**Remembering for Relationships: Brief Cognitive-Reminiscence Therapy
Improves Young Adults' Perceptions About Self and Others in Social Relationships**

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Abstract

Reminiscence-based interventions involve the guided recall and interpretation of autobiographical memories to promote adaptive thinking. This study involved secondary analyses of a recent trial of a positively focused, group-based, three-session version of cognitive-remembrance therapy (CRT) on perceptions of general relationship quality and interpersonally related psychological resources in young adults. A community sample ($N = 62$, $M_{\text{age}} = 24.6$ [$SD = 3.1$], 71% identified as cisgender women and 29% identified as cisgender men) of young adults were randomised into a CRT and wait-list condition. Participants completed assessments measuring perceived general relationship quality (relationship satisfaction, emotional intimacy, commitment, and trust) and perceptions of self and others within relationships (relationship self-esteem, relationship self-efficacy, relationship optimism and meaning in relationships). The CRT group, relative to the control group, scored significantly higher on perceived relationship quality ($d = 0.62$), and higher on generalized relationship self-efficacy ($d = 0.70$), relationship self-esteem ($d = 0.59$), and relationship optimism ($d = 0.57$) at the follow-up. Group differences for relationship meaning were not statistically significant (small to moderate). A brief, positive-focused intervention of guided recall of autobiographical memories led to more adaptive perceptions about self and others within the context of relationships in young adults. Replication studies with larger samples are needed, and outside of a pandemic lockdown context. Future research may expand CRT to target other relationship variables, assess the impacts of different doses, explore relationships in specific populations, and better understand the mechanisms for change.

Keywords: reminiscence therapy; cognitive reminiscence therapy; relationships; interpersonal; attachment; perceived relationship quality; self-esteem; self-efficacy; meaning; optimism; young adults

Reminiscence-based interventions focus on remembering personal experiences and events and reflecting about the details and meaning of these experiences. During reminiscence-based interventions people are typically guided through the recollection and evaluation of memories, with the purpose of integrating them into a coherent, meaningful, and positive understanding of one's life and oneself. These interventions and activities have been shown to yield benefits for individual outcomes such as positive well-being, depressive symptoms, cognitive functioning, and self-efficacy (Pinquart & Forstmeier, 2012), and are effective in diverse populations, including clinically depressed individuals (Westerhof & Slatman, 2019), people with chronic physical illness (Pinquart & Forstmeier, 2012), and cognitive impairments such as dementia (Park et al., 2019).

Viewed through the lens of attachment theory, it could be surmised that reminiscence-based interventions may also change perceptions about social relationships. A growing body of evidence indicates that one primary function of reminiscence is to facilitate stronger relationships, or social bonding, and support self-conceptualisation processes (Bluck et al., 2005; Bluck & Alea, 2011), particularly in younger adults (Vranić et al., 2018). Attachment theory provides important theoretical insights into how remembered interpersonal experiences with attachment figures early in life (Bowlby, 1969/1982), and into adulthood (Gillath et al., 2016; Mikulincer & Shaver, 2016), may influence generalised mental representations and interpretations about self, others, and social relationships. These generalised mental representations (or schemas) about relationships entail people's memories and interpretations of past interpersonal experiences as well as beliefs, goals, and expectations regarding current and future relationships (Collins & Allard, 2001; Dodge & Pettit, 2003; Gillath et al., 2016). Since the retrieval and reminiscence of autobiographical memories appears to be intrinsically involved in the encoding and generalisation of

interpersonal cognition, interventions specifically utilizing reminiscence may be one way to modify one's perceptions of relationships, oneself, and others.

In support of this, studies have successfully used relationship-focused memory priming methods (termed *security priming*) to temporarily enhance people's sense of attachment security or insecurity (Gillath & Karantzas, 2019; Gillath et al., 2016; Mikulincer & Shaver, 2016). Security priming is a method used primarily for research purposes to examine the impacts of attachment security or insecurity, rather than as a means for therapeutic intervention. The process involves exposing individuals to specific, relationship-focused stimuli, such as security enhancing words (e.g., "love", "hug") or images (e.g., Madonna and child), names of attachment figures, or recalling or imagining interpersonal experiences or scenarios. Evidence from recent qualitative and quantitative reviews conducted by Gillath, Karantzas and colleagues (Gillath & Karantzas, 2019; Gillath et al., 2022) have demonstrated that security priming enhances people's attachment security, empathy, perspective taking abilities, initiation of social interaction, response inhibition, and cognitive reappraisal (Gillath & Karantzas, 2019; Gillath et al., 2022). Security priming has also been found to reduce prejudice, the dissolution of social ties, and negative affect (Gillath & Karantzas, 2019; Gillath et al., 2022). Across these reviews, Gillath, Karantzas and colleagues found that priming methods which involved consciously (supraliminally) administered guided imagery or visualization exercises were effective.

The theoretical processes that underpin security priming are like those used in reminiscence-based interventions, suggesting that reminiscence-based interventions should also improve general relationship processes. As in reminiscence-based interventions, supraliminal security priming tasks that involve conscious visualization or guided imagery require participants to spend time visualizing, in detail, specific interpersonal scenarios; for instance, recalling an interaction with a close other involving the receipt of love, comfort, and

security. Such exercises are assumed to trigger multiple nodes within a person's semantic network through a process of spreading activation (Collins & Loftus, 1975; Förster & Liberman, 2007), thereby fostering a temporary sense of safety and support (Gillath & Karantzas, 2019). Reminiscence-based interventions leverage and expand upon these processes in three main ways:

- (1) by encouraging simultaneous cognitive and verbal elaboration using detail-oriented questioning and guidance, thus enhancing memory specificity of particular experiences;
- (2) through the active contributions of a suitably trained professional to guide the recall of memories and, where relevant, use cognitive restructuring techniques to promote more adaptive interpretations of experiences; and
- (3) through eliciting recall, elaboration and adaptive interpretation of multiple memories, across multiple sessions, and combining them into overarching narratives.

Considering this, it stands to reason that reminiscence-based interventions could provide an effective means of promoting longer-lasting adaptations in perceptions about the quality of one's general relationships, and the positive contributions of self and others to those relationships.

Despite the potential value of reminiscence interventions for influencing such perceptions, there is little research to consolidate our understanding of their specific impacts. In a meta-analysis of 16 reminiscence studies, Pinquart and Forstmeier (2012) found that reminiscence-based interventions had a small, but significant, effect on social integration in a population of predominantly older adults (i.e., frequency and quality of social contact, loneliness). As is traditional in the reminiscence field, nearly all of the included research examined older adult populations. Recent studies have argued that the known benefits of

reminiscence-based approaches may apply equally to younger adults (Hallford & Mellor, 2013), and have demonstrated positive effects of reminiscence-based programs in depressed (Hallford & Mellor, 2016a) and non-clinical (Hallford et al., 2021) populations of young adults, across a range of wellbeing outcomes. Despite these findings, to the authors' knowledge only two experimental studies of reminiscence-based activities have targeted relationship factors in young adults. These studies demonstrated large, significant changes in relationship satisfaction (Bazzini et al., 2007), and emotional intimacy (Alea & Bluck, 2007), following reminiscence inductions. Notably, these studies focused specifically on dimensions of perceived relationship quality in romantic dyads, and not on the quality of their relationships in general, nor how they perceived themselves and others in relationships.

Young adults stand to benefit from interventions focused on improving perceptions about general relationships, as they are more likely than their older counterparts to be actively forming their identity and exploring new and autonomous social roles (Doumen et al., 2012; Wood et al., 2018). Research also highlights a disproportionate and rising prevalence of maladaptive social perceptions and functioning in young adults (e.g., Merikangas et al., 2010; Burstein et al., 2011; Feehan et al., 1994; Jefferies & Ungar, 2020), with as much as 36 per cent of young adult populations around the world experiencing fear of general social situations disproportionate to situational threats (Jefferies & Ungar, 2020). This can significantly compromise functioning across various domains, such as school and work performance, unemployment, and quality of social support networks and close relationships (Jefferies & Ungar, 2020). This highlights the importance of identifying effective and acceptable treatments targeting general social perceptions for this age group. Cognitive-reminiscence therapy (CRT) is one type of intervention shown to support other aspects of wellbeing in clinically depressed (Hallford & Mellor, 2016a) and non-clinical (Hallford et al., 2021) young adults and has been indicated as acceptable, appropriate, and beneficial by this

population (Hallford et al., 2019). Given this, the current study explored whether a cognitive-remembrance therapy intervention would affect generalisable schemas about general relationships in young adults.

The Current Study

The present study set out to examine whether a structured reminiscence-based intervention enhanced young adults' perceptions of their general relationships. The study involved a reanalysis of a recent trial of a brief (three-session), positively focused, group- and teleconference-based intervention. In findings reported elsewhere (*citation removed for blinding*), this trial provided evidence that young adults in the intervention group reported increased psychological resources (self-esteem, self-efficacy, meaning in life, optimism) and mental well-being (depression, anxiety, and stress symptoms). In the current study, we focus on relationship variables, and in particular, whether the intervention influences young adults' perceptions of the quality of their relationships, and their perceptions of themselves in relationships immediately after the study and at a two-week follow up timepoint. The three sessions in the intervention focused consecutively on positive memories drawn from the life domains of relationships, overcoming challenges, and meaning in life. The first session specifically focused on the participants' past general relationships, and particularly on situations in which they were supported by others. Content about past experiences involving other people were also a key part of the reminiscence activities in sessions two and three (described in more detail below). Each session provided opportunities to attend to positive interpersonal memories, and to adaptively interpret participants' relationship experiences.

The aim of the study was to examine the young adults' perceptions of the quality of their general relationships, and their perceptions of themselves in their relationships. To do this we assessed several dimensions of perceived relationship quality, including satisfaction, commitment, emotional intimacy, and trust. Other interpersonal-related psychological

resources (i.e., perceptions about self and others within the context of relationships) were assessed, including relationship self-efficacy, the perception of oneself as being competent to overcome challenges that occur within relationships, and relationship self-esteem, the perception of oneself as being worthwhile and valuable within relationships. We also assessed how much meaning people derived from their relationships, and their relationship optimism, referring to generalised positive expectancies about their relationships. Scoring higher on these dimensions has been shown to enhance perceptions and functioning within relationships (relationship self-esteem [de Moor et al. 2020; Orth et al., 2012; Marshall et al., 2014]), support reconstruction or reinforcement of positive beliefs and attitudes about self and others to enhance social appraisal (relationship self-efficacy [Caprara & Steca, 2005; Bandura et al., 2003]), provide a means of regulating individuals' emotions within interpersonal relationships (relationship meaning [Botha, 2014]), and is associated with higher perceived relationship quality (relationship optimism [Lemay, 2016]). It was hypothesised that the young adults in the intervention group, relative to a control group, would report significantly higher perceived quality of their general relationships, and higher relationship self-efficacy, self-esteem, meaning, and optimism.

Methods

Design

The randomised controlled experiment included two conditions (waitlist control; Cognitive Reminiscence Therapy [CRT]) and three time-points (baseline; post-CRT; two-week follow-up). The primary outcomes were perceived relationship quality, relationship self-esteem, relationship self-efficacy, relationship meaning, and relationship optimism.

Participants

Nationwide recruitment and data collection was conducted from Melbourne, Australia. A community sample of young adults was recruited via an advertisement

disseminated through personal networks, social media and snowball sampling between June and September 2020. Pre-determined inclusion criteria required participants to be (1) aged between 18 to 29 years, (2) Australian residents, (3) English-speaking, and (4) able to access internet at home. The study was not specifically powered to detect changes in relationship variables, however, the previous study had an *a priori* power analysis that estimated that 52 participants would be needed (26 per condition) to detect a large between-groups effect size of $d = 0.80$; ($1-\beta = .80$; $\alpha = .05$; Cohen, 1992). In total, there were 62 participants recruited (31 in each condition) and so the current study was powered to detect relatively smaller effects if they occurred.

A total of 113 young adults self-nominated to be contacted regarding the study and 78 (40 CRT, 38 control) agreed to take part. Sixteen participants (nine CRT, seven control) subsequently withdrew from the study, including fourteen after baseline, and two after the first session. Sixty-two participants (31 CRT; 31 control) completed the study and were included in the final analysis. There were no significant differences between completers and non-completers on age, $t(77) = 0.51, p = .610$ (overall $M = 24.6, SD = 3.1$, range 18-29); gender, $\chi^2(1) = 0.02, p = .877$ (overall 71% identified as cisgender women and 29% identified as cisgender men), or education level, $\chi^2(1) = 0.03, p = .872$ (overall 22.4% secondary school, 11.3% diploma, 45.2% undergraduate degree, 21% postgraduate degree). Around half of the sample was in a romantic relationship (56.5%) with no difference between the groups, $\chi^2(1) = 0.06, p = .798$. Ethnicity was approximately distributed across completers and non-completers (overall 66.1% Caucasian, 21% Asian, 6.5% Latino, 6.5% “other”), with cell count frequencies that were too small to conduct chi-square analyses.

Materials

Perceived Quality of General Relationships

Perceived general relationship quality was measured using an adaptation of Fletcher, Simpson, and Thomas' (2000) shortened Perceived Relationship Quality Components (PRQC) scale. The current study used four items from this scale, which were selected based on their suitability for adaptation to perceptions of general relationships. These items measure distinct domains of PRQ: Satisfaction, Commitment, Intimacy and Trust. The items were originally derived from well-validated instruments, which are specific to each domain of PRQ. Items were adjusted to reflect general relationships: "How satisfied are you with your relationships?" (satisfaction), "How committed are you to your relationships?" (commitment), "How much do you trust people in your relationships?" (trust), and "How emotionally intimate are your relationships?" (intimacy). Participants were instructed to reflect on the quality of their relationships overall. Participants responded to each measure using a 7-point rating scale, ranging from 1 (not at all) to 7 (extremely). The items were averaged together, with higher scores indicating higher perceived relationship quality. The original short-form scale has demonstrated good internal consistency (Fletcher et al., 2001; Nofle & Shaver, 2006). In the current study, the adapted scale showed good internal consistency (MacDonald's $\omega = .84$).

Optimism in General Relationships

Optimism about relationships was measured using a three-item, short-form version of The Life Orientation Test - Revised (LOT-R; Carver et al., 2010) that was adapted to refer to general relationships, for example "I'm always optimistic about the future of my relationships." The self-report scale instructed participants to answer in terms of their overall relationships and required participants to respond to items ranging from 0 (absolutely untrue) to 10 (absolutely true). Scores were averaged, with higher scores indicating more positive expectations about the future of one's relationships. The original short-form scale has demonstrated good convergent and divergent validity, and good internal consistency ($\alpha =$

0.86; Hallford et al., 2013). In the current study, internal consistency was acceptable (MacDonald's $\omega = .72$).

Meaning in General Relationships

The five-item Presence subscale of the Meaning in Life Questionnaire (Steger et al., 2006) was adapted to measure the extent to which participants perceived their general relationships as meaningful. Participants were instructed to think of their overall relationships when responding to self-report items such as "I feel a real sense of purpose from having relationships with others." Likert scale responses ranged from 0 (absolutely untrue) to 10 (absolutely true). Scores were averaged, with higher scores reflecting a stronger sense of personal meaning derived through relationships. The Presence subscale in its original form has good psychometric properties (Steger et al., 2006). In the current study the adapted scale showed good internal reliability (MacDonald's $\omega = .86$).

Self-Efficacy in General Relationships

The 7-item Relationship Efficacy Measure (REM) was used to assess the degree to which participants perceived themselves as competent in managing problems, challenges, and conflicts in general relationships (Bradbury, 1989; Fincham et al., 2000). Participants were instructed to reflect on their relationships in general, when responding to a self-report scale ranging from 1 (strongly disagree) to 7 (strongly agree) to items such as, "I am able to do things needed to settle conflicts..." and "There is little I can do to resolve many of the important conflicts in my relationships" (reverse coded). The scores were averaged with higher scores indicating greater relationship self-efficacy. Factor analysis of this scale has shown good convergent validity and good internal consistency (Cui et al., 2008). In the current study, internal reliability was found to be good (MacDonald's $\omega = .82$).

Self-Esteem in General Relationships

A short-form version of the Rosenberg Self-Esteem Scale (Rosenberg, 2015) was adapted to measure self-esteem within the context of general relationships. Participants were asked to respond in terms of their overall relationships, to five positively worded items using a self-report scale, for example, “I feel that I am valued in relationships, and that my contribution to relationships is worthwhile.” Participants responded to a self-report scale ranging from 0 (absolutely untrue) to 10 (absolutely true). The scores were averaged, with higher scores indicating higher relationship self-esteem. Shortened versions of the original scale have been shown to maintain good convergent and divergent validity, and internal reliability (Hallford et al., 2013). The adapted version used in the current study had good internal reliability (MacDonald’s $\omega = .93$).

Reminiscence Intervention Protocol

A brief form of Cognitive Reminiscence Therapy (CRT; Watt & Cappeliez, 2000) that focused on positive memories was used in the current study. CRT is a structured form of reminiscence therapy that has been found to produce significant improvements in mental well-being in clinically depressed (Hallford et al., 2013; Hallford & Mellor, 2016a) and community (Hallford et al., 2021) samples of young adults. CRT traditionally involves the review of six life domains over six sessions, however, Hallford and Mellor (2016a) observed that the majority of change in outcome measures occurred after only three sessions. Accordingly, the present study used a three-session version of CRT, adapted from Hallford and Mellor’s (2016b) manualised program which focused predominantly on positive past experiences. The three, weekly, 60- to 90-minute sessions focused on one of three major themes: positive relationships, overcoming challenges, and meaning in life. Between four and six participants were allocated to each of eleven CRT groups, each of which were guided by two facilitators. Each participant was provided opportunities to attend to positive interpersonal memories within the boundaries of each overarching theme, with the aim of

supporting adaptive interpretation or reinterpretations of participants' relationship experiences.

Prior to each session, participants completed homework questions related to the following week's topic, to facilitate memory recall and encourage reflective processes. The homework invited participants to describe specific positive experiences in detail, given this has been found to facilitate positive prospective emotions (Hallford et al., 2020). This included prompting participants to reflect on several of their positive interpersonal relationships, or experiences involving positive relationships, and identify related thoughts, feelings, meaning, and impacts on their lives. In the first session, facilitators established rapport, provided a brief rationale and format for the program, and outlined group expectations. The facilitators delivered psychoeducation on the functions of reminiscence and provided examples illustrating the level of detail required during verbal narration of a selected memory. The facilitators emphasised the importance of selecting a memory with overall positive valence and briefly reviewed the memories selected during homework to ensure suitability. Participants then took turns in narrating memories from the homework. While participants shared memories, facilitators prompted deeper reflection by asking questions aimed at promoting event-level specificity and elaboration of details (e.g., "What colour was it?" "What did that sound like?" "Was the air warm or cool?" "Do you remember any smells?"), and identification of thoughts, feelings, and meaning. Among a broader suite of questions designed to prompt reflective reasoning, several were asked with the aim of increasing awareness of interpersonal-related psychological resources. For example, facilitators targeted relationship self-esteem (e.g. "how did your experience with that person make you feel about yourself?"), interpersonal self-efficacy (e.g. "what did you contribute to support your relationship during this experience?"), relationship meaning (e.g. "what did your experience with that person mean to you?") relationship optimism (e.g. "how does your

experience with that person make you think about the future of your relationships?") and perceptions about relationships (e.g. "how does remembering this experience make you think about your relationships in general?"). Participants were encouraged to narrate memories of various types of relationships (e.g., friends, family, colleagues, romantic partners) across the sessions, to support generalisation of adaptive thinking to overall relationships. After each person had narrated a memory, time was spent facilitating group reflection about individual experiences, or emerging thoughts or feelings about the reminiscence activity.

Procedure

This project was approved by the University Human Ethics Advisory Group (Approval ID: *removed for blinding*) prior to recruitment. Interested parties contacted the university via email and were assessed for eligibility. Participants were provided with a Plain Language Statement (PLS) including a summary of tasks, then gave informed consent and were randomised into a condition using computer-based randomisation software (www.randomizer.org) with a 1:1 ratio. After baseline measures were taken, participants allocated to the CRT condition were assigned to groups of between four and six people based on participant and facilitator availability. Participants were emailed homework tasks to be completed prior to each CRT session. Each session was facilitated by two of five students completing their 4th year in psychological studies. They were trained and supervised by the second author, a registered clinical psychologist. Both groups completed post-program and two-week follow up measures. Participants in the wait-listed condition were offered the opportunity via email to engage in the same CRT program following completion of data collection, and all participants were offered an AUS\$10 voucher upon completing the study.

Data Analysis Plan

All statistical analyses were conducted using IBM SPSS Statistics Version 27. There was less than 5% missing data on the study variables, and expectation maximisation was used

to impute scores. Descriptive statistics were analysed for all variables at each time point, and zero-order correlations of variables at baseline (Pearson's r) were evaluated. Analysis of covariance (ANCOVA) tests were performed to test the hypotheses. The intervention effect was estimated through differences between the two conditions at post-session and follow-up, after adjusting for baseline scores (Frison & Pocock, 1992; Twisk & Proper, 2004; van Breukelen, 2013; Vickers & Altman, 2001). In effect, this provides the controlled effect size equivalent to a group by time interaction, with good statistical power given the control of baseline scores. The false discovery rate procedure (Benjamini, 2010) was applied to p values from the ANCOVA results to control for Type 1 errors, with α set at .05. This provides a corrected significance level (q) which helps to control the proportion of significant results that might be Type I errors. Effect sizes were interpreted using Cohen's (1988, 1992) guidelines for small ($d = 0.2$), medium ($d = 0.5$) and large ($d = 0.8$) effects between conditions at both time points.

Results

The correlations between the variables at baseline are reported in Table 1 and descriptive statistics and results of inferential tests are reported in Table 2. All study variables were significantly and positively correlated with one another, ranging from small-to-moderate magnitudes, but typically at least moderate in size. This provided validity that perceived relationship quality was related to interpersonal-related psychological resources (i.e., efficacy, esteem, meaning, optimism).

As indicated in Table 2, there were group differences of at least small to moderate magnitude favouring the CRT group on all variables immediately post-Session 3. The results of the ANCOVA analyses showed that the only group differences that were statistically significant after correcting p -values were for relationship self-esteem and optimism. At the two-week follow-up the same trend of mean group differences was observed, and the

ANCOVA analyses indicated there were statistically significant differences between the groups on perceived relationship quality, self-efficacy, self-esteem, and optimism, after correcting p -values for possible Type 1 errors. The effect sizes were moderate to large in magnitude, indicating that individuals that engaged in the CRT program perceived their relationships as higher quality and themselves as of higher worth and competence in their relationships, and had more optimism regarding their relationships in general.

Figure 1 presents a graphical depiction of the scores in the groups over time for perceived relationship quality, which is a good exemplar of the pattern of mean changes on outcome variables. Given that scores appeared to both increase in the CRT group, and decline in the control group, we explored within-group changes by using paired-sample t -tests from baseline to follow-up in both groups. The results indicated that in the CRT group, there were increases in PRQ ($p = .057$, $d_z = .35$) and optimism ($p = .011$, $d_z = .38$), and non-trivial but non-significant increases for efficacy ($p = .112$, $d_z = .29$), esteem ($p = .132$, $d_z = .27$), and clearly trivial changes in meaning ($p = .643$, $d_z = .08$). In the control group there were non-trivial, but non-significant declines over time for PRQ ($p = .189$, $d_z = .24$), efficacy ($p = .114$, $d_z = .29$), esteem ($p = .144$, $d_z = .27$) and optimism ($p = .392$, $d_z = .18$), but there was a significant decline for meaning ($p = .043$, $d_z = .38$). Notably, there was no significant controlled effect between the groups at follow-up on meaning in the main analyses, so this would not have changed the findings/conclusions substantially. These findings are interpreted below.

As exploratory analyses, we used two-way ANOVAs (CRT vs. control group; single vs. in a relationship) to assess whether being in a romantic relationship was a factor in residualized change scores of relationship quality and interpersonal psychological resources. The interaction effects were of primary interest and were all non-significant (all F 's < 1.2 , all

p 's > .543), indicating that change in the CRT group (or control group) did not differ dependent on relationship status.

Discussion

This study represented the first to examine whether a brief, positive CRT protocol would improve perceptions of general relationship quality and interpersonally focused psychological resources in young adults. The findings supported the hypothesis that CRT leads to significantly higher perceived relationship quality, self-efficacy, self-esteem, and optimism reported at follow-up in the CRT group relative to a control group. All effect sizes were moderate to large at the two-week follow-up timepoint. These findings are conceptually consistent with studies showing that reminiscence-based interventions have significant benefits for social integration (Pinquart & Forstmeier, 2012), and extend on this by showing that a brief, positive form of CRT is effective in promoting more positive generalised perceptions about relationships, the self, and others within the context of relationships, in a community sample of young adults.

The results showed that differences between groups for perceived relationship quality and self-efficacy were stronger at follow-up, relative to results taken immediately post-CRT. This effect may be explained through several processes. For instance, individuals who participate in CRT may continue to reminisce and reflect on their positive interpersonal experiences following the intervention. This may facilitate cumulative integration of positive information about participants' ongoing relationship experiences. Increases in relationship optimism that occurred post-intervention might also explain subsequent increases in other variables at follow-up. Dispositional optimism has been associated with better social functioning, including enhanced social support-seeking (Nes & Segerstrom, 2006), lower social alienation (Scheier & Carver, 1985) and loneliness (Rius-Ottenheim et al., 2012), improved relationship evaluations (Helgeson, 1994; Murray & Holmes, 1997; Srivastava et

al., 2006; Assad et al., 2007), and longer lasting friendships (Geers et al., 1998) and romantic relationships (Helgeson, 1994; Murray & Holmes, 1997). Higher optimism about one's relationships may influence how individuals attend to and interpret others' behaviours and intentions, and therefore influence their own responses, making them more constructive contributors to that relationship (Srivastava et al., 2006). Accordingly, enhancements in relationship optimism, which were demonstrated following CRT, may have led to more adaptive thinking and behaviour within the young adults' interpersonal interactions following the intervention, facilitating additional positive interpersonal interactions, and reinforcing positive evaluations of self and other within relationships. A similar argument may be made for relationship self-esteem, on which a group difference was found immediately post-CRT. Although this study was not designed nor powered to detect mediational effects, exploratory analyses indicated correlations of non-trivial magnitudes between changes in optimism and relationship variables at follow-up, and between changes in self-esteem and relationship variables at follow-up¹. Given this, future studies may test whether earlier changes in optimism and self-esteem predict subsequent changes in interpersonal evaluations resulting from CRT.

No significant difference was found for meaning in relationships at either timepoint. Group differences were small to moderate, and therefore non-trivial. Likewise, group differences for other variables were non-significant immediately following the intervention, showing small to moderate effects. These results, along with *p*-values that trended towards significance, indicate the possibility of Type II errors. Replication studies with larger samples

¹ Note: correlations in the CRT group, between change in optimism from baseline to post-intervention, and perceived relationship quality at follow-up $r = .32$, self-efficacy $r = .21$, self-esteem $r = .26$, and meaning $r = .42$. Changes in self-esteem from baseline to post-intervention, and perceived relationship quality at follow-up $r = .54$, self-efficacy $r = .35$, self-esteem $r = .56$, and meaning $r = .71$.

will more clearly demonstrate whether CRT contributes to differences between groups across these variables.

Importantly, the within-group analyses indicated that group differences may have been partially driven by declines in scores in the control group over time. It is vital to take into account the fact that the study was conducted in the midst of the global coronavirus pandemic, and specifically in the context of widespread and strict lockdowns in Australia during 2020. Indeed, in the city of Melbourne, where the participants were recruited from, level/stage 4 restrictions with orders to not leave home were in effect. The decline on relationship variables in the control group may be the result of this restriction of freedoms to socialise as well as the general impact on mental health (Rogers & Cruickshank, 2021). Of course, given the study used a randomized allocation, these external factors would equally be expected to impact the intervention group. However, a decline was not observed in the CRT group, and in fact increases were observed. This suggests that CRT may buffer against the adverse effects of restrictions of freedom and social disconnection during lockdown. It also suggests that replication of the study may be needed outside of widespread lockdowns to further establish the effects of CRT on relationship variables. This is currently underway by the authors.

The implications of the current study are that a brief, group-based online program for young adults that focuses on positive relationship memories can increase their interpersonally related psychological resources. Furthermore, guided reminiscence appears to yield positive change regarding one's sense of self *in relation to others*. The findings have important implications for both the fields of reminiscence therapy and attachment theory. Specifically, the positive relationship focus of the guided reminiscence was likely to heighten feelings of love, comfort, validation, and security – and thus – may have been akin to priming attachment security. Indeed, the results of the current study align with the findings of recent

reviews into the effects of security priming, in which enhancing attachment security was found to increase people's self-esteem, optimism and relationship quality (see Gillath & Karantzas, 2019; Gillath et al., 2022). One challenge for the field of security priming is how best to enhance feelings of security that result in the maintenance of positive outcomes immediately post priming (Gillath et al., 2016, Gillath et al., 2022). The findings of the current study may provide security priming researchers with an important method by which to prime attachment security to yield effects that extend to weeks post intervention. Likewise, security priming relies heavily on the immediate availability of attachment-related memories, and researchers (Sakaluk, 2014) have expressed concerns about the impacts of excluding subjects who cannot recall targeted episodes. The processes involved in CRT (such as pre-session recall and reflection, cognitive and verbal elaboration, and guided interpretation during sessions) may provide some alternative approaches to circumvent such challenges.

On the other hand, if research into reminiscence therapy more explicitly integrates security priming content within guided visualisations that focus on relationships, then the effects experienced for both self and relationship outcomes may be enhanced. This is largely because efforts to prime security-enhancing interactions are assumed to heighten feelings of security that are similar to those held by people with a secure attachment style (Gillath et al., 2016; Gillath et al., 2022; Mikulincer & Shaver, 2016). However, to determine the extent to which CRT primes security, future research would need to include assessments of trait and state-based measures of attachment styles to confirm that CRT does in fact heighten feelings of attachment security. If so, then CRT may be useful for people with attachment insecurity, who typically report concerns with forming and maintaining relationships. Indeed, future research may compare the effects of CRT to that of traditional security priming methods (e.g., security-related words or images). Such research would help to clarify evidence for the effects of CRT and may indicate, at least in part, the mechanisms for change. Given the more

personal nature of inducing participants' own memories, it is even possible that CRT could prompt comparatively larger effects on perceptions of self and others within relationships, including attachment security.

Equally, attachment insecurity may moderate the effects of CRT in the current form, given the association between attachment insecurity and negatively biased memory reconstruction of interpersonal interactions (e.g., Dykas et al., 2010, 2011; Feeney & Cassidy, 2003; Gentzler & Kerns, 2006). Depressive symptoms are also associated with overgeneralized autobiographical memories, which may make it more difficult for individuals to elicit or elaborate on specific memories (e.g., Gibbs & Rude, 2004). Similarly, it may be more difficult to elicit positive memories from those with lower state or trait self-esteem due to negative biases (Tafarodi et al., 2003). Individuals with histories of trauma may have fewer positive memories to draw upon, while PTSD symptoms associated with memory and emotional regulation (e.g., Stryckman & De Neuter, 2019), may complicate treatment with CRT. Future research may consider how to target such specific needs, or adaptations to amplify noted effects. For instance, future research may test different dosages, to see if more sessions may better promote accumulation of positive interpersonal memories. Focussing each CRT session exclusively on positive memories pertaining to each of the dimensions of perceived general relationship quality (e.g., commitment, satisfaction, intimacy, and trust [Fletcher et al., 2001]) may also enhance effects. It might also be useful to test the outcomes of this program on factors such as perceived social support, social engagement, and loneliness. Including further measures as outcomes, and other potential moderators of outcomes, may provide a more thorough understanding of the ways in which CRT changes relationship variables in young adults and therefore reveal future directions for the adaptation or expansion of this version of CRT. If effects for such outcomes can be determined, CRT may provide important opportunities for populations vulnerable to social isolation, such as

LGBTIQ+ (e.g., Garcia et al., 2020), people with disabilities (e.g., Emerson et al., 2021), and CALD/ refugee groups (e.g., Warr et al., 2020).

The study had several limitations. As stated above, the sample size may have meant that some effects did not reach significance due to inadequate statistical power. The short two-week follow-up means that although it can be confirmed that self-reported changes in generalized perceptions of relationships are maintained beyond the immediate end of the sessions, it is difficult to ascertain whether they will persist over a longer period. This will be an important task for future research, as will assessing outcomes outside of a pandemic lockdown context. Future studies might include more robust measurements of relationship quality, including larger self-report batteries. Further, interview techniques at post-intervention could be adopted for a more in-depth understanding of processes that led to change (for an example see Hallford et al., 2019). Despite being well-validated and reliable in their original form, many of the measures used in this study were adapted to capture relationship-focused outcomes and have not been formally validated for general relationships. Relationship self-esteem and relationship optimism were highly correlated ($r = .81, p < .001$) at baseline measurement, raising the question of discriminant validity. Theoretically, self-esteem and optimism in the context of relationships are two distinct constructs, with the former denoting confidence in one's own worth within the context of relationships, and the latter encompassing one's confidence about the future success of one's relationships. Indeed, self-esteem has been found to mediate the role of optimism in subjective wellbeing (Duy & Yıldız, 2019), and these variables may similarly interact within the context of relationships. However, development and evaluation of instruments which specifically measure interpersonal related variables are needed to ensure continued rigour in this promising line of research. Some participants withdrew from the study prior to any intervention or completing

follow-up measures. Their data was not used in the study, as agreed, however, future studies may use intention to treat approaches to examine the effect on outcomes.

As noted above, this study was conducted during a period of significant social restrictions in Australia, due to the COVID-19 pandemic. The group format and the focus of CRT on reviewing past experiences associated with relationships may have been highly appropriate to facilitate socialising and reduce isolation. Rather than framing as a confound, the outcomes of the study can be construed as showing that at a time where young people may benefit greatly from an increased sense of social connection, an intervention that uses retrospection might be useful.

In conclusion, this brief, positive-focused, teleconference-delivered version of cognitive-remembrance therapy was largely effective in increasing perceptions of relationship quality and interpersonal related psychological resources in young adults. Further research is needed to establish the full range of interpersonal variables which may benefit from reminiscence-based interventions, and to understand the ways in which change may occur.

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Table 1.*Correlations between Study Variables at Baseline*

	Perceived Relationship Quality	Relationship Self-Efficacy	Relationship Self-Esteem	Relationship- Meaning	Relationship- Optimism
Perceived Relationship Quality	-				
Relationship Self-Efficacy	.47***	-			
Relationship Self-Esteem	.63***	.37***	-		
Relationship-Meaning	.53***	.26***	.67***	-	
Relationship-Optimism	.46***	.32**	.81*	.62***	-

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

Table 2.*Comparison of Outcomes Between Control and CRT Groups Across Time*

	Control Group	CRT Group	Adjusted difference (CRT - control)			
Outcomes	Mean (<i>SD</i>)	Mean (<i>SD</i>)	Mean (95% CI)	Cohen's <i>d</i>	<i>p</i> -value	Correct <i>p</i> - value (α)
Perceived Relationship Quality						
Baseline	5.51 (1.02)	5.42 (0.80)				
Post-CRT	5.67 (0.84)	5.91 (0.69)	0.21 (-0.08, 0.52)	0.36	0.16	0.16
Follow-up	5.52 (1.01)	5.98 (0.66)	0.42 (0.07, 0.77)	0.62	0.017	.042*
Relationship Self-Efficacy						
Baseline	5.30 (0.74)	5.43 (0.81)				
Post-CRT	5.23 (0.80)	5.61 (0.68)	0.29 (0.009, 0.57)	0.58	0.043	0.071
Follow-up	5.08 (0.88)	5.65 (0.83)	0.49 (0.13, 0.85)	0.7	0.009	.045*
Relationship Self-Esteem						
Baseline	7.73 (1.77)	7.58 (1.63)				
Post-CRT	7.65 (1.48)	8.12 (1.51)	0.59 (0.12, 1.07)	0.65	0.014	.035*
Follow-up	7.32 (2.14)	8.15 (1.44)	0.78 (0.09, 1.47)	0.59	0.026	.043*
Relationship Meaning						
Baseline	8.61 (1.18)	8.64 (1.08)				
Post-CRT	8.05 (1.70)	8.69 (1.25)	0.61 (0.01, 1.21)	0.53	0.044	0.054
Follow-up	8.09 (1.77)	8.57 (1.35)	0.44 (-0.14, 1.03)	0.38	0.136	0.136
Relationship Optimism						
Baseline	7.83 (1.75)	7.61 (1.71)				
Post-CRT	7.52 (1.46)	8.13 (1.41)	0.74 (0.27, 1.22)	0.85	0.003	.015*
Follow-up	7.60 (1.66)	8.04 (1.33)	0.58 (0.06, 1.10)	0.57	0.028	.035*

Note: The adjusted difference reflects the group x time interaction. *indicates *p*-value is significant at the 0.05 level after adjustment using the false discovery rate procedure.

Figure 1.

Mean Scores (With 95% Confidence Intervals) For Each Group at Each Time Point