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FANTASY PRONENESS AND COUNTERFACTUAL THINKING

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Abstract

Counterfactual thinking (CFT; mentally simulating alternatives to reality) is central to learning and motivation. Two studies explored the relationship between CFT and fantasy proneness, a personality trait typified by excessive fantasies hard to distinguish from reality. In study 1, participants completed a fictional diary entry which was used to measure spontaneous CFT and the Creative Experiences Questionnaire measure of fantasy proneness. Fantasy proneness was significantly correlated with the generation of counterfactual thoughts. Both CFT and fantasy proneness have been independently associated with low mood and study 2 included a measure of negative emotional state (the Depression, Anxiety and Stress scale) in addition to the CEQ and CFT. Fantasy proneness and negative emotion both predicted CFT, but no interaction between them was observed. The results suggest that individuals high in fantasy proneness have a general tendency to think counterfactually.

1. Introduction

Counterfactual thinking (CFT) refers to the mental simulation of alternatives to reality. It takes the form of “if only ...” thoughts about what might have been. For example, a person might imagine “*if only I had gone to university, I could have pursued a different career.*” The tendency for people to imagine events beyond those that actually occurred is a pervasive feature of human thought (Byrne, 2002). It occurs across cultures, even in the absence of linguistic cues (Au, 1983) and at pre-school age, children can already draw conclusions about what might have happened if antecedent events had been different (Harris, German & Mills, 1996). A range of emotions including guilt and shame (Niedenthal, Tangney & Gavanski, 1994), sympathy and blame (Alicke, Buckingham, Zell & Davis, 2008), regret (Seta & Seta, in press) and relief (Sweeny & Vohs, 2012) are associated with imagining that events could have turned out differently.

Our understanding of CFT is critical because reflecting on what might have been facilitates important psychological functions which impact on behaviour and wellbeing (Epstude & Roese, 2008; Roese & Morrison, 2009). Functions may be affective, for instance contrasting the current situation with less desired states can enhance mood (Sanna, 2000), or preparative, such as when mental simulations of better realities support improved future outcomes (Roese, 1997). Counterfactuals highlight causal relations (Walsh & Byrne, 2007) and are hence a means by which individuals can learn from past mistakes, plan ahead and modify behaviour (Markman, Gavanski, Sherman & McMullen, 1993; Smallman & Roese, 2009). In relation to specific goals, CFT can improve motivation, encourage persistence and model success through a process of reflection and evaluation of alternative states (Markman, McMullen, & Elizaga, 2008) or as a function of regret (Seta & Seta, in press). In sum, this functional explanation suggests that counterfactual simulation can be an antecedent of performance, with behavioural regulation

serving to avoid undesirable outcomes, or promote desirable ones, in the future (Epstude & Roese, 2008). Accordingly, understanding how individual differences influence CFT has important implications for learning and personal development.

Surprisingly little is known about how personality influences CFT and it is this which forms the focus of the present studies. Roese (1997) identified two stages of counterfactual generation: Activation (whether counterfactuals actually come to mind) and functional content (what these thoughts focus on). Research on activation has mainly concentrated on understanding the situational and emotional contexts which trigger CFT. For instance, individuals generate more counterfactuals following negative outcomes (Roese & Hur, 1997) and when in a low mood, whether naturally occurring (Monroe, Skowronski, MacDonald & Wood, 2005) or induced (Sanna, Turley-Ames & Meier 1999). However, far less research has examined personality correlates of activation. Kasimatis and Wells (1995) presented a series of studies which demonstrated little relation between CFT activation and a range of personality factors including the Big Five, need for cognition and locus of control. Variations were only observed when counterfactuals were examined for functional content. Later work has also linked personality and counterfactual content - for example, optimists and individuals high in self-esteem are more likely to think about how things could have turned out worse (Sanna, 2000; Sanna, et al 1999) and Wong, Haselhuhn and Kray (2012) have shown that individuals who perceive cognitive abilities as malleable were more likely to consider how things could have been better (as opposed to worse) when reflecting on previous experience.

The present work concentrates on a personality factor not previously considered in the context of CFT, fantasy proneness, and specifically on how this may impact on the activation of counterfactuals. Individuals high in fantasy proneness tend to spend considerable amounts of

time daydreaming (Schupak & Rosenthal, 2009) and experience “deep, profound, and long-standing involvement in fantasy and imagination” (Lynn & Rhue, 1988, p. 35). Such individuals may have fantasies and pseudomemories so vivid that they can be hard to distinguish from reality (Horselenberg, Merckelbach, van Breukelen & Wessel, 2004; Merckelbach, 2004; Merckelbach, Horselenberg & Muris, 2001). Fantasy proneness can be seen as normally distributed within the general population (Eisen & Lynn, 2001) with various degrees of daydreaming a fairly universal part of normal emotional functioning (Mason, Norton, Van Horn, Wegner, Grafton, & Macrae, 2007). Importantly, being prone to fantasy is not the same as being prone to CFT. CFT involves the simulation of alternative outcomes to actual life events, but tend to involve minimal changes to those events (Byrne, 2002). Fantasy proneness however, is conceptualised as the tendency to imagine fictitious situations, often to escape reality. What the concepts share is a tendency to mentally construct alternative realities. As such, we might reasonably expect that individuals high in fantasy proneness will also have a tendency towards the spontaneous activation of counterfactual thoughts.

Much previous research has measured cued CFT, whereby participants are explicitly asked to state ways in which a given situation might have turned out differently, for better and worse. While these tasks can present a rich source of data on counterfactual content, a more sensitive measure of the general propensity to engage in CFT can be achieved by examining a free narrative response within which counterfactual thoughts are spontaneously embedded (McEleney & Byrne, 2006; Sanna & Turley, 1996). As our interest was in the natural propensity to CFT, we examined the number of counterfactuals that participants spontaneously generated in a fictional diary entry (McEleney & Byrne, 2006). We also presented a self-report measure of fantasy proneness and expected that scores on this measure would significantly predict the tendency to generate counterfactuals.

2. Experiment 1

2.1 Methods

2.1.1 Participants

A volunteer sample of 106 undergraduate students (80 female; mean age 26.56 years, $SD = 12.22$) participated in small groups. All were native English speakers.

2.1.2 Measures and Procedures

All participants completed two measures:

Counterfactual thinking: Participants read a scenario about moving house to a new job in a new city (from McEleney & Byrne, 2006). The scenario described a number of decisions made and events that occurred in the first few weeks after the move which resulted in difficulties settling in and making new friends. Participants were given 5 minutes to write a free narrative of their thoughts and feelings in the style of a personal diary entry and we counted the number of counterfactuals generated in each narrative. A counterfactual was defined as any thought about how a change to the scenario would change the outcome (McEleney & Byrne, 2006; for instance, “*If only I had gone to that party, I would have made friends*”). Participants typically generate between 0 and 4 counterfactuals in response to this scenario (McEleney & Byrne, 2006, present a mean of 1.75).

The Creative Experiences Questionnaire (CEQ: Merckelbach et al., 2001) is a dichotomous measure of fantasy proneness comprising 25 items, for example, “*My fantasies are so vivid that they are like a good movie*”. “Yes” responses were summed to yield a total CEQ score with good internal consistency ($\alpha = .82$).

2.2 Results

The mean number of counterfactuals ($M = 1.56$; $SD = 1.61$) was fairly typical for this task (e.g. McEleney & Byrne, 2006). CEQ scores ($M = 9.69$, $SD = 4.76$) were within the expected range for a non-clinical sample (Merckelbach et al., 2001). As predicted, scores on this fantasy proneness measure were positively correlated with number of counterfactuals generated ($r = .55$, $p < .01$, $\eta^2 = .30$).

2.3 Discussion

As predicted, Experiment 1 showed that higher levels of fantasy proneness were correlated with higher levels of spontaneous CFT. This is one of the first studies to show a significant association between a specific personality trait and individual differences in the activation of counterfactuals.

However, as noted earlier, individuals with low mood show a propensity to think counterfactually (Monroe, et al., 2005; Sanna et al., 1999) and one of the key affective functions of CFT is to regulate emotion (Sanna, 2000). Fantasy proneness has also been associated with subclinical levels of mood disorder (Levin & Spei, 2003; Maaranen, Tanskanen, Honkalampi, Haatainen, Hintikka, & Viinamäki, 2005) and schizotypy (Merckelbach & Giesbrecht, 2006) and, in clinical populations, an association with schizophrenia, dissociation, depression and anxiety is documented (Ross, Joshi & Currie, 1990; Tutkun, Sar, Yargic, Ozpulat, Yanik, & Kiziltan, 1998). Accordingly, it is possible that the relationship between fantasy proneness and CFT may be based on their mutual association with low mood, a factor not considered in Experiment 1. In Experiment 2, therefore, we presented the same CFT and fantasy proneness measures as previously, together with a measure of mood state. We expected

to replicate the relationship between fantasy proneness and CFT found in Experiment 1. In addition, we predicted that both fantasy proneness and CFT would be positively correlated with negative mood. Finally, we aimed to investigate whether mood would mediate the association between fantasy proneness and CFT.

3. Experiment 2

3.1 Methods

3.1.1 Participants

A volunteer sample of 76 students (52 female; mean age 27.85 years, $SD = 8.69$) participated in small groups. All were native English speakers and self-declared as not having been clinically diagnosed with any form of psychological disorder, including depression and anxiety. None had taken part in Experiment 1.

3.1.2 Measures and Procedures

Counterfactual Thinking: All participants completed the same task as in Experiment 1 and counterfactuals were identified according to the same criteria. Two raters independently examined the diary narratives (inter-rater reliability, $r = .86$)

Following this, participants completed the CEQ ($\alpha = .78$ for this sample) and finally the *Depression, Anxiety and Stress Scale* (DASS; Lovibond & Lovibond, 1995). The DASS comprises three 7-item scales to measure the negative emotional states of depression, anxiety and stress. It has a robust factor structure and high levels of reliability with non-clinical samples (Crawford & Henry, 2003). Items present descriptions of affective symptoms, for

example: *‘I couldn’t seem to experience any positive feeling at all’* (depression), *‘I was worried about situations where I might panic and make a fool of myself’* (anxiety), and *‘I found it hard to wind down’* (stress). Participants rated the extent to which they have experienced each symptom over the past week on a scale from 0 - *not at all* to 3 - *most of the time*. Scores for each emotional state were computed by summing responses from the items in each subscale and multiplying by 2 – hence maximum score for each scale was 42¹. Each scale showed good internal consistency (depression $\alpha = .92$, anxiety $\alpha = .85$, stress $\alpha = .86$).

3.2 Results

Table 1 presents descriptive statistics. The mean number of counterfactuals observed was again characteristic of responses to this scenario (McEleney & Byrne, 2006) and similar to Experiment 1. Scores on the DASS subscales showed typical intercorrelations for this measure (depression*anxiety, $r = .52$; depression*stress $r = .54$; anxiety* stress $r = .84$; $p < .01$ in each case) and, following Lovibond & Lovibond (1995), we computed the mean of the three scores to produce a composite measure of negative emotional state (NES). Table 1 shows the mean scores for this and the CEQ. Both were typical of those reported previously for non-clinical samples (Lovibond & Lovibond, 1995; Merckelbach et al., 2001, respectively).

PLEASE INSERT TABLE 1 ABOUT HERE

Both NES and CEQ scores correlated positively with CFT as shown in Table 1. In addition, NES and CEQ were themselves moderately, but significantly, related ($r = .26$, $p = .03$; 2 tailed) suggesting that participants who reported low mood were also likely to be higher in fantasy proneness.

A linear regression analysis showed that, as expected, fantasy proneness significantly predicted CFT (model 1 in Table 2). A series of further regressions were then conducted to test whether mood would mediate this effect. Baron and Kenny (1986) specified four requirements for mediation: 1) the predictor significantly predicts the outcome in the absence of the mediator; 2) the mediator has a significant unique effect on outcome; 3) the predictor significantly predicts the mediator; 4) on addition of the mediator to the model, the effect of the predictor on the outcome is reduced. In Table 2, the first two of these criteria are satisfied in models 1 and 2 in that the predictor (fantasy proneness) and the mediator (NES) are both significant independent predictors of CFT (CEQ and NES both converted to z-scores). Model 3 shows that fantasy proneness predicts NES.

PLEASE INSERT TABLE 2 ABOUT HERE

Finally, both fantasy proneness and NES were entered into model 4. As Table 2 shows, significantly more of the overall variance in CFT was accounted for compared to model 1: R^2 change = .42, F change (2, 73) = 25.96, $p < .001$. The effect of fantasy proneness was reduced when NES was included in the model (as evidenced by the reduced beta value compared to model 1) suggesting a partial mediating effect. As recommended for small samples, we used nonparametric bootstrapping analysis (Preacher & Hayes, 2004) to test the mediational effect of NES on the relationship between fantasy proneness and CFT. Results based on 10,000 bootstrapped samples indicated a 95% confidence interval which included zero (lower CI=.00; upper CI= .05). This suggests an indirect effect not significantly different from zero ($p < .05$, two tailed), and hence that no significant mediating effects are present.

An alternative possibility is that the results of model 4 reflect a partial *moderating* effect such that the effect of fantasy proneness on CFT varies with different levels of NES. To test for this, we conducted a final regression (Table 2, model 5) which incorporated an interaction variable (computed as the product of CFT and NES scores). Model 5 accounted for the same amount of variance in CFT as model 4 (40%). Fantasy proneness and NES remained significant predictors, with β values identical to those in model 4, but the interaction variable did not predict CFT, suggesting no significant moderating effects.

4. General Discussion

These studies provide one of the first demonstrations that personality factors can predict the extent to which individuals engage in spontaneous counterfactual thinking. In study 1 we showed that fantasy proneness significantly predicted the activation of counterfactual thoughts with high fantasisers generating more counterfactuals than low fantasisers. Low mood has been associated with both fantasy proneness (Levin & Spei, 2003; Maaranen, et al., 2005) and CFT (Monroe, et al., 2005) and the results of study 2 were consistent with previous research in these respects. However, our data suggested no interaction between fantasy proneness and mood in the activation of counterfactuals. This was perhaps surprising given that, for many individuals, negative events are inextricably linked to some degree of lowered mood and this is thought to be a key activator of CFT. Indeed, CFT has been described as a spontaneous, possibly automatic process, almost irrepressible following a negative event or perceived poor decision (Epstude & Roese, 2008). Fantasy proneness has also been linked to low mood states in non-clinical populations (Levin & Spei, 2003; Maaranen, et al., 2005) and we might therefore have expected that participants activating the most counterfactuals would be those high in fantasy proneness, but low in mood. One possible way in which the three factors may interact is via rumination. Thinking repetitively, but passively, about distressing events and focusing on

negative emotions is linked to higher levels of depressive symptoms over time (Nolen-Hoeksema, 2000). However, CFT and rumination can be separated conceptually (Epstude & Roese, 2008). Whether or not it involves rumination, CFT is a stronger predictor of depression than rumination alone (Roese, Epstude, Fessel, et al., 2009).

A practical context in which fantasy and CFT may interact is in coping with stressful events. Thinking counterfactually about how things might have been better may support coping by raising optimism and improving mood (Sanna, 2000) or facilitating problem-focused behaviour regulation (Epstude & Roese, 2008; Mandel, 2003; Markman & McMullen, 2003). However, such counterfactuals may be unhelpful if the situation is perceived to be outside the individual's control (Markman & Miller, 2006; Markman & Weary, 1996) and excessive regret or negative emotion may be detrimental to coping (Davis & Lehman, 1995; Gilbar & Hevroni, 2007; Kocovski, Endler, Rector & Flett, 2005). Fantasies support coping as a means to avoid unpleasant realities (Lawrence, Edwards, Barraclough, Church, & Hetherington, 1995), to avoid culpability (Merckelbach, 2004) or dissociate from trauma (Näring & Nijenhuis, 2005). Continuing research might usefully explore the nature and function of counterfactuals generated by high fantasiers who have not experienced major trauma and have no clinical psychopathology. Individual differences in how CFT and fantasy proneness interact to mutually support emotional regulation and affect coping is a significant issue given the link between poor coping and reduced physical and mental health (Wrosch, Bauer, Miller, & Lupien, 2007). However, there are additional, wider, implications. Smith and Mathur (2009) have shown that fantasy prone children not only have better coping skills and emotional regulation than their less imaginative peers, they also perform better on measures of thinking, logic, and communication.

Finally, given our results, it is surprising that Kasimatis and Wells (1995) reported no association between CFT and the Big Five factor Openness to Experience. This trait includes a subfacet “Fantasy” reflecting the tendency to mentally create a richer, more interesting world (Costa & McCrae, 2006). Furthermore, daydreaming (a major aspect of fantasy proneness) has been found to correlate positively with Openness when the content of the fantasies is constructive, but with the trait Neuroticism when the daydreams are dysphoric (Zhiyan & Singer, 1997). The relationship between CFT and the Big Five traits remains under-researched and requires further investigation.

4.1 Limitations

This work is not without limitations. Firstly, although our measures are all widely used in research, they may suffer from well-documented limitations associated with psychometrics and self-report. Secondly, an undergraduate sample may limit generalisability to a wider population – though it is notable that UK undergraduates are increasingly heterogeneous in social background and age. Thirdly, our participants were predominantly female and the association between variables could be driven by women’s increased tendency towards rumination (Nolen-Hoeksema & Aldeo, 2011). Further research with larger, gender balanced and socially representative, samples is desirable. Finally, this research focused only on the activation stage of the CFT process. A number of questions remain outstanding with regard to how individual differences in fantasy proneness are reflected in variations in the functional content of counterfactuals. We did not examine content here because, while the diary task provides a useful measure of spontaneous activation, the counterfactuals generated tend to vary little in content and structure (McEleney & Byrne, 2006). Further research might usefully employ tasks which cue participants to think in alternative ways or which manipulate the outcome valence of

the scenario. These methods produce richer variation in content data and offer a useful way to examine individual differences.

4.2 Conclusion

Reflection on life is a pervasive part of human experience. CFT not only facilitates learning, planning and behaviour change, but also allows us to find meaning in life choices and events (Kray, George, Liljenquist, Galinsky, Tetlock & Roese, 2010). Our preliminary studies suggest that individuals high in fantasy proneness also have a tendency towards CFT. The next step is to investigate associated differences in the content and functional application of counterfactuals.

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Table 1: Mean scores and correlations between CFT, fantasy proneness (CEQ) and negative emotional state (NES).

	mean	SD	CFT (<i>r</i>)
CFT	1.17	1.32	----
CEQ	9.84	5.30	.58**
NES	9.91	6.19	.42**

** $p < .01$ (1 tailed)

Table 2: Regressions to test mediating effect of negative emotional state (NES) on relationship between fantasy proneness (CEQ) and CFT.

Model	Predictor	Outcome	Adj. R ²	Standardised β	t	p
1	CEQ	CFT	.33	.58	6.11	< .001
2	NES	CFT	.17	.42	4.00	< .001
3	CEQ	NES	.05	.26	2.26	.03
4	CEQ (step 1) NES (step 2)	CFT	.40	.51 .29	5.45 3.16	< .001 .002
5	CEQ (1) NES (2) Interaction (3)	CFT	.40	.51 .29 -.01	4.29 3.14 -.11	< .001 .002 .91

Footnote 1

For the 21-item DASS used here, the test manual (Lovibond & Lovibond, 1995) instructs that scores be multiplied by 2 in order that they appear equitable to those obtained on the 42-item version of the measure.