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An experimental investigation of the effects of perspective-taking on emotional discomfort, cognitive fusion and self-compassion

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Title: An experimental investigation of the effects of perspective-taking on emotional discomfort, cognitive fusion and self-compassion.

• **Author names:** Louise Boland[a], Dorian Campbell[a], Monika Fazekas[a], Wataru Kitagawa[a,c], Lorna MacIver[a], Klaudia Rzeczkowska[a], David Gillanders[b,*]

* Corresponding author

[a] School of Health in Social Science, The University of Edinburgh, Medical School, Teviot Place, Edinburgh, United Kingdom, EH8 9AG

[b] Clinical & Health Psychology, School of Health in Social Science, Medical School, Teviot Place, Edinburgh, United Kingdom, EH8 9AG, +44(0)131 651 3946, david.gillanders@ed.ac.uk

[c] National Institute of Mental Health, National Center of Neurology and Psychiatry, 4-1-1 Ogawa-Higashi, Kodaira, Tokyo, 187-8553, Japan

Highlights:

- Perspective-taking is regularly used by clinicians, but it lacks experimental study.
- The effect of perspective-taking on self-related negative thoughts was measured.
- Perspective-taking reduced discomfort and cognitive fusion and increased compassion.
- Implications are discussed at both non-technical and RFT-level analyses.

Declaration of competing interest: None.

Abstract

Background: Perspective-taking exercises are used in a range of therapies, such as Acceptance and Commitment Therapy (ACT), Cognitive Therapy (CT), Dialectical Behavioural Therapy (DBT) and Compassion-Focused Therapy (CFT). Perspective-taking has been theorised in ACT to foster cognitive defusion, self-compassion and a sense of self as distinct from and containing self-related negative thoughts and feelings. To date, few experimental studies have investigated the impact of typical perspective-taking exercises. This study sought to investigate whether perspective-taking exercises were able to decrease state cognitive fusion and emotional discomfort and increase state self-compassion associated with a self-related, negative thought (SRNT). It also sought to investigate whether there are differences in effects between temporal ('now' vs 'then') and interpersonal ('self' vs 'other') perspective-taking and between giving and receiving perspectives.

Method: A convenience sample of non-clinical participants (n = 61) generated a SRNT and then rated levels of emotional discomfort, state cognitive fusion and state self-compassion in relation to the thought. Participants were then guided through three within-participant conditions: a control procedure, a giving perspective and a receiving perspective condition. Participants were allocated to one of two groups: temporal perspective-taking or interpersonal perspective-taking. Mixed ANOVAs showed that both interpersonal and temporal exercises significantly reduced emotional discomfort and cognitive fusion and increased self-compassion associated with a SRNT. The effects of giving or receiving perspective differed between interpersonal and temporal groups.

Conclusion: These results provide experimental evidence that perspective-taking is a psychologically beneficial process, therefore supporting the existing use of perspective-taking exercises in clinical practice.

1. Introduction

Acceptance and Commitment Therapy (ACT) is a modern form of Cognitive Behavioural Therapy (CBT) that targets increased psychological flexibility (Hayes, Luoma, Bond, Masuda & Lillis, 2006; Hayes, Strosahl & Wilson, 2012). Psychological Flexibility is our capacity to be aware of what is influencing us, open to all our experiences, even unpleasant ones, and to continue to take steps towards the things that we most care about. It has been shown to be related to a very wide range of psychopathological outcomes (Hayes et al., 2006) and to be the primary mechanism of action of ACT (Stockton et al., 2019).

ACT emerged in parallel to Relational Frame Theory (RFT; Hayes, Barnes-Holmes & Roche, 2001), influencing and informing one another (Hayes et al., 2012a). RFT is a behaviour analytic theory of language and cognition which posits that human behaviour involves learned patterns of responding to stimuli based on the relations between them, known as relational framing.

From an RFT perspective, stimuli can acquire properties to influence behaviour based not on physical properties of the stimulus, nor from direct contingency between stimulus and response, but from the arbitrary derived relations between stimuli. Such relations are cued by environmental and language cues such as 'same as', 'opposite', 'bigger than', 'before', or 'after'. Crucially, the stimulus functions controlled by these language cues transfer from one member of a relation to another, based upon the relation specified.

Whilst RFT has been supported by experimental research (e.g. O'Connor, Farrell, Munnelly and McHugh, 2017), many have found RFT to be too technical for easy application in clinical contexts. Applied models like ACT have attempted to address this with their use of non-technical so called 'mid-level' terms such as 'defusion' and 'self-as-context' (Hayes et al., 2012a). Contextual Behavioural Science, a guiding framework for both of these fields, advocates for the implementation of theoretically focused laboratory studies to strengthen the link between basic RFT principles and ACT's non-technical terms (Hayes, Barnes-Holmes & Wilson, 2012; Levin, Hildebrandt, Lillis & Hayes, 2012).

1.1. Use of perspective-taking in therapeutic work

Perspective-taking is defined as the ability to step outside of ourselves and 'see' or infer aspects of a situation from another's point of view (Marvin, Greenberg and Mossler, 1976) . This ability not only underlies the development of an understanding of others but is also crucial to the healthy development of the self (Novak, 2012).

Several psychological therapies include perspective-taking interventions. These have different purposes, depending on the therapy. In cognitive therapy, imagining what you might say to a friend having a similar dysfunctional thought is used to initiate 'cognitive distancing' (Ingram & Hollon, 1986) and reveal the client's bias in evaluation towards themselves, thereby introducing corrective re-appraisal into their own thinking (Beck, Rush, Shaw & Emery, 1979). In Dialectical Behaviour Therapy (DBT) perspective-taking enhances the client's ability to take different perspectives on the same experience and find a 'wise synthesis'. In addition, DBT also employs mindfulness meditation to encourage observation of experience, as well as using perspective-taking skills to enhance interpersonal effectiveness (Linehan, 1990; 1993). Perspective-taking exercises are also used in Compassion Focussed Therapy (CFT), often using mental imagery (e.g. Kolts, 2016). Examples of these practices include guiding clients to construct an image of an ideal compassionate friend, to imagine receiving kindly support from them, also to imagine giving compassion to others, and to their own suffering. In ACT, perspective-taking exercises are powerful elements of therapy (Villatte et al., 2016), and they are understood using non-technical terms such as 'self as context' and also 'defusion'. Defusion refers to stepping back from psychological content, not taking it literally, and reducing its dominance over behaviour and experience (Gillanders et al., 2014). Self as context refers to a flexible repertoire of perspective taking skills that enhance defusion by adding a sense of containment of psychological experience. In ACT, skills of flexible perspective-taking are used to detach from unhelpful patterns of thinking, develop a more observer-based stance, and to foster empathy and compassion towards one's self and others (Hayes et al., 2012a; Moran, Almada & McHugh, 2018).

The fact that many therapy modalities have employed these kinds of interventions has led some researchers to outline commonalities and distinctions between these at the level of underlying construct, referring to that as 'Metacognition' (Bernstein et al., 2015). These authors propose that our capacity to shift perspective from within one's subjective

experience onto that experience itself is composed of three overlapping skills: disidentification with internal experience, reduced reactivity to internal experience and increased meta-awareness. They review and synthesise evidence from across different therapy modalities that shows that deficits in these skills are strongly related to poorer mental health (Bernstein et al., 2015).

Despite Bernstein and colleagues' work in synthesising these perspective-taking concepts across modalities, the metacognitive model of decentring that they propose remains relatively descriptive, and does not provide a precise, experimentally manipulable framework for investigating perspective-taking in laboratory and clinical settings. Relational Frame Theory has, however, been used to explore perspective-taking interventions conceptually and experimentally, leading to a more detailed and testable account of how perspective-taking interventions work. The advantage of this account is that it provides a functional, rather than descriptive, account of how perspective-taking might operate, based on manipulable features of context that can be reliably influenced to evoke perspective-taking.

1.2. Relational Frame Theory and perspective-taking

According to RFT, through repeated interactions with others, children learn that their behaviour (including their own private behaviour such as thoughts, feelings, and urges) is different from others. By learning to respond consistently to questions such as, "What do you like?", "Where did you go today?" "Where were you yesterday?" "Where is Daddy?", "How are you feeling?", children derive three core relations called deictic frames. These deictic frames specify a relationship from the perspective of the speaker along the dimensions of person, place and time, the core deictic relations being I-YOU (interpersonal), HERE-THERE (spatial) and NOW-THEN (temporal). Unlike other relational frames, deictic frames are not based on formal dimensions of the environment and are always dependent on the perspective of the speaker. When this repertoire of deictic relating is established, the child will respond to the kinds of questions above from a perspective that is consistent and different to other people's perspectives. A sense of self, or the perspective of 'I', is therefore derived from multiple examples of learning to talk about one's own perspective and experience in relation to others' perspectives (McHugh, 2015).

Once this perspective of 'I' is derived, a person can then relate that deictic 'I' in a range of other ways with psychological content. For example, the self can be compared to other people, can be related in coordination with negative evaluations, and can participate in conditional framing such as 'It is my personality that makes me have such problems in life'. This kind of framing leads to the experience of 'self as story' or 'conceptualised self' (also called 'self as content') in ACT. RFT postulates that in self as story, psychological content and 'I' are framed in coordination and both in the here and now (Moran & McHugh, 2019).

In contrast, therapeutic use of perspective-taking exercises are theorised to lead to the addition of frames that establish a distinction relation between the self and psychological content (e.g., 'I am having the thought that...). The addition of such distinction relations is postulated to underpin the experience of cognitive defusion. RFT postulates that this leads to the psychological content being experienced as 'YOU, THERE, THEN' and distinct from the self which is experienced as 'I, HERE, NOW'. Repeated experience of this deictic distinction framing is assumed to lead to a more generalised awareness of the distinction between self and psychological content, which is described as 'self as process'.

Perspective-taking exercises can also lead to the derivation of coordination relations between one's own struggle and other people's suffering, leading to a transformation of empathy and compassion functions towards the self. Perspective-taking exercises can also lead to the addition of hierarchical or containing relations between self and psychological content. These relations are thought to lead to the experience of 'self as context' in ACT.

Evidence supportive of the RFT account of perspective-taking and the derivation of self has been provided by several studies. Atkins and Styles (2016) used interview transcripts to code participant speech as either 'self as story', 'self as process', 'control oriented self-rules', 'values-oriented self-rules' or 'self as context'. Results showed that participant natural speech could be reliably coded, and that frequency of values-oriented self-rules and self as process speech predicted better wellbeing and reduced distress six and 12 months later. Similar findings were reported in a replication with healthy adolescents by Moran & McHugh (2020).

Yu, Norton & McCracken (2017) further supported that a measure of perspective-taking changed significantly due to an ACT-based pain management programme and that these changes were predictive of changes in pain interference, adjustment and depression, even after controlling for pain intensity and pain acceptance. A limitation of this study is that the direction of causality could also be reversed, in that reductions in outcomes such as depression could also have led to the improvements in self as context / perspective-taking.

Moran and McHugh (2019) showed that for non-clinical adolescents, framing the self hierarchically with psychological experience was associated with reduced stress, depressed mood and avoidance behaviour, whilst framing the self with only distinction relations was not. Finally, Moran, Almeida and McHugh (2018) found in a cross-sectional analysis of non-clinical participants, that measures of self as content, self as process and self as context all independently predicted poorer mental health in theoretically hypothesised directions.

RFT has also been used to experimentally test elements of perspective-taking exercises under laboratory conditions. Luciano et al. (2011) created two defusion protocols and tested them with teens who showed problematic behaviours. One protocol had only distinction framing (Defusion I) between the participant and their own negative self-content, whilst the other also added hierarchical (i.e. containing) relations (Defusion II). The Defusion II protocol also contained relations linking this novel perspective with greater adaptive functioning. The Defusion II protocol led to significantly greater reductions in problem behaviour and was the only protocol to lead to increased psychological flexibility.

Foody et al. (2013; 2015) replicated and extended these findings. They found that adding hierarchical relations led to superior stress-reducing properties in response to a negative thought, compared to distinction relations alone. Other experimental work has also investigated defusion exercises under laboratory or clinical analogue conditions (e.g. Larsson et al., 2016; Mandavia et al., 2015; Masuda et al., 2010a, 2010b, for a review see Levin et al., 2012). From an RFT perspective, these can be considered a form of perspective-taking in that they create a context in which psychological content is experienced in a relation of distinction to the self. These experiments differ however, in that they achieve their effects not via a deliberate shift of perspective, but by disrupting usual verbal

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conventions (e.g., word repetition, singing thoughts, saying thoughts in a funny voice, (Larsson et al., 2016)).

In summary – RFT has provided an account of the basic relations and transformations of function that are likely to be involved in perspective-taking and that initial experimental, cross sectional and longitudinal evidence has supported this account. From this body of work we know that cognitive defusion appears to involve adding relations of distinction between self and psychological content and that the addition of hierarchical framing appears to support the establishment of self as context.

What we do not yet know is how this RFT analysis of perspective-taking applies to interventions commonly used in therapeutic work. For example, when a client describes negative self-referential content, it is common for a therapist to ask the client to imagine what they might say to a trusted friend who was describing similar thoughts (giving a perspective to another). Similarly, the therapist might ask the client to imagine what a trusted friend might say to them if they were to express this content to them (receiving an alternative perspective from another). In other intervention examples, the therapist might ask the client how old they were when they first began thinking of themselves in this way. The therapist might ask them to imagine they could offer something to that child version of themselves and to imagine receiving a kindly or wise response from an older version of themselves. These kinds of therapeutic exercises deliberately involve the evoking of perspective-taking, and the giving and receiving of alternative perspectives through gesture, imagery and other language-based cues.

1.5. The Present Study

The current study used an RFT framework to experimentally investigate the effects of these kinds of perspective-taking exercises on a participant-generated self-relevant negative thought (SRNT). Based upon McHugh (2015), the experiment manipulated the basic deictic relations involved in perspective-taking of person (Self vs Other) and time (Now vs Then). The study did not seek to investigate the addition of hierarchical relations as previous experimental work has done. The experiment also addressed another research gap by testing the effect of giving versus receiving alternative perspectives. Consistent with previous experimental studies and the theorised role of perspective-taking in facilitating

defusion and self-compassion, it was hypothesised that perspective-taking would reduce state cognitive fusion and emotional discomfort, and increase state self-compassion.

2. Method

2.1. Participants and setting

A total of 61 participants (48 female, 79%) were recruited through convenience sampling from on campus and social media advertising. Thirty-nine (64%) of the participants were students. The age of the sample ranged from 22 to 60 ($M = 27.87$, $SD = .82$). The ethnic composition of the participants was not especially diverse, with 74% ($n = 45$) identifying as "White / Caucasian", 18% ($n = 11$) as "Asian", 5% ($n = 3$) as "mixed / multiple ethnic group" and 3% ($n = 2$) as "Pacific Islander" or "Black / African". Criteria for exclusion were expression of suicidal ideation and/or current severe mental distress, and the inability to generate a SRNT rated 50 or above on a $0 - 100$ emotional discomfort scale. The experiments took place on the university campus in private rooms.

2.2. Experimental design and analytic plan

The current study followed a mixed design with two levels of a between-group condition and four levels of a within-group (repeated measures) condition. The between-group condition was whether the participant received an interpersonal deictic manipulation self-versus other), or a temporal deictic manipulation (current self-versus younger self). An inert control group was not included, due to concerns about being able to recruit a sufficiently large sample to have a three-group study. The within-group condition had four levels: baseline, control procedure, a 'giving' condition and a 'receiving' alternative perspective condition. The control procedure included exposure to and discussion of the SRNT and generation of mental imagery without explicit deictic manipulation, in an attempt to control for experimenter effects and repeated exposure to the SRNT.

During the pilot testing of the experimental protocol it was found that full randomisation of the within-participant conditions would result in reduced ecological validity of the study (it was not possible for the receiving condition to be self-generated and also come before the giving condition), and could potentially increase distress for participants (ending

the experiment on the control condition of having the SRNT without manipulating perspective was found to be upsetting and led to feelings of isolation). The decision was therefore made to complete the conditions in a set order: baseline, control, giving, and then receiving perspective condition.

Statistical analyses were conducted using SPSS version 24 (IBM, 2016). The planned analyses included descriptive statistics to describe the sample (gender, age, ethnicity, and student status), as well as descriptive statistics of the three dependent variables of discomfort, fusion and compassion at each time point. A mixed within – between group repeated measures analysis of variance was used to test study hypotheses.

2.3. Ethical considerations

Participants were fully informed of the study's methods and provided written informed consent to participate. Participants were free to withdraw from the study at any time and a safety protocol was employed prior to beginning the study to screen for suicidal ideation and current severe emotional or mental distress. No participants were excluded based on these criteria. A safety protocol for distress during the experiment and the provision of support after the experiment by the research team was devised, as well as signposting to local support services. The study was reviewed by the [name removed for blinding] Ethics and Integrity Committee and approved.

2.4 Measures

Besides the demographic form that included questions regarding age, gender, ethnicity, occupation and current mental health status, the study also used the following measures, which were completed in a random order after each stage of the experiment.

2.4.1 Emotional Discomfort Visual Analogue Scale (ED)

Self-reports of current emotional discomfort elicited by the SRNT were measured by asking participants to respond to the item "Please rate how uncomfortable or distressing you find this thought" on a 100 mm visual analogue scale, anchored on the left with 0 (not at all uncomfortable) and on the right with 100 (extremely uncomfortable). Although emotional discomfort is not usually a primary target in ACT, it is still a relevant variable in clinical work

and including it here allows for comparison of this study with other similar experimental studies (e.g. Luciano et al., 2011, Foody et al., 2013;2015).

2.4.2. State Cognitive Fusion Questionnaire (SCFQ)

The SCFQ (Bolderston et al., 2019) is a 7-item self-report state measure of cognitive fusion. The instructions ask participants to rate how true each statement is for them *at this moment*. Sample items include, "I am so caught up in my thoughts that I don't know what to do" and "I am very entangled in my thoughts". Preliminary validation studies showed adequate test-retest reliability (r= .69) and excellent internal reliability (α = .95). Likewise, the data from the present study also indicated good internal reliability (α = .77). Furthermore, the SCFQ is sensitive enough to detect changes in cognitive fusion following brief exercises in lab-based studies (Bolderston et al., 2019).

2.4.3. State Self-Compassion Scale (SSCS)

The SSCS is a seven item, self-report measure based on the 26 item Self-Compassion Scale (SCS; Neff, 2003). The SCS contains six subscales: Self-Kindness, Self-Judgement, Common Humanity, Isolation, Mindfulness and Over-Identification. The original SCS demonstrated good discriminant validity, test-retest reliability (*r* = .93) and internal reliability (Cronbach's α = .92). The state version was adapted specifically for this study. One item was selected from each subscale and an additional item from the Self-Kindness subscale, based on strength of item loadings in the original validation studies. The wording was also modified to measure state rather than trait self-compassion for a specific thought. Example items include, "As I think this thought right now, I am being disapproving and judgmental towards myself," and "As I have this thought right now, I am able to be understanding and patient towards those aspects of myself that I don't like". The resulting scale for this study was the State Self-Compassion Questionnaire, consisting of 7 items measured on a 5-point Likert scale, with possible answers ranging from 'almost never' to 'almost always'. In the present study, the SSCS demonstrated good internal reliability (α = .73), suggestive of a unitary scale. At baseline, the SSCS was moderately correlated with the State CFQ (*r*=-.38, *p*<.01), showing initial support for concurrent validity.

2.5. Procedure

Participants were convenience sampled using on campus adverts, social media posts and through association with the experimenters. To avoid confounds and to protect participant privacy, no experimenter met with a participant that they knew personally. Participants were assigned to either the temporal perspective-taking or the interpersonal perspective-taking condition, based on the order of their recruitment to the study. The study took approximately 30 minutes with each participant. The experimental conditions were created specifically for this study by a peer reviewed trainer and expert in ACT (named removed for blinding). For purposes of ecological validity, the protocol was not closely scripted, but instead a prompt guide and detailed training was used to ensure consistency of delivery. Each investigator (all masters level students in psychology) was trained and observed in their conduct of the experimental sessions by the entire research team (including the peer reviewed trainer), until they could safely and accurately deliver the perspective-taking exercises. The experiment consisted of seven stages, always conducted in the same order, as outlined below.

Stage 1: Demographic Screening and Consent. Participants were informed, provided consent and were screened according to exclusion criteria. Demographic details were recorded.

Stage 2: Thought selection and assessment. Participants generated a SRNT that was over 50 on the ED and frequent. They shared it with the researcher and wrote it down verbatim. Examples of thoughts given were 'I'm not thin enough', 'I don't feel I have achieved enough for my age', 'I worry people find me irritating'. Participants reflected silently on the effects this SRNT has on their life and the situations in which it arises. When ready, baseline ratings of the SRNT on the emotional discomfort scale were provided, along with completion of the SCFQ and SSCQ.

Stage 3: Generation of self at a younger age or trusted 'other'. In the temporal group, participants were asked to think about how old they were when their SRNT first appeared and to generate an image of their younger self at that age. In the interpersonal group participants were asked to think of a person whom they trust and with whom they would feel comfortable

sharing the SRNT and to generate an image of that person. In both conditions, participants received cues to imagine details of the locations they were visualising.

Stage 4: Control Condition. In the temporal group, the control condition involved participants imagining that they were their younger self, and that their current self was able to travel back in time and be with them. They were then asked to imagine that the SRNT came to mind while they were spending time with their older self. In the interpersonal group, participants were asked to imagine that they were with their trusted person and the SRNT came to mind from time to time. In both conditions, participants were told that they were having their SRNT, but that they were not sharing it with their trusted person or older self. This condition was to control for non-specific effects of the imagery exercise and for repeated exposure to the SRNT, but without cues to give or receive any particular response. After this stage, participants were asked to return their attention to their SRNT and to complete the rating measures for emotional discomfort, cognitive fusion and self-compassion, according to how the thought now appeared to them.

Stage 5: Giving Perspective. In the temporal group, this condition involved the experience of giving perspective to the younger self. Participants were asked to mentally travel back in time to be with their younger self. This time they were to remain in the perspective of their current self and imagine that their younger self disclosed the negative thought to them. Participants were asked to reflect on how it felt hearing the SRNT from their younger self and whether they wanted to offer their younger self anything in return. In the interpersonal group, participants were instructed to imagine that they were with their trusted person, and their trusted person shared the same (or very similar) SRNT with them, as if they were struggling with the same (or very similar) problem. Participants were then asked to describe how it would feel to hear the SRNT from the trusted person, and what they would like to offer as a response. It is of note that no instructions or suggestions as to the type of response to be given were made, and yet all participants spontaneously generated a response that was supportive and compassionate. Participants in both conditions then rehearsed giving this response to either their imagined younger self or their trusted other. After this stage, participants were again instructed to rate the three aspects of emotional discomfort, cognitive fusion and self-compassion in relation to the SRNT, at that moment in time.

Stage 6: Receiving Perspective. In the temporal group, participants once again imagined themselves in the perspective of their younger self. Participants were then asked to imagine sharing the SRNT with their current (older) self and then to imagine receiving the perspective (advice, point of view, etc) that they had offered to their younger self in the previous condition. Experimenters used the wording that the participant had generated to support the receiving of this perspective. In the interpersonal group participants imagined sharing the SRNT with their trusted person and receiving the response from the trusted other that they had generated in the previous condition. Participants were again instructed to rate the three aspects of emotional discomfort, cognitive fusion and self-compassion in relation to the SRNT, as it appeared to them at that moment in time. The measures were completed in a random order following each condition.

Stage 7: Debriefing. Following the completion of the procedure, the researcher assessed participants' reaction to the exercises. Participants were given an opportunity to provide feedback and ask questions whilst the aim of the study was discussed. No participant found the study unduly upsetting.

3. Results

Table 1 shows the means and standard deviations for each condition across time for both groups. Baseline scores of emotional discomfort, cognitive fusion and self-compassion were not significantly different between interpersonal and temporal perspective-taking conditions. Superscript letters indicate the pattern of statistical significance within participant changes for each between group condition.

INSERT TABLE 1 HERE

Table 1 also shows the main ANOVA results for each dependent variable across the groups. The within-participants effects were significant for both perspective-taking conditions. The between-groups effects were not significant across all three dependent variables, though the between group findings for state self-compassion reported a *p* value of .06, with a medium effect size, potentially indicating a Type II error. This indicates that both interpersonal and temporal exercises were equally effective in reducing emotional discomfort and cognitive fusion and increasing self-compassion. The between-groups by

within-participant interaction was significant for cognitive fusion and self-compassion, but not for emotional discomfort, indicating a significantly different pattern of change across within-participant conditions, for each type of perspective-taking. These details are further outlined below and in Figures 1 – 3.

Figure 1 and Table 1 show that in the interpersonal group, emotional discomfort was not significantly reduced from baseline to control. For the temporal group, there was a significant reduction in emotional discomfort after the control condition. There were further reductions in emotional discomfort for both interpersonal and temporal perspective-taking groups following the giving perspective condition but no further significant reductions in emotional discomfort following the receiving perspective condition in the temporal group. In contrast, in the interpersonal group, receiving perspective from the trusted other led to further significant reductions in emotional discomfort.

INSERT FIGURE 1 HERE

A similar but stronger effect was seen for state cognitive fusion. As shown in Figure 2, in the interpersonal group, the score remained almost unchanged between baseline and control. There was a statistically significant reduction in state cognitive fusion after the giving perspective condition, and a further decline was observed after the receiving perspective condition. In the temporal group, on the other hand, there was a significant reduction in fusion immediately following the control and a further reduction after the giving perspective condition. No further change was observed in cognitive fusion following the receiving perspective condition.

INSERT FIGURE 2 HERE

Figure 3 and Table 1 show that in the interpersonal group, state self-compassion did not increase from baseline to control, but significantly increased following the giving perspective condition. No further increase was seen following the receiving condition. In the temporal group, there was a significant increase in self-compassion after the control exercise. State self-compassion further increased significantly after giving perspective condition, but did not increase any further when participants imagined receiving that perspective from their older self, from the perspective of their younger self.

INSERT FIGURE 3 HERE

4. Discussion

4.1 Interpretation of findings

This study aimed to examine whether perspective-taking exercises can significantly reduce emotional discomfort and state cognitive fusion and significantly increase state self-compassion associated with a self-related, negative thought. It also sought to investigate whether there were significant differences between different types of deictic framing: interpersonal perspective (I-YOU) versus temporal perspective (NOW-THEN). Finally, it aimed to explore whether there were differential effects of giving a response versus receiving a response under either of these deictic conditions.

Results revealed that 'giving perspective' exercises were effective in decreasing emotional discomfort and cognitive fusion and increasing self-compassion across both deictic perspective groups, while 'receiving perspective' exercises only further decreased emotional discomfort and cognitive fusion in the interpersonal group. For self-compassion, receiving a perspective did not lead to further changes compared to giving exercises for either condition. In the temporal group only and contrary to hypotheses, significant effects were also found for each dependent variable following the control condition, suggesting a failure of the control condition in the temporal group.

The 'failure' of the control procedure for the temporal group may still tentatively support the study's hypothesis. It is possible that the control procedure cues a transformation of the deictic framing from 'I, here, now' to 'I, there, then', leading in turn to a transformation of the stimulus function of the deictic 'I' as worthy of compassion. Such a transformation of stimulus functions may have occurred because the 'I' in the temporal condition was a younger person, often a child or adolescent, which in general may have enhanced stimulus functions for protection and care for most adults. This result could be explained without reference to deictic framing. A more parsimonious interpretation is that visualising a younger person could elicit compassion functions through its role as an unconditioned stimulus for protective instincts in most humans.

In contrast, the control instructions may have operated more neutrally in the interpersonal condition because the deictic cueing alters from 'I, here, now' at baseline to 'I there then, with you, there, then'. In this condition the 'I' has few additional features that

would lead to transformation of stimulus functions, and the control condition instructions do not contain any explicit contextual cues relating to the perspective of the trusted other.

Another interesting difference between the interpersonal and temporal perspective-taking groups was the difference in effects between the giving and receiving conditions. While the temporal group showed significant shifts in the dependent variables following the failed control procedure, the interpersonal condition required explicit additional contextual cues to offer an alternative perspective to the trusted other. In both conditions, additional effects were observed after giving an alternative perspective. Furthermore, in the interpersonal group, additional effects were observed after imagining receiving a similar response from the trusted other. In this group, specific contextual cues to imagine giving and receiving were necessary to achieve similar effects on the dependent variables.

Taken together, the results add experimental support for the use of perspective-taking exercises to decrease emotional discomfort and cognitive fusion and increase self-compassion. It is of note that the temporal condition may have been the more powerful intervention, because the effects occurred more rapidly, before the rehearsal of giving and that then the receiving instructions were of no added value. If using the trusted other perspective-taking exercise, it appears that giving and receiving perspectives both have value.

The observed changes in cognitive fusion and self-compassion support theory and application at the level of non-technical (mid-level) terms. The discussion above regarding whether this study also supports theory at the level of RFT is more speculative and is offered tentatively.

4.2 Limitations and implications for future research

There are several limitations to the present study. The decision to not include an inert control condition means that we cannot conclusively attribute the changes observed to the manipulation of the deictic frames. There are a number of other elements in the experimental manipulation that could have led to changes, for example: repeated exposures to the SRNT, saying the SRNT to an experimenter and writing it down, or generation of mental images. The control condition attempted to control for these aspects, though was only successful in the interpersonal condition. It is not possible to track all the possible

elements of associative and operant learning, derived relations and transformations of stimulus functions that may have been occurring and it is possible that other contextual cues and learning processes may have been contributing to the effects.

A further important limitation was the decision not to fully randomise the order of conditions. During pilot testing of the experimental procedure, putting the control condition as the final condition in the experiment was found to enhance feelings of isolation and was moderately upsetting. Secondly, in pilot testing the giving and receiving conditions it was felt to be more authentic if the participant generated the response themselves, compared to the experimenter creating a generic response for them. For that reason, giving a response had to occur before receiving that response. This meant that it was not possible to fully randomise the order of the within-participant conditions. Although this is a limitation as it fails to fully separate the effects of each condition, it does enhance the ecological validity of the study, as receiving perspective was judged to follow more naturally from giving perspective and thus more closely mirrored how these exercises are used in clinical practice. However, the lack of randomisation limits the conclusions that can be drawn about the differential effects of giving versus receiving perspective, and future research in which conditions are randomised may provide fuller insight into such effects. Nevertheless, the large effect sizes observed on all dependent variables suggests that the cumulative effects of perspective-taking in sequence has the potential to have beneficial psychological effects.

Another limitation was the design of the temporal control condition, which may have inadvertently brought about perspective-taking in participants and thus results from the giving and receiving perspective conditions are more difficult to interpret. Future research on temporal deictic framing should seek to design a control condition which avoids cueing participants to take the perspective of their younger self before beginning the active experimental conditions.

A further limitation of this study was the exclusive reliance on self-report measures of dependent variables. The repeated use of these three measures may have made the dependent variables being measured obvious to participants and thus resulted in demand characteristics (Nichols & Maner, 2008). To avoid this, participants were regularly reminded that there were no expected answers, but future research may benefit from behavioural or physiological measures, in addition to self-reports.

In addition, the adaptation of the Self Compassion Scale Short Form as a state measure has limited data on its validity, beyond this study. Whilst we know from this study that the measure was internally consistent, correlated as theoretically expected with the standardised measure of state cognitive fusion and was able to detect the effects of the experimental manipulation, it is acknowledged that suggesting this as evidence of the measure's validity and of the experiment's validity is tautological. It is of note that Neff, Tóth-Király, Knox, Kuchar and Davidson (2020) have recently published a state version of the Short Form Self-Compassion scale. It is very similar to the version that was created for this experiment, with two of the seven items the same. Neff and colleagues report the unitary factor structure and psychometric properties of their State Self Compassion Scale (Short Form) as excellent. Given that the Neff et al. scale has had more extensive development than the scale used in this study, future studies should use it. That scale was not available at the time that the current study was conducted.

The study is also limited by being conducted on a predominantly student sample, recruited through convenience sampling, without major mental health difficulty. As such the sample is self-selected, which could introduce sampling bias. Participants were also not asked if they had previously undertaken psychological therapy. The sample may therefore have contained people who have experienced perspective taking exercises or self-compassion exercises prior to the experiment, which may have been a confound.

Future studies could replicate this experiment with people who report more significant distress related to their self-relevant negative thinking, or who score highly on fears of self-compassion, and could more tightly control previous exposure to psychological interventions. Future studies could also explore the balance between the naturalistic language and procedure used in this study, versus a more tightly controlled use of relational language cues to attempt to isolate the independent variable at the basic theory level.

4.3 Implications for practice

This study has implications for the use of perspective-taking exercises in ACT as it experimentally supports that these exercises enhanced self-compassion and cognitive defusion and led to reductions in emotional discomfort from self-related, negative thoughts, with large effects. Similar exercises to the ones used in this study are used in several therapeutic modalities (e.g. Gilbert, 2014; Villatte, 2016). ACT is highly personalised and

responsive to clients' presenting issues, but this can make manualisation of ACT challenging (Thompson, Luoma & LeJeune, 2013). Clarifying the specific effects of such therapeutic techniques may help the development of more cost-effective, modularised ACT protocols which make use of more targeted exercises (Villatte et al., 2016). It is of note that the temporal perspective-taking led to experimental effects more rapidly than the interpersonal perspective-taking. This does suggest that in therapeutic work, temporal perspective-taking may be the more powerful route to transformation. However, some clients may also find this experience too challenging. Given that the interpersonal perspective-taking achieved the same magnitude of result across the entire experiment, that approach could be an equally effective, but more gentle way to work.

4.3 Conclusion

This study was important in being the first to distinguish between the effects of interpersonal versus temporal perspective-taking, and giving versus receiving perspective. Results indicated that both interpersonal and temporal perspective-taking decrease emotional discomfort and state cognitive fusion and increase state self-compassion in relation to a negative thought, though more tightly controlled studies are needed to clarify the effects of giving versus receiving and to be confident that the results seen can be interpreted as reflecting deictic relations.

REFERENCES

Atkins, P. & Styles, R. (2016). Measuring self and rules in what people say: exploring whether self-discrimination predicts long-term wellbeing. *Journal of Contextual Behavioral Science*. 5(2), 71-79.

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression*. New York, NY: Guilford Press.

Bernstein, A., Hadash, Y., Lichtash, Y., Tanay, G., Shepherd, K., & Fresco, D. M. (2015). Decentering and Related Constructs: A Critical Review and Metacognitive Processes Model. *Perspectives on Psychological Science*, *10*(5), 599–617.

Bolderston, H., Gillanders, D., Turner, G. et al. (2019). The initial validation of a state version of the Cognitive Fusion Questionnaire. *Journal of Contextual Behavioral Science*, 12, 207-215

Foody, M., Barnes-Holmes, Y., Barnes-Holmes, D., Rai., L., & Luciano, C. (2015). An empirical investigation of the role of self, hierarchy and distinction in a common ACT exercise. The Psychological Record, 65(2), 231-243.

Foody, M., Barnes-Holmes, Y. & Barnes-Holmes, D. & Luciano, C. (2013). An empirical investigation of hierarchical versus distinction relations in a self-based ACT exercise. International Journal of Psychology & Psychological Therapy, 13(3), 373-388.

Gilbert, P. (2014). The origins and nature of compassion focused therapy. *British Journal of Clinical Psychology*, 53, 6-41.

Gillanders, D., Bolderston, H., Bond, F. et al. (2014). The development and initial validation of The Cognitive Fusion Questionnaire. *Behaviour Therapy*, 45(1), 83-101.

Hayes, S., Luoma, J., Bond, F., Masuda, A. & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour Research and Therapy*, 44(1), 1-25.

Hayes, S.C., Barnes-Holmes, D. & Roche, B. (2001). *Relational Frame Theory: A post-Skinnerian account of human language and cognition*. New York: Kluwer Academic/Plenum Publishers.

Hayes, S.C., Strosahl, K.D. & Wilson, K.G. (2012a). *Acceptance and Commitment Therapy: The process and practice of mindful change* (2nd Edition). New York: The Guilford Press.

Hayes., S., Barnes-Holmes., D. & Wilson, K. (2012b). Contextual behavioural science: Creating a science more adequate to the challenge of the human condition. *Journal of Contextual Behavioural Science*, 1(1-2), 1-16.

IBM Corp. (2016). IBM SPSS Statistics for Macintosh, Version 24.0. Armonk, NY: IBM Corp.

Ingram, R. E., & Hollon, S. D. (1986). Cognitive therapy for depression from an information processing perspective. In R. E. Ingram (Ed.), *Information processing approaches to clinical psychology* (xi ed., pp. 259–281). San Diego, CA: Academic Press.

Kolts, R. L., (2016). *CFT Made Simple: A Clinician's Guide to Practicing Compassion-Focussed Therapy*. Oakland: New Harbinger.

Larsson, A., Hooper, N., Osborne, L., Bennet, P., & McHugh, L. (2016). Using brief cognitive restructuring and cognitive defusion techniques to cope with negative thoughts. *Behaviour Modification*, 40(3), 452-482.

Levin, M., Hildebrandt, M., Lillis, J. & Hayes, S. (2012). The impact of treatment components suggested by the psychological flexibility model: a meta-analysis of laboratory-based component studies. *Behaviour Therapy*, 43(4), 741-756.

Linehan, M. M., (1990) *Cognitive-Behavioral Treatment of Borderline Personality Disorder*, New York: Guilford Press.

Linehan, M. M., (1993) *DBT Skills Training Manual (Second Edition),* New York: Guilford Press.

Luciano, C., Ruiz, F.J., Torres, V. et al. (2011). A Relational Frame analysis of defusion interactions in Acceptance and Commitment Therapy. A preliminary and quasi-experimental study with at-risk adolescents. *International Journal of Psychology and Psychological Therapy, 11*(2), 165-182.

Mandavia, A., Masuda, A., Moore, M. et al. (2015). The application of a cognitive defusion technique to negative body image thoughts: A preliminary analogue investigation. *Journal of Contextual Behavioral Science*, 4(2), 86-95.

Marvin, R. S., Greenberg, M. T., & Mossler, D. G. (2017). The Early Development of Conceptual Perspective Taking : Distinguishing among Multiple Perspectives: *Child Development, 47*(2), 511–514.

Masuda, A., Feinstein, A., Wendell, J. et al. (2010a). Cognitive defusion versus thought distraction: a clinical rationale, training, and experiential exercise in altering psychological impacts of negative self-referential thoughts. *Behaviour Modification*, 34(6), 520-538.

Masuda, A., Twohig, M., Stormo, A. et al. (2010b). The effects of cognitive defusion and thought distraction on emotional discomfort and believability of negative self-referential thoughts. *Journal of Behaviour Therapy and Experimental Psychiatry*, 41(1), 11-17.

McHugh, L. (2015). A Contextual Behavioural Science approach to the self and perspective-taking. *Current Opinion in Psychology*, 2, 6-10.

Moran, O., Almada, P. & McHugh, L. (2018). An investigation into the relationship between the three selves (self-as-content, self-as-process and self-as-context) and mental health in adolescents. *Journal of Contextual Behavioral Science*, 7, 55-62.

Moran, O., & McHugh, L. (2019). Patterns of relational responding and a healthy self in older adolescents. *Journal of Contextual Behavioral Science*, *12*, 74–80.

Moran, O., & McHugh, L. (2020). Measuring occurrences of self and other discriminations in relation to mental health in adolescent textual responses. *Journal of Contextual Behavioral Science*, *15*, 253–263.

Neff, K. D., Tóth-Király, I., Knox, M. C., Kuchar, A., & Davidson, O. (2020). The Development and Validation of the State Self-Compassion Scale (Long- and Short Form). *Mindfulness*, (2016).

Neff, K. (2003). The development and validation of a scale to measure self-compassion. Self and Identity, 2(3), 223-250.

Nichols, A.L. & Maner, J.K. (2008). The good-subject effect: Investigating participant demand characteristics. *The Journal of General Psychology*, 135(2), 151-165.

Novak, G. (2012). Precursors to Perspective-Taking. Approaches to the self. In McHugh, L & Stewart, I. (Eds.) *The Self and Perspective-Taking: Contributions and Applications from Modern Behavioural Science* (Rev. edn, pp. 73-89). Oakland, Canada: Context Press.

O'Connor, M., Farrell, L., Munnelly, A., & McHugh, L. (2017). Citation analysis of relational frame theory: 2009–2016. *Journal of Contextual Behavioral Science*, *6*(2), 152–158.

Stockton, D., Kellett, S., Berrios, R., Sirois, F., Wilkinson, N., & Miles, G. (2019). Identifying the underlying mechanisms of change during acceptance and commitment therapy (ACT): A systematic review of contemporary mediation studies. *Behavioural and Cognitive Psychotherapy*, *47*(3), 332–362.

Thompson, B.L., Luoma, J.B. & LeJeune, J.T. (2013). Using Acceptance and Commitment Therapy to guide exposure-based interventions for posttraumatic stress disorder. *Journal of Contemporary Psychotherapy*, 43(3), 133-140.

Villatte, J.L., Vilardaga, R., Villatte, M., Plumb Vilardaga, J.C. et al. (2016). Acceptance and Commitment Therapy modules: Differential impact on treatment processes and outcomes. *Behaviour Research and Therapy*, 77, 52-61.

Villatte, M. (2016). A manifesto for clinical RFT, Keynote address presented at the 10th conference of the Association for Contextual Behavioural Science, Australia and New Zealand Chapter (ANZACBS), Melbourne, November 2016, cited in: McHugh, L., Stewart, I., & Almada, P. (2019) *A contextual behavioral guide to the self: Theory & Practice*. Oakland: New Harbinger.

Wilson, A., Mackintosh, K., Power, K. & Chan., S. (2019). Effectiveness of self-compassion related therapies: a systematic review and meta-analysis. *Mindfulness*, 10(6), 979-995.

Yu, L., Norton, S., & McCracken, L. M. (2017). Change in "Self-as-Context" ("Perspective-Taking") Occurs in Acceptance and Commitment Therapy for People With Chronic Pain and Is Associated With Improved Functioning. *Journal of Pain*, *18*(6), 664–672.
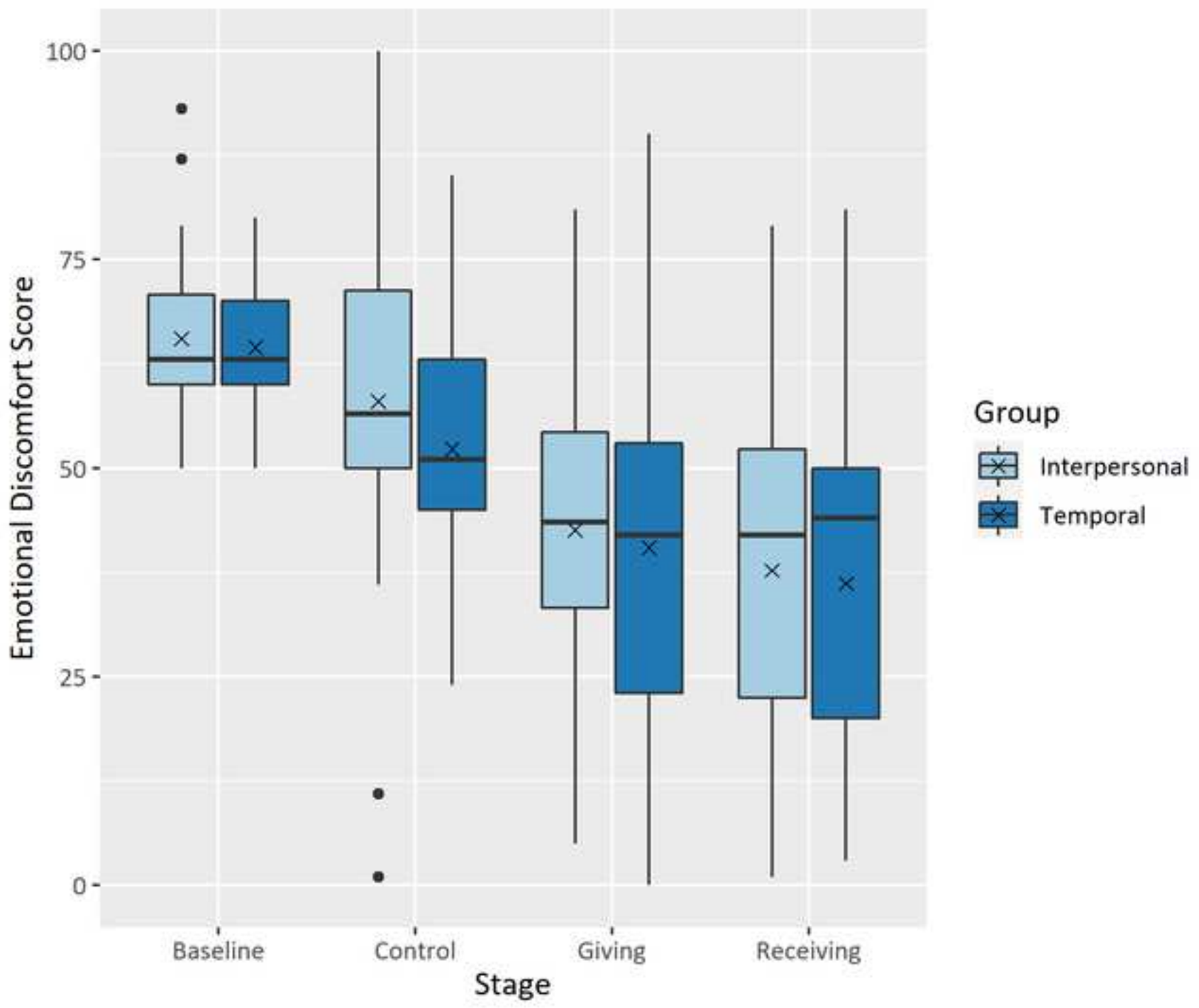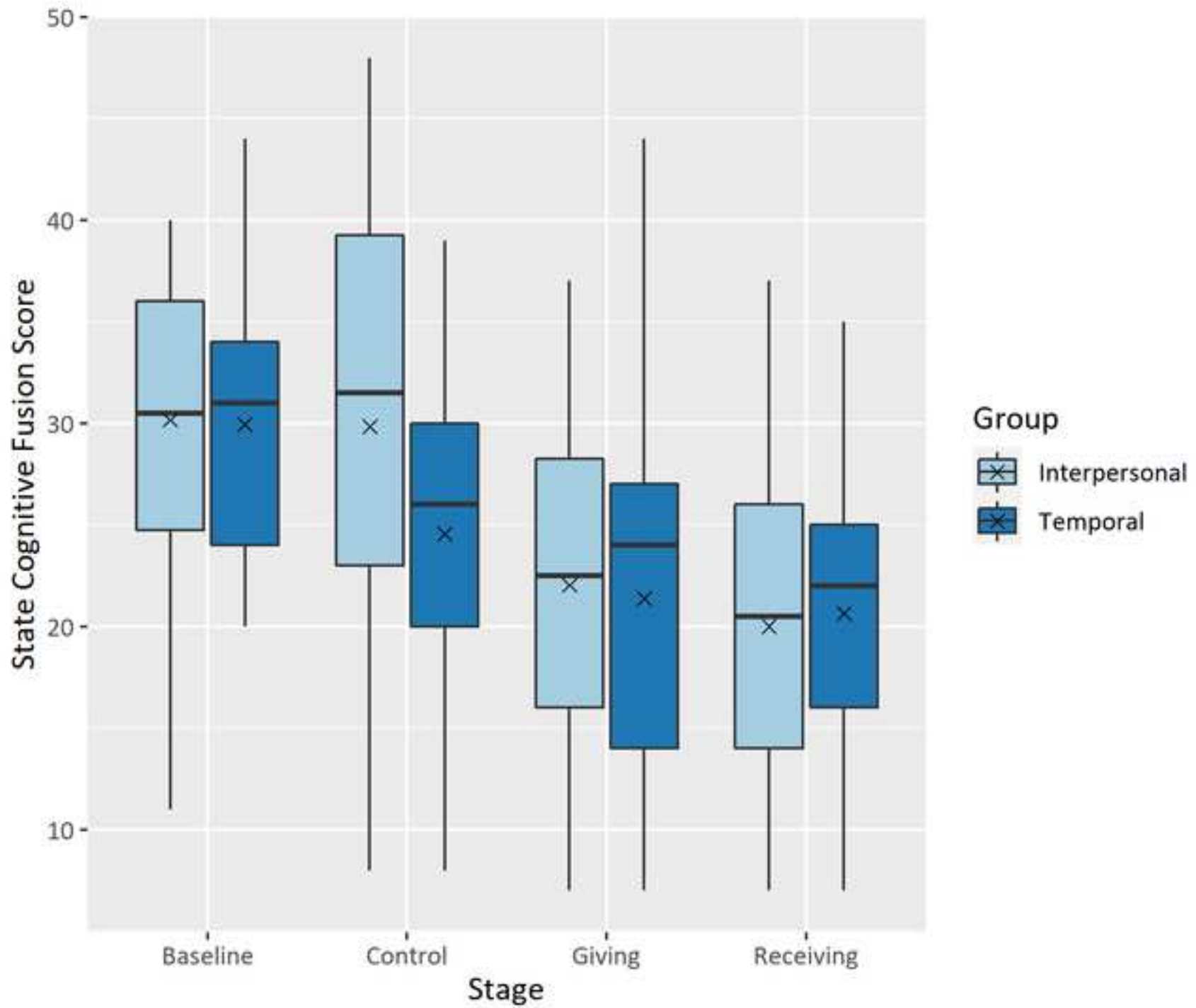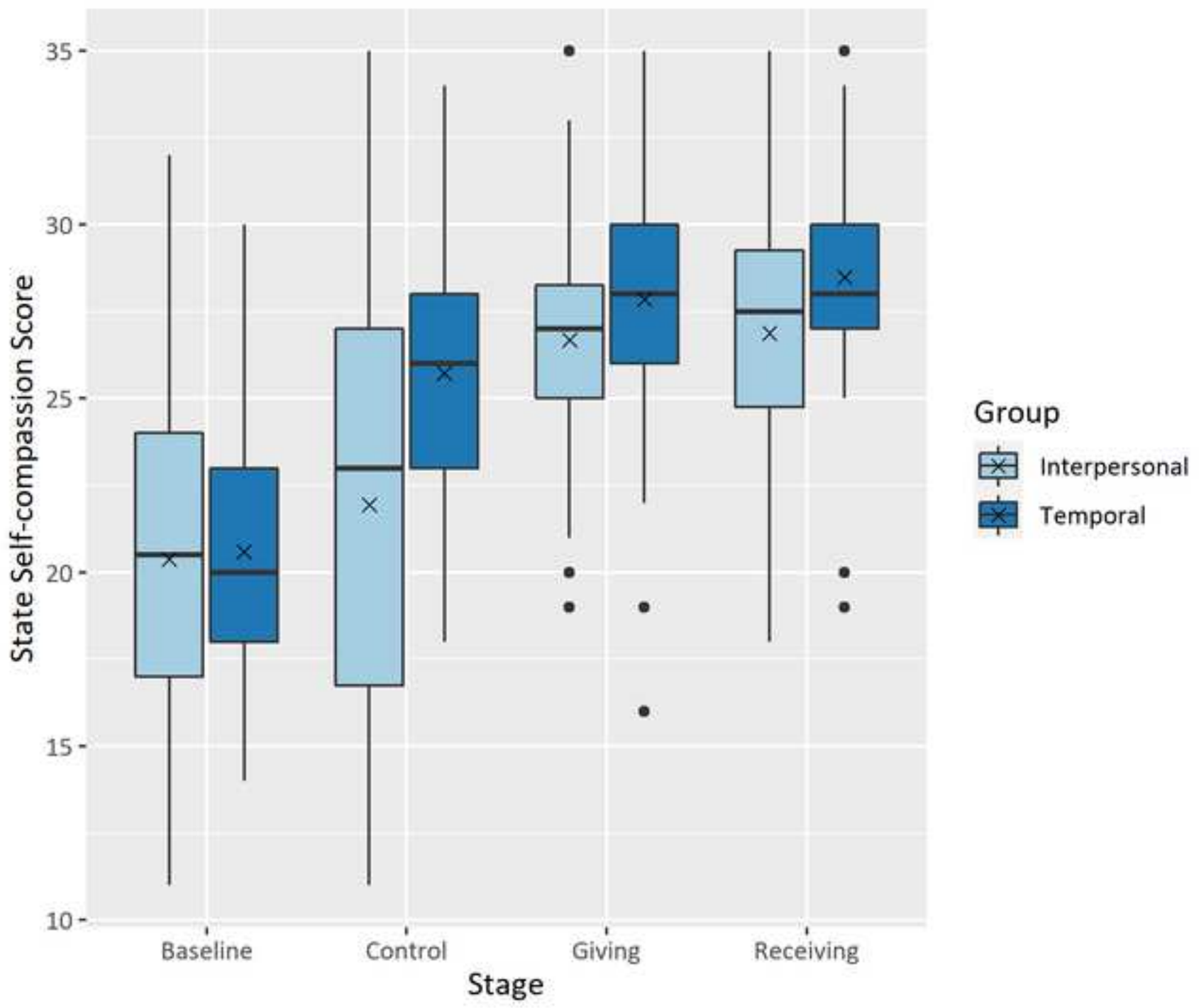
Figure 1

Figure 2

Figure 3

Figure 1. Box plots for the scores of Emotional Discomfort Visual Analogue Scale over four stages across perspective-taking groups of interpersonal (self-other) and temporal.

Figure 2. Box plots for the total scores of State Cognitive Fusion Questionnaire over four stages across perspective-taking groups of interpersonal (self-other) and temporal.

Figure 3. Box plots for the total scores of State Self-Compassion Scale over four stages across perspective-taking groups of interpersonal (self-other) and temporal.

Table 1: Descriptive statistics and findings

Variable	Condition	Baseline		Control		Giving		Receiving		Within $F_{(3,177)}$ $F_{(2.5,145.2)}^{\dagger}$	η_p^2	Between $F_{(1,59)}$	η_p^2	Interact $F_{(3,177)}$ $F_{(2.5,145.2)}^{\dagger}$	η_p^2
		Mean	SD	Mean	SD	Mean	SD	Mean	SD						
Emotional Discomfort	Temporal	64.45[a]	8.3	52.31[b]	14.35	40.48[c]	21.25	36.17[c]	19.39	51.16[†]**	.46	.68, ns	.01	.34[†], ns	.01
	Interpersonal	65.53[a]	9.81	58.00[a]	20.63	42.56[b]	17.29	37.72[c]	21.36						
State Cognitive Fusion	Temporal	29.93[a]	6.38	24.55[b]	7.69	21.38[c]	9.6	20.66[c]	7.4	45.11**	.43	.59, ns	.01	3.83*	.06
	Interpersonal	30.16[a]	7.05	29.84[a]	11.25	22.03[b]	8.13	20.00[c]	8.31						
State Self Compassion	Temporal	20.59[a]	3.76	25.72[b]	3.96	27.86[c]	4.12	28.48[c]	3.76	54.19**	.48	3.84[‡], ns	.06	2.73*	.04
	Interpersonal	20.37[a]	4.97	21.94[a]	6.78	26.69[b]	3.74	26.88[b]	4.46						

Means with different superscripts are significantly different for within participant comparisons at the level of $p<.05$. Interact = Within by between interaction, Significance of F test *$p<.05$ ** $p<.001$, [†]Greenhouse-Geisser correction applied to degrees of freedom due to violation of sphericity assumption. [‡]The p value for this test was .06. Effect size for partial eta squared can be described as following: .01 = Small, .06 = Medium, .14 = Large

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