximately 30-45 minutes to complete. Positive affect was not manipulated directly in Chapter 6 as this study took place prior to the studies in chapters 3-5, at which point, the significance of PA for relationship quality had not been established.

6.3 Results

Table 6.1 shows correlations between psychological flexibility pre- and post-intervention, PA, NA and relationship quality, revealing moderate levels of correlation between psychological flexibility and PA and NA and also between PA and relationship quality. No direct associations were observed between psychological flexibility and relationship quality.

Differences in relationship quality following the intervention were assessed between groups using a one-way ANOVA. There were no differences in relationship quality between the control and experimental groups following the intervention ($F(1, 63) = .168$, $p=.683$). Mediation by affect showed that the indirect effect of PA was significant (b(SE) =.13 (.07), CI 95% [.01,.30]) but that the indirect effect of NA was not significant (b(SE) =.08 (.10), CI 95% [-.11, .28]), indicating that when participants experienced higher psychological flexibility they experienced higher PA and that this is turn was linked to higher relationship quality. However, although high levels of psychological flexibility were significantly associated with lower NA, this in turn was not associated with higher relationship quality, in the current sample following the intervention. Finally, psychological flexibility did increase significantly following both

interventions ($F(1,63)=9.094$, $p=.004$), despite there being no significant main effect of condition ($F(1, 63)=.05$, $p=.82$) and no interaction between conditions ($F(1,63)=1.11$, $p=.295$). This may indicate that the intervention itself did as it was designed to do or it may indicate that another, unidentified aspect of the experiment influenced the results, with further investigation needed for clarification.

Table 6.1: *Correlations between key constructs*

	Mean (SD)	PF-pre	PF-post	PA	NA	RQ
Psychological Flexibility - pre-intervention (PF-pre)	3.76(.68)	*.88*	**.92***	**.44***	**-.56***	.19
Psychological Flexibility - post intervention (PF-post)	3.89(.82)		*.91*	**.41**	**-.53***	.22
PA	3.46(.69)			*.86*	-.27**	**.34**
NA	2.16(.79)				*.88*	-.23
Relationship Quality (RQ)	6.10(.92)					*.91*

Note: Bolded font indicates a correlation over .30. *** p<.001 and ** p<.005 (2-tailed). Reliability data is provided with McDonald's Omega, on the diagonal.

6.4 Discussion

This study explored whether a psychological flexibility intervention would raise individual perceptions of their relationship quality and investigated whether any such relationship was mediated by affect. The intervention did not yield a significant main effect of change in relationship quality following the experimental versus the control condition. Moderate levels of correlation emerged between psychological flexibility pre- and post- and both PA and NA whilst psychological flexibility and relationship quality were not significantly correlated either before or after the manipulation. Although a significant indirect effect emerged between psychological flexibility and relationship quality via positive affect, this finding neared non-significance and as such the results require replication to establish the validity of this finding.

The small sample size of this study also contributes to a lack of generalisability of the findings. Given that each condition contained 33-34 participants, this limits what may be concluded from the findings and the possibility of detecting potentially significant effects. However, a number of other considerations may also contribute to these findings such as the selection of the stimulus for the control condition. Campbell et al. (2000) are among the authors who highlight the complexity of designing adequate control conditions for research. They point to the importance of ensuring parity between experimental and control conditions, indicating that there a host of factors which need to be tailored to each specific study. The control for this study was an excerpt from an interview with an occupational psychologist, outlining advice on ways to maximise recruitment success. This matched the experimental condition in length and audio delivery format. However, this alone may not have been sufficient

for a control condition as the control audio did involve encouraging listeners to think about their goals and how to work towards these effectively and goal-orientation contributes to one aspect of psychological flexibility.

Further, a study of 219 couples (Kimmes, Jaurequi, Roberts, Harris, & Fincham, 2019), differentiated the benefits of a general tendency to mindfulness from a relationship-specific mindfulness, finding that relationship mindfulness had benefits for relationship wellbeing over and above mindfulness more broadly, and that effects persist over time (Stanton, Chan, & Gazder, 2021). These findings are also consistent with those of Rogge et. al. (2013) who found that when an intervention specifically targeted couples' mindfulness about their relationship then this was beneficial for relationship functioning over a three-year period. In the context of the current study then, this may indicate that a relationship-targeted mindfulness intervention might be more effective for raising relationship quality, compared to a more generic psychological flexibility enhancing intervention.

A further consideration relates to the level of intervention. The effect of factors such as number, length and frequency of exposure has been explored across a range of contexts. In a review of lab-based component studies (Levin et al., 2012), 48 of 57 studies involved single-session exposure to a partial or fully student based sample and showed appreciable gains for aspects of psychological flexibility. Levin et al identified larger effect sizes for studies with theoretically-specified outcomes and theoretically distinct interventions, compared to general outcomes and general interventions. Additionally, experiential methods were found to be more effective

than those driven by rationale-alone. However, findings from therapeutic studies suggest that the efficacy of an intervention may be determined by its length and that repeated exposure is required in order to achieve appreciable effects. One review of outpatient psychotherapy evaluated treatment duration for a sample of 6375 clients, predominantly composed of college counselling centres (94%) for interventions ranging from 3-26 sessions (Stulz, Lutz, Kopta, Minami, & Saunders, 2013). Findings support the idea that whilst treatment responses slowed for longer treatment programmes, that a single exposure was unlikely to be sufficient to generate an effect. When viewed in conjunction with the findings of Levin et al., this may indicate that single-exposure manipulations such as the one in the current study may be less likely to elicit the results achievable from repeated-exposure interventions.

Although research tends to focus on student samples, as in this study, it is useful to acknowledge that age may have bearing on how people experience psychological flexibility (Gillanders & Laidlaw, 2014), affect (Scheibe & Carstensen, 2010) and relationship quality (Lantagne & Furman, 2017). Understanding how developmental, cohort and normative influences may contribute to differences in the way that people experience and report their own wellbeing and the quality of their closest relationships, is therefore important. It may be that a more nuanced understanding can be achieved by exploring of a range of contextual factors. Similarly, the balance of ethnicity in this study was unusual for a UK based study in its mix of participants from collectivist and individualistic cultures. This may also have contributed to patterns of responding in ways that were not anticipated (Kitayama, Berg, & Chopik, 2020; Markus & Kitayama, 1991; Markus & Kitayama, 2010), such as in the socio-cultural construction of values (Sabucedo, 2017) and the pursuit of goals. Despite

studies which show that psychological flexibility is robustly linked to wellbeing across cultures (Lin, Rogge, & Swanson, 2020), there may be nuances in the way these are expressed (Fonseca, Ye, Curran, Koyama, & Butler, 2021), which require further study.

In conclusion, this study did not find any effect of a short-term experimental manipulation of psychological flexibility on relationship quality despite the intervention being shown to raise psychological flexibility. Although a single exposure is not uncommon for component studies of psychological flexibility (Levin et al., 2012), it may be that a more relationship-targeted, intensive or repeated exposure is required for effects to manifest in specific contexts. However, the conclusions of this study are most significantly limited by the small sample size (Cohen, 1992; Faul, Erdfelder, Lang, & Buchner, 2007) and their implications for the generalisability of the findings.

Chapter 7: General Discussion

7.1 Introduction and Overview

A functional contextual approach advocates that as all behaviour occurs in a context, to predict and influence behaviour we need to focus on the function of individual behaviour in a specific context (Ajzen & Fishbein, 1970; Biglan & Hayes, 2015; Newsome & Alavosius, 2011). Behaviour in turn is thought to be guided by the thoughts and the feelings of the individual (Beck, 1993). More recently, relationships research has demonstrated that individual perceptions of relationships are a highly important predictor of romantic relationship quality (Joel et al., 2020). Therefore, the thoughts and feelings of the individual can be seen to have implications not only for the individual in terms of their own wellbeing, but also for their perceptions of the quality of their relationships. High levels of correlation between relationship perceptions and behaviour (Birnbaum et al., 2016; Debrot et al., 2012) mean that when a person perceives that they have a high quality relationship, then this therefore likely to be linked to beneficial relationship behaviours. One way to understand individual functioning is through the construct of psychological flexibility. Hayes, Strosahl, and Wilson (1999) propose that *psychological rigidity* is at the heart of maladaptive functioning and human suffering whilst *psychological flexibility* underpins psychological wellbeing. A psychologically flexible response style enables people to be consciously present in each moment of their life and to focus on things that are important to them (Hayes, Pistorello, & Levin, 2012). Within this context, relationships have been recognised as underpinning many important life values and goals (Kohlenberg & Tsai, 1994; Schoendorff & Bolduc, 2014) and the current

research sought to understand the significance of psychological flexibility for individual wellbeing and relationships.

Factor analytic work in Chapter 2 developed precision in understanding the constructs underlying measures of psychological flexibility, wellbeing and relationship quality, showing variance could be explained by six factors. Items specific to scales of *life satisfaction* and *relationship quality* absorbed variance associated with single discrete factors, whilst PANAS items formed two discrete factors reflecting *positive* and *negative affect*. Psychological flexibility also loaded onto two discrete factors, one comprising items of the *openness to experience* and *behavioural awareness* subscales and the other composed of items of the *valued action* subscale. Items of the *Psychological Wellbeing Scale* (PWBS) reflecting subscales of autonomy, environmental mastery, personal growth, positive relations with others, purpose in life and self-acceptance, were found to share variance with psychological flexibility and life satisfaction. No pattern was identifiable in the way PWBS items loaded and these items offered a consistently lower contribution to the variance of each factor. As such, the PWBS was omitted from further investigations with a combination of psychological flexibility and life satisfaction taken to form a proxy for PWB.

Chapters 3-5 explored the structural relationships between psychological flexibility, wellbeing and relationship quality, taking progressive steps towards deepening understanding of individual and interpersonal associations between variables. Chapter 3 revealed the structural relationships between psychological flexibility, aspects of wellbeing and relationship quality at the individual level, showing that

higher PA and lower NA mediated the relationship between psychological flexibility and relationship quality. Life satisfaction was not found to contribute to any well fitting models and focus then turned to considering how affect may be important to relationships at the individual and dyadic levels.

Partner effects were explored in Chapter 4 , considering how psychological flexibility may be associated not only with aspects of *individual* wellbeing and relationship quality but also associated with *partner* level effects. PA and NA showed different patterns of association in mediating the relationship between psychological flexibility and relationship quality, consistent with the idea that NA represents a more internalised experience, but that PA is often associated with sociability and behavioural correlates which may enhance interpersonal functioning (Diener et al., 1999). Chapter 5 further developed this dyadic work, investigating the pattern of actor and partner associations between constructs over time, revealing that patterns of association varied over different time periods. The dyadic findings represent an initial insight into the potential for a psychologically flexible response style to be beneficial not only for individual wellbeing and relationship quality but also for partner effects through the interdependence characteristic of romantic relationships. Finally, Chapter 6 tested an individual-level short-term experimental manipulation of psychological flexibility designed to explore whether perceptions of relationship quality can be raised through a single 5-minute intervention designed to enhance psychological flexibility. This study did not find an effect, but it did point to further research areas which may prove fruitful.

This discussion will therefore consider three major contributions of this research. Firstly, it will discuss how the research informs distinctions between psychological flexibility, individual wellbeing and relationship quality. Secondly, it will discuss the implications of structural relationships between psychological flexibility and relationships and finally, it will speak to the significance of psychological flexibility for partner level experiences.

7.2 Differentiating psychological flexibility, wellbeing and relationship quality

In Chapter 2, factor analytic work developed precision in understanding the constructs which underlie measures of psychological flexibility, individual wellbeing and relationship quality. Items from the PWBS (Ryff, 1989) shared variance with factors representing items of psychological flexibility and life satisfaction but contributed lower item weightings to these factors. Furthermore, there was no apparent pattern in the way items from the PWBS loaded onto factors. This speaks to research which questions the discriminant validity of the subscales of the PWBS (Abbott et al., 2006; Burns & Machin, 2009; Ryff & Keyes, 1995), with the implication being that this scale might best be employed to measure PWB at the full-scale level alone (Chen, Jing, Hayes, & Lee, 2013). Understanding how the PWBS related to other constructs offered a comparative context through which to conceptualise PWB, anchoring it within the context of measures of psychological flexibility and life satisfaction.

Within the EFA, psychological flexibility subscales of *openness to experience* and *behavioural awareness* merged into a single factor. This was partially determined by forcing the number of factors required to form an interpretable solution from the data available. It is conceivable that the directionality of items associated with subscales of the CompACT may have influenced factor loadings, mirroring the findings of some studies exploring the factor structure of the PWBS (e.g. Henn et al., 2016) which identified that items of the PWBS loaded into a two-factor solution with all positively worded items on one factor and all negatively loaded items on the second factor, a so-called method effect (Maul, 2013). More broadly, Henn and colleagues advise that the utility of negatively worded items should be considered, and they urge caution in the use of scales with positively and negatively worded items. Although this advice is counter to the recommendations that both standard and reverse scored items are used in measures to control for response bias (Anastasi, 1992; Nunnally & Berstein, 1994), findings of studies of item wording suggest that factors of solely negatively worded items can appear when as few as ten percent of participants fail to take note of item reversals (Schmitt & Stuits, 1985; Schriesheim & Eisenbach, 1995). This could potentially account for some of the factorial loadings identified in the CompACT as the aggregation of items from two subscales into a single factor comprises solely negatively worded items. Although oblique rotations such as Oblimin can be used to address wording effects in factor analysis (Schriesheim & Eisenbach, 1995), further research should explore the potential for a method effect (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) to have emerged in the *mindful acceptance* factor where a significant proportion of the variance in scores may be attributable to all items being negatively worded. Further, the negative wording of items of mindful acceptance suggests that what these items measure is *low* mindful

acceptance and more specifically, experiential avoidance and a general inattentive unawareness (Rogge et al., 2019). This is particularly important if the aim is to assess and work towards positive functioning, in contrast to alleviating distress as marked by a reduction in avoidance and inattentive awareness. Factor loadings for items of the PANAS (Watson, Clark, & Tellegen, 1988) were consistent with existing literature in loading onto the distinct factors reflecting PA and NA. Similarly, items of the SWLS (Diener, Emmons, Larsen & Griffin, 1985) loaded onto a discrete factor and items from all subscales of the PRQC (Fletcher, Simpson, & Thomas, 2000) also loaded onto distinct factors in anticipated patterns.

The distinctions made in this aspect of the research are critical at the conceptual level, underpinning the subsequent structural analyses with an additional level of precision and clarity about the nature of the constructs being tested. At the measurement level, the findings suggest that discrete constructs underlie scales measuring PA, NA, life satisfaction and relationship quality. It also raises interesting questions about the constructs which underlie the measurement of psychological flexibility, by the CompACT. The EFA suggest that *behavioural awareness* and *openness to experience* subscales form a discrete construct, distinct from *valued action*. This may point to the importance of future research investigating the performance of these separate subscales in intervention research and the different functions of each factor in the relationship context (Rogge, Fincham, Crasta, & Maniaci, 2017). Further understanding how each is important to healthy relationships could further inform how relationships can be supported at both the individual and couple levels.

These findings also have implications at the theoretical level. The spread of individual items from specific subscales of the PWBS across factors predominated by psychological flexibility and life satisfaction, provide an insight into the nature of PWB shedding light on why psychological flexibility is so closely linked to individual wellbeing. Similarly, the merging of openness to experience and behavioural awareness subscales of the CompACT suggests that it is important to think carefully about what constructs are being measured, alongside the aims and objectives of measurement. Although reductions in experiential avoidance and inattentive awareness are correlated with higher levels of wellbeing, it may be the behavioural correlates of valued action that are most important to positive functioning (Debrot et al., 2012) and these remain questions for the future.

7.3 Structural relationships between psychological flexibility and relationship quality

Several themes emerged from the three structural studies. At the actor level, psychological flexibility was associated with relationship quality both directly and through mediation by positive and negative affect. The direct effect of psychological flexibility on actor relationship quality became non-significant in the cross-sectional dyadic study and then re-emerged in the longitudinal study when measurements were taken over a 2.5-month period. Patterns of mediation were largely consistent across studies revealing that both PA and NA have an important role to play in mediating the relationship between psychological flexibility and relationship quality over time, not only for oneself but also for one's partner. The increasing complexity of modelling over successive studies may contribute to the variation in significant

paths across some models. Despite this, the key finding from these studies remains that psychological flexibility is associated with both an individual's experiences of relationship quality and with those of their partner, and that affect plays an integral part in these associations.

All the findings were consistent with studies which show that raising psychological flexibility has positive benefits for relationship quality across many contexts including couples experiencing a range of difficulties (Barnes et al., 2007; Jacobson et al., 2000; Johns, Allen, & Gordon, 2015), and in reports of relationship satisfaction (Greer, 2017; Harvey et al., 2019; Kappen, Karremans, Burk, & Buyukcan-Tetik, 2018). What is less evident in the existing literature is why these effects occur.

7.3.1 Theoretical analysis of effects

One theoretical model which seeks to explain why mindfulness is important for romantic relationships is offered by Karremans et al. (2017). This model outlines how mindfulness is important to relationship satisfaction at both the actor and partner levels. Karremans and colleagues identify individual mechanisms of mindfulness as: increasing awareness to implicit processes, emotion regulation, executive control and self-other connectedness. These then shape relationship-specific responses influencing factors such as pro-relationship behaviour, coping with distress, relationship and partner acceptance and acceptance of fluctuations in relationship functioning. It is the interdependence of these processes which are thought to underpin not only individual relationship satisfaction but also partner satisfaction (Reis, 2013). In this way it is possible to see exactly how mindfulness and

acceptance may play out in relationships with benefits in many aspects of relationship functioning, including recovery from conflict (Barnes et al., 2007), spill-over from work stress (Montes-Maroto, Rodríguez-Muñoz, Antino, & Gil, 2018), sexual outcomes (Khaddouma et al., 2015; Pepping, Cronin, Lyons, & Caldwell, 2018), ill health (Birnie, Garland, & Carlson, 2010; Pakenham & Samios, 2013; Schellekens et al., 2017; Williams & Cano, 2014), infertility (Javedani, Aerabsheybani, Ramezani, & Aerabsheybani, 2017) and in more general reports of relationship satisfaction (Adair et al., 2018; Kappen et al., 2019; Wiggins, 2012).

In addition to open awareness and acceptance, psychological flexibility also incorporates commitment to and behaviour towards valued goals. Although there is less literature that explores directly how valued action may be beneficial to relationship partners, promising insights are afforded by research around self-expansion (Aron & Aron, 1996) which suggests that when couples engage in novel, interesting or challenging activities together, this increases relationship quality (Aron, Aron, Norman, McKenna, & Heyman, 2000; Aron, Lewandowski, Mashek, & Aron, 2013) for both partners. It may be that people who are psychologically flexible therefore experience higher relationship quality as a function of more mutually valuable experiences with their partner which includes opportunity for pursuit of common goals and self-expansion.

Research has also differentiated between both perception and behavioural components of relationship quality (Joel et al., 2020). This study showed that across 43 longitudinal datasets, spanning 11,196 romantic couples, the top relationship-

specific predictors of relationship quality were perceived partner commitment, appreciation, sexual satisfaction, perceived partner satisfaction and low conflict. Highlighting the key role of individual perceptions for self-reports of relationship quality, Joel et al. identify that both individual difference and relationship specific variables combined to exert influence on relationship quality via the person's own relationship specific experiences. Among the individual difference constructs identified by Joel et al., psychological flexibility has been found to moderate the link between attachment and relationship quality (Saavedra et al., 2010), lower levels of anxiety and depression (Masuda & Tully, 2012), as a fundamental aspect of health (Kashdan & Rottenberg, 2010) and as a predictor of PA and NA (Hardy & Segerstrom, 2017). It is also associated with a range of factors identified by Joel et al as *relationship-specific constructs*, including intimate partner violence (Horst & Stith, 2013) perceived partner responsiveness (Manusov, Stofleth, Harvey, & Crowley, 2020) conflict strategies (Laurent, Laurent, Hertz, Egan-Wright, & Granger, 2013), managing misbehaviour in children (Weiss, Cappadocia, MacMullin, Viecili, & Lunksy, 2012) and a range of sexual outcomes (Greer, 2017). Collectively these studies serve to demonstrate the relevance of psychological flexibility across a wide range of constructs that affect relationships, evidencing the inter-play between perceptions and behaviour.

Applied to the current research, this may indicate that psychological flexibility is most influential in the relationship context because of its associations with the perceptions of relationship experiences, with downstream implications for the way that people behave in their relationships. Although high rates of correlation are found between perceptions and behaviour in relationships (Debrot et al., 2012), it is important to

remember that these are not interchangeable and that how relationship quality manifests at a behavioural level also needs to be investigated, potentially yielding different manifestations between individuals and across contexts. For example, in situations of high demand, such as created by the COVID pandemic, how do manifestations of psychological flexibility vary and are some behaviours more readily perceived as relationship-supportive than others? The current research has focussed predominantly on self-report and perceptions of relationship quality. Further investigation is needed to establish how these patterns may manifest in terms of relationship behaviour.

Other possible explanations of associations between psychological flexibility and relationship quality can be found in the literature that explores factors that help couples behave in ways that are more likely to promote a healthy pattern of engagement (Arriaga & Agnew, 2001; Arriaga, Kumashiro, Finkel, VanderDrift, & Luchies, 2014; Arriaga, Kumashiro, Simpson, & Overall, 2018). At the actor level, psychological flexibility may enable people to be more self-aware, recognising their own goals and values and the importance of relationship partners (Arriaga & Agnew, 2001). At the partner level, low psychological flexibility may mean that people are just not as reinforcing to be around as they tend towards moodiness, more changeable emotions, self-focussed attention and dysphoria (Leonidou, Panayiotou, Bati, & Karekla, 2019). In contrast, being more psychologically flexible may provide a more reinforcing context for romantic partners, such that couples are more able to recognise relationship triggers and down-regulate concerns experienced about their relationships (Barnes et al., 2007). Further, relationship mindfulness in particular may have beneficial effects on both individual and partner relationship experiences

over time (Gazder & Stanton, 2020; Saavedra et al., 2010), enabling relationship partners to share more pro-relationship behaviour and experiences.

Direct effects of psychological flexibility on relationship quality are specific to the initial individual level study in Chapter 3 and to Phase 3 of the longitudinal study, in Chapter 5, when taking affect into account. By creating composite scores for affect and relationship quality during the diary phase of the longitudinal study, this creates an element of stability and a trait-like quality to constructs which are generally thought to fluctuate regularly (Nater, Hoppmann, & Klumb, 2010; Sin, Ong, Stawski, & Almeida, 2017). To understand these effects in more depth it would be useful to explore the associations between psychological flexibility, affect and relationship quality within individuals, over time. This would enable a clearer picture to emerge as to the nature of the association between constructs. Standardising the measure of relationship quality used across studies and also to further analyse the individual recordings of affect and relationship quality in the diary study component of the longitudinal study. This was not possible in Chapter 5 due to issues of convergence when multiple measurements were used to predict a single outcome. What these findings do indicate however is that affect appears to be a consistent role in the relationship between psychological flexibility and relationship quality when experiences of affect and relationship are considered over time.

Chapter 3 also identified a structural relationship where relationship quality predicted psychological flexibility via affect (see Table 3.2). One interpretation of this finding is that the relationship between psychological flexibility and relationship quality via

affect is recursive: not only that psychologically flexible people may be more likely to experience both higher relationship quality directly and through experiences of affect but also, that when people experience higher quality relationships this in turn contributes to their experiences of affect and psychological flexibility. This is consistent with research exploring the links between psychological flexibility and individual wellbeing (Kashdan & Rottenberg, 2010) and with studies which show that relationships can promote individual wellbeing (Ducat & Zimmer-Gembeck, 2010; Roberson et al., 2018). However, this does not negate the importance of understanding how psychological flexibility might impact on relationship quality as a construct with a wide utility across a range of contexts.

7.3.2 Interpersonal effects

Interpersonal effects are evident throughout the dyadic aspects of this research and findings are relatively consistent across studies. Not only is psychological flexibility associated with one's own (actor) relationship quality, but it is also associated with one's partner's relationship quality. These effects vary over time with indirect effects occurring through the mediating effect of PA and NA in the shorter term, but direct effects between actor psychological flexibility and partner relationship quality observed when PA and relationship quality were measured over a 2.5-month period. This means that when someone is psychologically flexible, not only do they experience higher relationship quality 2.5-months later, but so does their partner. This may suggest that people who are psychologically flexible are generally nicer to be around and that this makes for a more pleasant relationship experience.

Being 'nicer to be around' speaks not only to how psychological flexibility may manifest behaviourally in the relationship domain but it also incorporates how people are perceived and influenced by their relationship partners. Pinpointing how interdependence may occur, Karremans and colleagues identify a series of basic mechanisms which result from higher levels of mindfulness (Karremans et al., 2017). The person's ability to attend to whatever emotion is currently being experienced has been linked to effective emotion regulation and less emotional reactivity (Arch & Craske, 2006; Goldin & Gross, 2010; Hill & Updegraff, 2012; Ortner, Kilner, & Zelazo, 2007). Basic mechanisms feed relationship responses at the cognitive, affective and behavioural levels, and include; pro-relationships motivations and behaviours such as sacrifice, interpersonal forgiveness and resisting attractive alternatives, coping with distress including stress spillover effects, relationship cognition which include partner and relationship acceptance and attachment security, beneficial automatic relationship processes and motivated biases such as positive partner illusions. It is these relationship processes which are thought to impact not only on actor but also on partner experiences of relationship satisfaction. The model also offers a potential explanation of why affect poses an important mediatory effect in the association of psychological flexibility with relationship quality.

7.3.3 Indirect effects through affect

In the current research, psychological flexibility is consistently linked to actor PA, in both the individual level study and throughout each of the dyadic studies. However, none of the dyadic studies found actor psychological flexibility significantly linked to partner experiences of PA. Actor PA is also associated with both actor and partner

reports of relationship quality in both the cross-sectional dyadic study and Phase 2 of the longitudinal research, with partner effects becoming non-significant when relationship quality is measured at Phase 3. This means that psychological flexibility is associated with relationship quality via PA consistently at the actor level and that PA also mediates partner effects over shorter time periods. Partner effects of PA on relationship quality may be linked to the increased sociability associated with PA (Diener et al., 2017). The lack of partner effects over a 2-month period may be attributable to variability in relationship quality thought to be experienced over time (Jocz, Stolarski, & Jankowski, 2018; Stolarski, Wojtkowska, & Kwiecińska, 2016) and the different measurement points for PA and relationship quality at Phase 3. One interpretation of the findings for PA is that positive emotional states are a consequence of more flexible thinking and behaviour (Kashdan & Rottenberg, 2010) and higher levels of acceptance (Urada & Miller, 2000) which are in turn linked to a more responsive interpersonal style (Selcuk et al., 2016) which is closely linked to relationship quality (Slatcher & Selcuk, 2017; Stanton, Slatcher, et al., 2019).

Turning to explore how NA mediates the association between psychological flexibility and relationship quality, psychological flexibility is negatively associated with both actor and partner NA across all studies, making it the most consistent finding in this thesis. In Chapter 4, the cross-sectional study and in the shorter-term diary study in Chapter 5, there is also an actor effect of NA on actor relationship quality and a partner effect of NA on relationship quality in both longitudinal studies. However, the actor effect of NA on relationship quality was not significant at Phase 3. This means that people who are psychologically flexible experience lower NA themselves and their partner does as well, over all measured timeframes. Whether or not NA is

required for an association between psychological flexibility and relationship quality to emerge, depends on the length of time over which affect and relationship quality were observed. Direct partner effects of psychological flexibility on relationship quality were observed but no direct partner effects were evident over a 2-month period when mediation by NA was accounted for.

One reason for differences in patterns of association over time may lie in the way that NA is experienced. The automatic vigilance hypothesis describes the idea that people attend more closely to negative stimuli in a bid to avoid any negative consequences that may be associated with them (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Pratto & John, 1991). In addition, cognitive processing is slowed when people experience negative events (Gao, Wedell, & Shinkareva, 2020) and negative behaviours have also been identified as more diagnostic about a person's character, compared to positive acts (Vonk, 1994). This may afford part of the explanation as to why cross-partner associations for NA are more prevalent and more persistent than those for PA: that people are more vigilant to indicators of negative stimuli. In this context, psychological flexibility may be allowing people to make peace with their own NA and with that of their partner, possibly through an increased present moment awareness which reduces reactivity to negative stimuli, and an ability to become less enmeshed with difficult thoughts (Gillanders et al., 2014; Gillanders, Sinclair, MacLean, & Jardine, 2015). In turn, as psychologically flexible people attend more flexibly to their own experiences of NA then this has bearing on their reports of relationship quality.

Finally, with reports of affect and relationship quality found to vary over the course of daily life regardless of overall level of relationship satisfaction (Iida & Shapiro, 2017; Impett et al., 2010; Park, Impett, MacDonald, & Lemay, 2019), psychologically flexible people may be more responsive to relationship partners through their higher capacity for awareness in the moment, supporting the increased sociability linked to PA and an increased motivation to attend to their relationship, based on commitment towards relationship maintenance and goals.

7.4 Experimental manipulation of psychological flexibility

Chapter 6 attempted to establish a causal link between psychological flexibility and relationship quality through an experimental manipulation of psychological flexibility. The experimental condition did not differ significantly in its effects compared to the control condition, and it may be that this was because the experimental condition was not targeted at relationships specifically but to a more general openness to experience and behavioural awareness. Similarly, it may be that the intervention was just too brief to have an effect. However, there were several features of this study that limited the generalisability of the findings including a small sample size and a control condition which may not have been as inert as initially assumed. It would be useful to replicate this study with a larger sample size and a more clearly inert control such as an excerpt from an audiobook on an unrelated topic, for example. Repeated exposure to the intervention would also be useful to effectively assess the effects of psychological flexibility on relationship quality. Further exploring the way effects take shape at the individual and couple levels would provide insight into the way an intervention may be beneficial at the interpersonal level. A significant

research base also indicates that psychological flexibility can be manipulated for beneficial effects in a range of populations experiencing distress (Åkerblom, Perrin, Fischer, & McCracken, 2015; Gerhart, Baker, Hoerger, & Ronan, 2014; McCracken & Gutiérrez-Martínez, 2011; Pakenham & Samios, 2013; Tkatch et al., 2017). An emphasis on understanding how interpersonal effects may take shape across a wide range of samples would therefore prove insightful, to fully appreciating not only how interpersonal effects take shape but whether particular aspects of psychological flexibility are more beneficial than others in particular contexts (Levin et al., 2012).

7.5 Limitations

One consideration that cannot be overlooked is the difference between perceptions and behaviour. This research has explored how psychological flexibility predicts perceptions of relationship quality, using self-report measures. Psychological flexibility is emphatically grounded in a behavioural perspective and the idea that as all behaviour occurs in a context, we should focus on the functionality of individual behaviour in context in order to enhance and maintain effective individual functioning. However, this thesis measures *perceptions* of relationship quality and focuses on how people perceive their relationships. At times, perceptions are argued to have not just equal but greater weight than behaviour for relationship quality (Joel et al., 2020). These risk factors could be mitigated if the relationship was characterised by appreciation, sexual satisfaction and a lack of conflict. The most proximal predictors were those that coloured the individual's perception of the relationship itself. Whilst psychological flexibility was not among the predictors considered in that study, this response style may at the very least contribute to

individual experiences, not only of lower NA, as found here, but of both other risk and mitigating factors. Although perceptions and behaviour tend to be highly correlated, couples who are experiencing relationship distress have been found to experience more of a mismatch between what each partner understands about specific relationship situations (Rogge et al., 2013). This can be attributable at least in part to issues with motivation and communication (Visserman, Righetti, Impett, Keltner, & Van Lange, 2018; Visserman et al., 2021). It is therefore problematic to assume that perceptions of partner behaviour are always construed in the same way by both partners and moving beyond self-report alone towards behavioural and/or physiological measurement, would be beneficial to accurate assessment, particularly of interpersonal effects.

Reliance solely on self-report measures also highlights a second limitation of this research, as participant responses may be influenced by a motivation to maintain consistency between cognitions and attitudes (Podsakoff et al., 2003). This can lead to relationships between item responses which would not otherwise exist in the real world, where participants may provide item responses in an effort to maintain consistency with previous item responses for instance. Also, the underlying assumptions that people make about how constructs are related can lead to illusory correlations and artificial covariation, whilst social desirability bias may result when participants are motivated to present themselves in a favourable light (van de Mortel, 2008). In total, Podsakoff and colleagues note four separate classes of method bias and how each of these influence item responses. Triangulation of methods whereby different techniques are used to analyse a phenomenon are one way to address such bias and enable improved identification and understanding of complex

phenomena (Joslin & Müller, 2016). In the current context, combining self-report with methods such as measurement of physiological arousal (e.g. (Kiecolt-Glaser, Glaser, Cacioppo, & Malarkey, 1998; Kiecolt-Glaser, Gouin, & Hantsoo, 2010), observer ratings (Simpson, Rholes, & Phillips, 1996) or fMRI (Simpson, Collins, Farrell, & Ruby, 2015) may be ways to enhance both methodological and conceptual understanding of how psychological flexibility is relevant for relationships.

Finally, the sampling strategy also has implications for the data collected in this study. Online sampling is convenient for reaching large samples who may be more representative of the population compared to typically student samples (Coppock & McClellan, 2019). However, it is reliant on participant access to and ability to use online methods. Low levels of literacy may be more prevalent among some groups (Burris, Phillips, & Lonigan, 2019; Morrisroe, 2014) whilst technology is less commonly used among older cohorts (Blok, van Ingen, de Boer, & Slootman, 2020). This limits the population from which such studies are sampled. An additional consideration in dyadic sampling is the comparative motivation of both partners to take part in a study (Park, Impett, & MacDonald, 2021). Reduced motivation of one partner may lead to issues such as less meaningful engagement or even one partner completing measures for both and it is unclear whether these issues are more likely to vary systematically based on key characteristics being sampled. For these reasons caution is required in the interpretation of findings and replication studies are important.

7.6 Future Directions

These studies demonstrate preliminary evidence for the significance of psychological flexibility for romantic relationships. Further longitudinal research would provide greater insight into the evolution of these dynamics across the life course. From the current research, it is not possible to know how relationships evolve and whether differences that may exist between cohorts reflect cohort effects, developmental factors or learning about a specific relationship with increasing duration. These are important dynamics but ones that require much longer periods of study to clarify. Developmental studies have shown, for instance, that older people are able to regulate their emotions more effectively compared to people of working age (Carstensen et al., 2011) and that ageing well often involves a deepened sense of connection with others (Scheibe & Carstensen, 2010). Similarly, evolving life values and goals characterise changes in attachment over time (Chopik, Edelstein, & Grimm, 2017), contributing to the potential for changes in relationship quality at different life stages. Factors such as loneliness alternatively are found to show cohort effects (Suanet & van Tilburg, 2019) with increasing mastery and self-efficacy across birth cohorts, whilst the interdependence that develops over time may also be at least partly attributable to the developing attunement and learning which occurs between partners (Aune & Aune, 2019).

Similarly, in younger groups, the links between psychological flexibility and attachment may be particularly important among adolescent cohorts as they enter their first relationships (Salande & Hawkins, 2017). In this context, positive emotional experiences linked to a more psychologically flexible response style, also

characterise social competence and this has been associated with a secure attachment style (Simpson, Collins, Tran, & Haydon, 2007). Social competence has been found to be important both in enhanced conflict resolution and in collaborative tasks, with downstream implications for relationship quality. Clarification of how and why patterns emerge between psychological flexibility and relationship quality, would therefore deepen understanding of how it may be possible to provide intervention to support healthy relationships.

Data collection for Chapter 5, phase 3, spanned the emergence of the COVID-19 pandemic and subsequent lockdown in the UK, resulting in restrictions on movement and a requirement to navigate unfamiliar circumstances. At the point of writing, the longevity of these changes was unknown, and studies have identified ways in which wellbeing and relationships have been affected by the pandemic so far (Fluharty & Fancourt, 2020; Pietromonaco & Overall, 2020; Wright, Steptoe, & Fancourt, 2020). In this context, psychological flexibility has been associated with greater overall wellbeing and lower levels of anxiety and depression (Dawson & Golijani-Moghaddam, 2020, Mallett et al., under review), with lower levels of psychological flexibility related to higher levels of general distress (Kroska et al., 2020). Among a sample of 1003 parents, 86% of whom were in romantic relationships, psychological flexibility moderated links between COVID-related stressors and desire for death as mediated by perceptions of perceived burden on others (Crasta, Daks, & Rogge, 2020). Psychological flexibility has also been found not only to buffer the negative effects of increased social isolation but also to amplify the benefits of social connection (B. M. Smith, Twohy, & Smith, 2020). Requiring people to spend more time with their romantic partner than they have previously, as during a national

lockdown, may have positive consequences (Perelli-Harris & Walzenbach, 2020), but it also raises the question of what happens in lower-quality relationships. How couples adapt to increasing stressors is thought to be influenced by the broader pre-existing context of the relationship such that difficulties may be exacerbated, resulting in increased harmful relationship behaviours such as aggression or withdrawal (Pietromonaco & Overall, 2020; Usher, Bhullar, Durkin, Gyamfi, & Jackson, 2020). Assessing how psychological flexibility plays into these complex dynamics would provide a good test of boundary conditions to establish which types of behaviour are functional and how perceptions of relationships may change, under pressure, both in the moment and in the longer term.

Further establishing the causality between psychological flexibility and relationship quality is also important. Although the over-time components of this research identified prospective links between psychological flexibility and relationship quality, establishing whether the same patterns emerge across relationship contexts would be valuable in informing not only how couples in distress may be supported but how couples may navigate relationship and contextual challenges more broadly. Further understanding the characteristics of how people transition in and out of relationships successfully and how a psychologically flexible response style may help navigate these transitions would also deepen understanding of key relationship processes, potentially also providing an important insight into how psychological flexibility contributes to patterns of singleness. It may be for instance that maintaining a self-compassionate and self-accepting attitude is linked not only to adaptive coping strategies and relationship adjustment in couples (Galhardo et al., 2011), but also extends to singles in specific ways.

Similarly, understanding dynamics within single-sex relationships and other relationship dyads, such as parent-child (e.g. Merz, Consedine, Schulze, & Schuengel, 2009) or work-place relationships (e.g. Heintz & Ruch, 2020), would be a few of the ways that this work could usefully develop to further understanding of how people are interconnected and how individuals contribute to the context and wellbeing of those with whom they interact on a regular basis.

7.7 Concluding Remarks

Six studies have contributed novel insight into how psychological flexibility is important in romantic relationships. Not only is psychological flexibility associated with one's own perceptions of relationship quality, but it also linked to those of one's partner. This interdependence is mediated by both PA and NA in different ways over time. The findings have implications for how relationship quality may be enhanced both in distressed and non-distressed couples. Future research could usefully examine how psychological flexibility plays into the evolution of relationships over time and the specific behaviours which contribute to effective relational functioning particularly during times of difficulty. Further deepening our understanding of how we ripple is vital not only to individual level functioning but also to interpersonal contexts and, potentially, beyond.

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Appendix A: Study measures

Comprehensive assessment of Acceptance and Commitment Therapy processes (CompACT): Studies 1-6

Please use the following scale to indicate how strongly you agree with each statement:

	Strongly disagree					Strongly agree
	0	1	2	3	4	5	6

I tell myself that I shouldn't have certain thoughts

I try to stay busy to keep thoughts or feelings from coming

One of my big goals is to be free from painful emotions

I go out of my way to avoid situations that might bring difficult thoughts, feelings or sensations

Even when something is important to me, I'll rarely do it if there is a chance it will upset me

I work hard to keep out upsetting feelings

I can take thoughts and feelings as they come without attempting to control or avoid them

I am willing to fully experience whatever thoughts, feelings and sensations come up for me, without trying to change or defend against them

I get so caught up in my thoughts that I am unable to do the things that I most want to do

Thoughts are just thoughts – they don't control what I do

It seems that I am 'running on automatic' without much awareness of what I'm doing

Even when doing the things that matter to me, I find myself doing them without paying attention

I rush through meaningful activities without being really attentive to them

I do jobs or tasks automatically, without being aware of what I'm doing

I find it difficult to stay focussed on what's happening in the present

I make choices based on what is important to me, even if it is stressful

My values are really reflected in my behaviour.

I am able to follow my long term plans including times when progress is slow

I can keep going with something when it's important to me

I behave in line with my personal values

I undertake things that are meaningful to me, even when I find it hard to do so

I act in ways that are consistent with how I wish to live my life

I can identify the things that really matter to me in life and pursue them

Positive and Negative Affect Scale (PANAS): Studies 1-6

This scale consists of a number of words that describe different feelings and emotions. Read each word and then mark the appropriate answer next to it, using the scale below. Indicate to what extent you have felt this way during the past week.

	1 Very slightly/not at all	2 A little	3 Moderately	4 Quite a bit	5 Extremely
Interested					
Irritable					
Distressed					
Alert					
Excited					
Ashamed					
Upset					
Inspired					
Strong					
Nervous					
Guilty					
Determined					
Scared					
Attentive					
Hostile					
Jittery					
Enthusiastic					
Active					
Proud					
Afraid					

Satisfaction with Life Scale: Studies 1-4

Below are five statements with which you may agree or disagree. Using the 1-7 scale below, indicate your agreement with each item.

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
	1	2	3	4	5	6	7
In most ways my life is close to my ideal.							
The conditions of my life are excellent.							
I am satisfied with my life.							
So far I have gotten the important things I want in life.							
If I could live my life over, I would change almost nothing.							

Ryff's Psychological Well-being Scale (PWBS): Studies 1-3

Please indicate your degree of agreement with the following statements, using the scale provided.

	Strongly agree					Strongly disagree	
	1	2	3	4	5	6	7
I am not afraid to voice my opinions, even when they are in opposition to the opinions of most people							
In general, I feel I am in charge of the situation in which I live							
Most people see me as loving and affectionate							
When I look at the story of my life, I am pleased with how things have turned out							
The demands of everyday life often get me down							
I think it is important to have new experiences that challenge how you think about yourself and the world							
I have a sense of direction and purpose in life							
I tend to worry about what other people think of me							
When I think about it, I haven't really improved much as a person over the years							
My daily activities often seem trivial and unimportant to me.							
I tend to be influenced by people with strong opinions							
I am quite good at managing the many responsibilities of my daily life							
I enjoy personal and mutual conversations with family members or friends							
I don't have a good sense of what it is I'm trying to accomplish in life							
I like most aspects of my personality.							
I have confidence in my opinions, even if they are contrary to the general consensus							
I enjoy making plans for the future and working to make them a reality							
In many ways, I feel disappointed about my achievements in life							
I have difficulty arranging my life in a way that is satisfying to me							
For me, life has been a continuous process of learning, changing, and growth							
I have not experienced many warm and trusting relationships with others							
My attitude about myself is probably not as positive as most people feel about themselves							
I judge myself by what I think is important, not by the values of what others think is important.							
I gave up trying to make big improvements or changes in my life a long time ago.							

Perceived Relationship Quality Component (PRQC): Studies 1-6

Thinking about your current relationship, use the scale below to answer the following questions:

	Not at all				Extremely
	1 2	3	4	5	6

How satisfied are you with your relationship?
How content are you with your relationship?
How happy are you with your relationship?
How committed are you to your relationship?
How dedicated are you to your relationship?
How devoted are you to your relationship?
How intimate is your relationship?
How close is your relationship?
How connected are you to your partner?
How much do you trust your partner?
How much can you count on your partner?
How dependable is your partner?
How passionate is your relationship?
How lustful is your relationship?
How sexually intense is your relationship?
How much do you love your partner?
How much do you adore your partner?
How much do you cherish your partner?

Bolded items indicate those used in Study 3.

Investment Scale: Study 5

Items comprise the Commitment and Satisfaction subscales of this measure.

Please indicate the extent to which you disagree or agree with the following statements:

	Completely disagree	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree	Completely agree
Commitment									
It is likely that I will date someone other than my partner in the next year									
I feel very attached to our relationship – very strongly linked to my partner									
I want our relationship to last forever									
I am committed to maintaining my relationship with my partner									
I would not feel very upset if your relationship were to end in the near future									

I want our relationship
to last a very long time

I am oriented toward
the long-term future of
my relationship; for
example, I imagine
being with my partner
several years from now

Satisfaction

My relationship is close
to ideal

Our relationship does a
good job of fulfilling my
needs for intimacy,
companionship, etc.

Our relationship makes
me very happy

My relationship is much
better than others'
relationships

I feel satisfied with our
relationship

Trust Scale: Study 5

Please use the scale below and respond to the following statements in terms of how well each characterises your relationship with your partner.

	Strongly agree			Neutral			Strongly disagree
	1	2	3	4	5	6	7
I can rely on my partner to react in a positive way when I expose my weaknesses to him/her							
I am certain that my partner would not cheat on me, even if the opportunity arose and there was no chance that he/she would get caught							
I feel very uncomfortable when my partner has to make decisions which will affect me personally							
I have found that my partner is usually dependable, especially when it comes to things that are important to me							
Even when I don't know how my partner will react, I feel comfortable telling him/ her anything about myself, even those things of which I am ashamed							
My partner has proven to be trustworthy and I am willing to let him/her engage in activities which other partners find too threatening							
Even if I have no reason to expect my partner to share things with me, I still feel certain that he/ she will							
Though times may change and the future is uncertain, I know my partner will always be ready and willing to offer me strength and support							
I am never certain that my partner won't do something that I dislike or will embarrass me							
When I am with my partner, I feel secure in facing unknown new situations							
Even when my partner makes excuses which sound rather unlikely, I am confident that he/ she is telling the truth							
My partner behaves in a very consistent manner							
When I share my problems with my partner, I know he/ she will respond in loving way even before I say anything							
I sometimes avoid my partner because he/ she is unpredictable and I fear saying or doing something which might create conflict							
Whenever we have to make an important decision in a situation we have never							

encountered before, I know my partner will be concerned about my welfare

My partner is very unpredictable. I never know how he/ she is going to act one day to the next

I can rely on my partner to keep the promises he/ she makes to me

Perceived Partner Responsiveness Scale (PPR) – Romantic Partner Version: Studies 1-4

Instructions: Please answer the following questions about your current romantic partner.

Response categories

Not at all true		Somewhat true		Moderately true		Very true		Completely true
1	2	3	4	5	6	7	8	9

My partner usually:

Is an excellent judge of my character

Sees the 'real' me

Sees the same virtues and faults in me as I see in myself

'gets the facts right' about me

Esteems me, shortcomings and all

Knows me well

Values and respects the whole package that is the 'real' me

Usually seems to focus on the 'best side' of me

Is aware of what I'm thinking and feeling

Understands me

Really listens to me

Expresses liking and encouragement for me.

Seems interested in what I am thinking and feeling

Seems interested in doing things with me.

Values my abilities and opinions.

Is on 'the same wavelength' with me

Respects me

Is responsive to my needs

Appendix B: Factor ordering for 6-factor solutions for individual and combined samples.

	F1 (CA)	F2 (CA)	F3 (CA)	F4 (CA)	F5 (CA)	F6 (CA)	CVE	IfC
Study 1	Mind accept (.928)	Rel qual (.960)	Pos aff (.917)	Neg aff (.928)	Life sat * (.931)	Val act * (.905)	49.50	14
Study 2	Life Sat (.933)	Rel qual (.960)	Pos aff (.917)	Valued action (.916)	Mind acc (.935)	Neg aff (.928)	53.56	11
Combined	Life Sat (.923)	Rel Qual (.960)	Pos aff (.917)	Valued action (.910)	Mind accept (.893)	Neg aff (.928)	51.80	10

Factor abbreviations: Life sat = life satisfaction, Rel qual = perceived relationship quality, pos aff = positive affect, beh aw = behavioural awareness, neg aff = negative affect, op to exp = openness to experience, CVE = percentage cumulative variance explained. * = negative weighting of items, IfC= Iterations for Convergence

Appendix C: Materials used in Chapter 6

INFORMATION SHEET

PROJECT TITLE: Psychological Processes in Romantic Relationships

INVESTIGATORS:

Joey Koh, Desmond Lee and Katya Tavi, Undergraduate Students, Department of Psychology, University of Edinburgh

Karen Twiselton, PhD Student, Department of Psychology, University of Edinburgh

Dr. Sarah Stanton, Lecturer, Department of Psychology, University of Edinburgh

INVITATION TO PARTICIPATE

The Health and Relationship Processes Lab of the Department of Psychology at the University of Edinburgh, invites you to take part in a research study investigating how psychological flexibility affects your romantic relationship through the use of emotion regulation strategies. To be eligible to participate in this study, you must be at least 18 years of age and be currently involved in a romantic relationship.

WHAT WILL HAPPEN

In this study, you will be asked to answer some basic demographic questions and complete a questionnaire. You will then undergo an audio training exercise (approximate length of 5 minutes). Next, you will be asked to answer some other questionnaires and lastly a prompt question before a debriefing when you will have an opportunity to learn more about the study and what we are investigating.

TIME COMMITMENT

The study typically takes approximately 45 minutes across one session.

PARTICIPANTS' RIGHTS

You may decide to stop being a part of this study at any time without explanation. You have the right to ask that any data you have supplied to that point will be withdrawn/destroyed. You have the right to omit or refuse to answer or respond to any question that is asked of you. You also have the right to have your questions about the study procedures answered (unless answering these questions would

interfere with the study's outcome). If you have any questions as a result of reading this Information Sheet, please ask the investigators before beginning the study.

BENEFITS AND RISKS

Participation in this study involves completion of some standardized tests which are routinely used to explore romantic relationships. Scores from these tests are not used for any diagnostic purposes in this study and it is not possible to provide feedback on individual scores to participants.

COST, REIMBURSEMENT, AND COMPENSATION

Your participation in this study is voluntary and you will not be compensated. If you are a first year psychology student, you will receive course credit for your participation.

CONFIDENTIALITY/ANONYMITY

Your data will remain confidential, and when your role with this project is complete your data will be anonymized. From that time, there will be no record that links the data collected from you with any personal information from which you could be identified (e.g., your name, address, email, etc.). Up until the point at which your data have been anonymized, you can decide not to consent to having your data included in further analyses. Once anonymized, these data may be made available to researchers via accessible data repositories (e.g. the Open Science Framework) and possibly used for novel purposes.

FOR FURTHER INFORMATION

Joey Koh, Desmond Lee, Katya Tavi, Karen Twiselton and Dr. Sarah Stanton will be glad to answer your questions about this study at any time. You may contact them by email at;

If you would like to find out about the final results of this study, you should contact anyone above by email.

CONSENT FORM

PROJECT TITLE: Psychological Processes in Romantic Relationships

INVESTIGATORS:

Joey Koh, Desmond Lee, Katya Tavi, Undergraduate Students, Department of Psychology, University of Edinburgh

Karen Twiselton, PhD Student, Department of Psychology, University of Edinburgh

Dr. Sarah Stanton, Lecturer, Department of Psychology, University of Edinburgh

By selecting "I have read the Participant Information Sheet and I AGREE to participate in this study" below, you are agreeing that:

1) you have read and understood the Participant Information Sheet;
2) questions about your participation in this study have been answered satisfactorily;
3) you are aware of the potential risks (if any) involved in the study;
4) you are taking part in this research study voluntarily (without coercion);
5) anonymized data may be shared only in public research repositories.

If you do not wish to participate in the study, please select "I DO NOT AGREE to participate in this study" below, and you will be directed to an exit screen.

What is your age?

Which of the following best describes your race/ethnicity?

○ White, Caucasian, Anglo

○ Asian, Pacific Islander

○ Black, African, Caribbean

○ Hispanic, Latino/a, Chicano/a

○ East Indian

○ Aboriginal, Native

○ Bi-racial, Multi-racial

○ If you feel that your race/ethnicity is not represented by one of the above options, we invite you to write in how you identify your race/ethnicity in the following space:

How long have you been in a relationship with your current romantic partner? (Please provide an answer for both years and months; for example, if you have been with your current partner for 4.5 years please enter 4 years 6 months.)

0 years

0 months

Are you and your current romantic partner cohabiting (i.e., living together)?

○ Yes

○ No

Which of the following best describes your sexual orientation?

○ Heterosexual

○ Gay

○ Lesbian

○ Bisexual, Pansexual

○ Asexual

○ If you feel that your sexual orientation is not represented by one of the above options, we invite you to write in how you identify your sexual orientation in the following space:

Which of the following best describes your current relationship status?

○ Single/Not in a relationship

○ Dating my current partner and others

○ Dating my current partner exclusively

○ Common-law

○ Engaged

○ Married

Please use the following scale to indicate how strongly you agree with each statement:

	Strongly disagree 0	1	2	3	4	5	Strongly agree 6
I tell myself that I shouldn't have certain thoughts.	○	○	○	○	○	○	○
I try to stay busy to keep thoughts or feelings from coming.	○	○	○	○	○	○	○
One of my big goals is to be free from painful emotions.	○	○	○	○	○	○	○
I go out of my way to avoid situations that might bring difficult thoughts, feelings or sensations.	○	○	○	○	○	○	○
Even when something is important to me, I'll rarely do it if there is a chance it will upset me.	○	○	○	○	○	○	○
I work hard to keep out upsetting feelings.	○	○	○	○	○	○	○
I can take thoughts and feelings as they come, without attempting to control or avoid them.	○	○	○	○	○	○	○
I am willing to fully experience whatever thoughts, feelings and sensations come up for me, without trying to change or defend against them.	○	○	○	○	○	○	○
I get so caught up in my thoughts that I am unable to do the things that I most want to do.	○	○	○	○	○	○	○
Thoughts are just thoughts – they don't control what I do.	○	○	○	○	○	○	○
It seems that I am 'running on automatic' without much awareness of what I'm doing.	○	○	○	○	○	○	○
Even when doing the things that matter to me, I find myself doing them without paying attention.	○	○	○	○	○	○	○
I rush through meaningful activities without being really attentive to them.	○	○	○	○	○	○	○

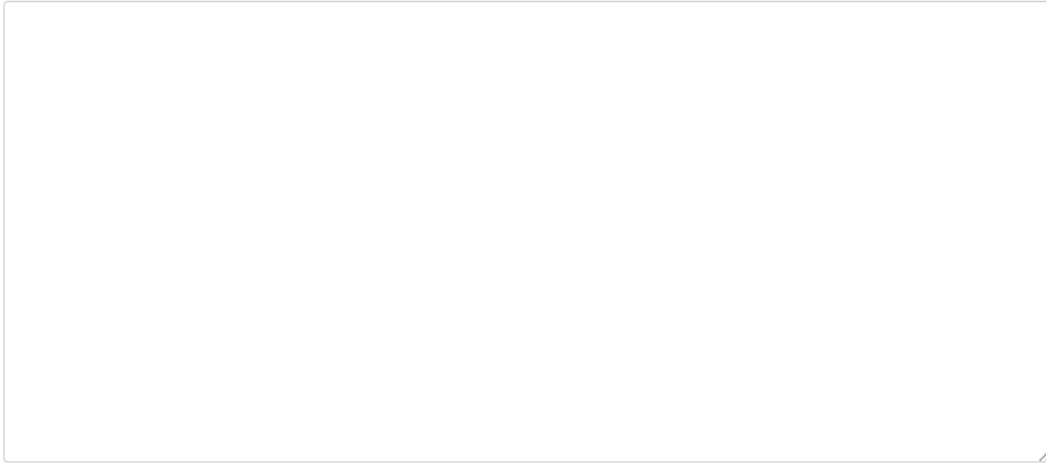|							
I do jobs or tasks automatically, without being aware of what I'm doing.	○	○	○	○	○	○	○
I find it difficult to stay focused on what's happening in the present.	○	○	○	○	○	○	○
I make choices based on what is important to me, even if it is stressful.	○	○	○	○	○	○	○
My values are really reflected in my behaviour.	○	○	○	○	○	○	○
I am able to follow my long term plans including times when progress is slow.	○	○	○	○	○	○	○
I can keep going with something when it's important to me.	○	○	○	○	○	○	○
I behave in line with my personal values.	○	○	○	○	○	○	○
I undertake things that are meaningful to me, even when I find it hard to do so.	○	○	○	○	○	○	○
I act in ways that are consistent with how I wish to live my life.	○	○	○	○	○	○	○
I can identify the things that really matter to me in life and pursue them.	○	○	○	○	○	○	○

Please click the link provided below and listen to the audio before continuing to the next question.

AUDIO

Now we are interested in your general perceptions of your emotion regulation strategies. Below are a number of statements that may or may not apply to you. Please indicate the extent to which you disagree or agree with each statement using the scale provided.

	Strongly disagree 1	2	3	Neutral / Don't Know 4	5	6	Strongly Agree 7
If I wanted to feel more positive emotion (such as joy or gratitude) right now, I would change what I'm thinking about.	○	○	○	○	○	○	○
If I was facing a stressful situation at the moment, I would make myself think about it in a way that helps me stay calm.	○	○	○	○	○	○	○
If I was feeling negative emotion (such as sadness or anger) and wanted to lessen it, I would change what I'm thinking about.	○	○	○	○	○	○	○
If I was currently feeling positive emotions, I would be careful not to express them.	○	○	○	○	○	○	○
If I wanted to feel more positive emotion now, I would change the way I'm thinking about my current situation.	○	○	○	○	○	○	○
Right now, if I wanted to control my emotions, I would change the way I think about the current situation.	○	○	○	○	○	○	○
If I was feeling negative emotions now, I would make sure not to express them.	○	○	○	○	○	○	○
If I wanted to feel less negative emotion, I would change the way I'm thinking about the current situation.	○	○	○	○	○	○	○
Right now, I prefer to keep my emotions to myself.	○	○	○	○	○	○	○
At this moment, if I wanted to control my emotions, I would choose not to express them.	○	○	○	○	○	○	○

In a recent conversation with your romantic partner, you discover that he/she betrayed your trust by telling a mutual friend some very private details about your past – very intimate and personal details that you have confided in them but in no one else. In 5 minutes on a computer, describe your feelings at the moment when you found out and how would you deal with the situation?

DEBRIEFING INFORMATION

PROJECT TITLE: Psychological Processes in Romantic Relationships

INVESTIGATORS:

Joey Koh, Desmond Lee, Katya Tavi, Undergraduate Students, Department of Psychology, University of Edinburgh

Karen Twiselton, PhD Student, Department of Psychology, University of Edinburgh

Dr. Sarah Stanton, Lecturer, Department of Psychology, University of Edinburgh

Thank you for participating in this research. You have made a meaningful contribution to a developing body of knowledge in psychology, and we would like to acknowledge that contribution. Now that your participation is complete, we can tell you more about the study you just took part in.

This study aims to investigate the effect of psychological flexibility in a romantic context

to see if psychological flexibility is associated with better relationship quality. We investigated whether people who are more psychological flexible use emotion regulation strategies more effectively and whether this impacted on their relationship quality. We also explored how individual wellbeing impacts on relationship quality and whether this is associated with higher levels of psychological flexibility.

Psychological flexibility combines how a person recognises and adapts to fluctuating life demands, with their awareness and commitment to behaviours in line with their personal values and goals. Research suggests that some types of emotion regulation strategies may be more effective in specific situations, and we are interested to explore how this may be important within the relationship context. This information could potentially be useful in helping to enhance relationship quality. The first aspect of this study therefore explored how psychological flexibility may help people to regulate their emotions effectively within the relational context.

The second aspect of this study builds on previous research which explored whether individual wellbeing is influential in the association between psychological flexibility and relationship quality. This research found that those who experienced higher levels of wellbeing were more likely to experience both higher levels of psychological flexibility and higher quality relationships. Here, we sought to investigate if it was

possible to raise individual wellbeing through enhancing psychological flexibility, and exploring the impacts on relationship quality.

We ask that you do not discuss this study with anyone who might take part in it later. However, we understand that the study may evoke feelings that you would like to discuss with your friends or partner, thus feel free to do so if they have already taken part in the study, are ineligible, or will not participate. If you print a copy of this information, we similarly ask that you please take care to avoid leaving this debriefing sheet where others may see it. We are interested in how thoughts, feelings, and behaviour occur naturally and prior knowledge of the study's goals may bias responses.

Please contact the researchers with any further questions about this study. You may contact them by email at;

If you have any questions regarding this research, or if you would like to know the outcomes of the study, feel free to contact any of us above.

Thank you again for your time and cooperation; it is greatly appreciated.