Shorter communication

Inflated responsibility and the use of stop rules for catastrophic worrying

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Abstract

The present paper reports the results of two experiments designed to test some predictions from a mood-as-input explanation of catastrophic worrying (Startup & Davey, 2001). In particular, these experiments attempted to identify whether worriers possess characteristics that would contribute to the use of relatively strict ‘as many as can’ closure rules for catastrophising. Experiment 1 demonstrated that high worriers begin a catastrophising task with higher self-reported levels of responsibility towards fully considering all issues involved, than low worriers. Experiment 2 suggested that inflated responsibility has a causal effect on perseveration at the catastrophising task (rather than being a simple non-causal by-product of excessive worrying), and that inflated responsibility exacerbates catastrophising only in conjunction with negative mood. This suggests a relatively complex relationship between responsibility and mood, where there are mood conditions in which high responsibility does not generate greater persistence than low responsibility. These findings are consistent with predictions from a mood-as-input account of catastrophic worrying, and provide evidence for a putative mechanism that mediates the influence of variables such as inflated responsibility on perseveration.

Keywords: Worry; GAD; Mood-as-input; Inflated; Responsibility

1. Introduction

Worry is known to be a feature associated with most of the anxiety disorders and most specifically with Generalized Anxiety Disorder (GAD) (Brown, Antony, & Barlow, 1992). A form in which uncontrollable worrying occurs in individuals suffering GAD is through processes of catas-
trophising (Vasey & Borkovec, 1992; Davey & Levy, 1998). Catastrophising is the tendency of individuals to apply a ‘what if...?’ questioning style to potential problematic features of their life. Rather than bringing the problem to a satisfactory close, however, this process usually leads the worrier to perceive progressively worse and worse outcomes to the worry topic (Vasey & Borkovec, 1992; Davey & Levy, 1998).

The question of theoretical importance, therefore, is by what mechanisms do worriers persist at generating catastrophising steps when the nonworrier will forego this process at a significantly earlier stage?

Startup and Davey (2001) carried out a series of experiments testing a mood-as-input explanation of catastrophic worrying. These studies suggested that worriers are in a significantly more negative mood state than nonworriers, and that they use relatively stringent ‘as many as can’ stop rules for judging whether to terminate the catastrophising task (cf. Startup & Davey, 2001). Thus, when catastrophising, worriers are continually asking themselves (either implicitly or explicitly) whether they have successfully dealt with the problem, but their negative mood provides them with information that they have not and this results in perseveration at the task (e.g. Martin & Davies, 1998).

Although the Mood-As-Input account could potentially offer a useful theoretical model of catastrophic worry, this model is only applicable if it is assumed that the worrier is adopting strict ‘as many as can’ stop rules (cf. Startup & Davey, 2001). That is, the worrier’s negative mood will produce perseveration at the catastrophising task only if that mood is interpreted in terms of a stop rule that requires that the worrier’s goal is to have achieved an acceptable solution to the problem.

The present paper reports the results of two experiments which attempt to identify whether worriers possess characteristics which would contribute to the strict use of ‘as many as can’ stop rules (e.g. inflated responsibility), and explores how these characteristics might be related to perseveration. Experiment 1 tests the prediction that worriers will report a greater sense of responsibility than nonworriers for properly considering the relevant issues during catastrophising. Experiment 2 looks at the effect of manipulating levels of responsibility and mood valence on perseveration at a catastrophising task. It is predicted that perseveration of a worry topic will be exacerbated when participants are in a negative mood and are in a condition of high responsibility.

2. Experiment 1

2.1. Method

2.1.1. Participants

The participants were 78 undergraduate and postgraduate students based at the University of Sussex (53 females and 25 males, ages ranged from 18 to 60 years with a mean age of 25 years). All participants were volunteers and were paid a small fee for their participation.

2.1.2. Procedure

Participants were assigned randomly to one of two groups. These groups were labeled Main Worry \((N = 39)\) or Hypothetical Worry \((N = 39)\) depending on the interview condition they were to partake in. Participants were asked initially to complete an informed consent form.
2.1.2.1. Stage 1 All participants were asked to rate their current levels of anxiety, sadness, and happiness on separate visual analogue 100-point scales, and then to complete the Penn State Worry Questionnaire (Meyer, Miller, Metzger, & Borkovec, 1990) as a valid measure of trait worrying that is unaffected by the content of the worry (Molina & Borkovec, 1994; Davey, 1993). In addition all participants were asked to complete the following questionnaires: The Responsibility Questionnaire was developed to conform to a new definition of responsibility, particularly relevant to OCD and has good psychometric properties (RQ, Rheaume, Ladouceur, Freeston & Letarte, 1994). The Bipolar form of the profile of mood states (POMS-BI) is a measure of general mood state, constructed using both normal and psychiatric outpatients samples, (Lorr & McNair, 1982).

2.1.2.2. Stage 2 Half of the participants (N = 39) were assigned randomly to the Main Worry condition and the other half to the Hypothetical Worry condition (N = 39). Participants were presented with a sheet of paper, for the Hypothetical Worry group the topic — Statue of Liberty — was written at the top of the page. Those in the Main Worry condition were asked to write down at the top of the page the topic of their current main worry.

2.1.2.3. Stage 3 (Catastrophising) All participants were initially shown an example of a possible catastrophising sequence. Once the procedure was understood, those in the Main Worry group, catastrophised their main worry topic and participants in the Hypothetical Worry group catastrophised being the Statue of Liberty (see Davey and Levy, 1998 for previous use of this procedure and rationale).

2.1.2.4. Stage 4 (Within interview measures) After every two catastrophising steps participants in both interview conditions were asked to pause from the catastrophising interview and respond to a question asking ‘At this point in the worry process to what extent do you feel a sense of responsibility that the issues have not yet been fully considered (where 0 = not at all responsible and 100 = extremely responsible)’. The scale was presented to the participant after every two catastrophising steps until the participant brought the interview to an end. As a result, each participant completed the visual analogue scales a different number of times, determined solely by the length of their catastrophising chain. If a participant could come up with no catastrophising steps or only one step then they did not complete any of the 100-point visual analogue rating scales, such data were therefore not included in the analyses.

After the full experimental procedure the total number of steps generated by each participant was calculated (for a discussion of how redundant steps were treated see Startup & Davey, 2001).

2.2. Results

2.2.1. Penn State Worry Questionnaire (PSWQ) A median split1 was carried out on the PSWQ scores to create a group with high and low worry scores (for details of PSWQ means for the sample as a whole and for the means for each experimental group (high and low worriers) see Table 1)2.

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1 These scores can be compared with a mean score of 47.65 (N = 1323, S.D. = 12.99) for unselected groups of the kind used in the present series of studies and a mean PSWQ score of 65.77 for a GAD analogue sample identified by Anxiety Disorder Interview Schedule-Revised (ADIS-R; DiNardo & Barlow, 1988) screening (N = 21, S.D. = 9.6) (Molina & Borkovec, 1994).

2 PSWQ scores were equivalent across topic conditions (p > 0.05).
Table 1
Participant details for Experiment 1: means (and standard deviations) for high and low worriers within the two topic conditions and for the sample as a whole

<table>
<thead>
<tr>
<th>Sample</th>
<th>Main worry</th>
<th>Hypothetical worry</th>
<th>Full</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hi worry</td>
<td>Low worry</td>
<td>Hi worry</td>
</tr>
<tr>
<td>PSWQ</td>
<td>55.21 sd 9.8</td>
<td>32.4 sd 18.41</td>
<td>58.16 sd 8.93</td>
</tr>
<tr>
<td>Responsibility</td>
<td>69.95 sd 18.04</td>
<td>61.15 sd 11.81</td>
<td>73.0 sd 13.02</td>
</tr>
</tbody>
</table>

2.2.2. Personality measures
At the outset, high worriers scored higher than low worriers on trait measures of responsibility (F (1,77) = 5.89, p < 0.05).

2.2.3. Mood measures
Analyses were performed to confirm the prior finding that, compared with low worriers, high worriers scored significantly higher on measures of state sadness (t(57.03) = −3.44, p < 0.001) and state anxiety (t(76) = −6.32, p < 0.001). However, the low worriers scored significantly higher on measures of state happiness (t(76) = 2.83, p < 0.01). Using the POMS bi-polar scales, high worriers scored significantly higher than low worriers on trait measures of negative affect (t(76) = −6.53, p < 0.001), but significantly lower on positive affect (t(76) = 3.43, p < 0.001).

2.2.4. Main analyses
The number of catastrophising steps was subject to a two-way worry group (high vs. low) × topic (main worry vs. statue of liberty) ANOVA. There was a significant main effect of worry group (F(1,77) = 26.71, p < 0.001), such that (disregarding topic) high worriers generated more catastrophising steps (mean = 7.54, S.D. 3.79) than low worriers (mean = 3.62, S.D. 1.98). There were no other significant effects (all p’s >0.05).

2.2.5. Analysis of subjective measures of ‘responsibility’, at the early stages of catastrophising and just prior to worry closure
Analyses of ‘responsibility’ revealed only a main effect of worry group (F (1,47) = 7.61, p < 0.01), such that high worriers score higher on this measure than low worriers. Regardless of the point in the catastrophising chain, or the topic to be considered, high worriers scored higher on this measure than low worriers.

2.3. Discussion
The results of Experiment 1 indicate that, compared to low worriers, high worriers begin a catastrophising task with higher self-reported levels of responsibility towards fully considering all

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3 *p* values were adjusted (for the state and trait mood variables) to reduce the likelihood of error, *p* = 0.01.

4 Catastrophising steps broke the assumption of homogeneity of variance, but this was successfully stabilized using a square root transformation (Levene’s test, *p* > 0.05, skewness, *p* < 1)
the issues involved, and this elevated sense of responsibility persists throughout the catastrophising process. This characteristic was found regardless of whether the topic being catastrophised was a current personal worry or whether it was a hypothetical worry that they had never previously considered.

While Experiment 1 has demonstrated that the greater sense of responsibility reported by high worriers is present at the outset of the catastrophising process (and is thus not simply a consequence of the number of catastrophising steps), Experiment 2 describes the results of a study that attempts to manipulate responsibility levels and observe the effect of this manipulation on perseverative catastrophising.

3. Experiment 2

3.1. Method

3.1.1. Participants

The participants were 60 undergraduate and postgraduate students from the University of Sussex (37 females and 23 males, ages ranged from 18 to 47 years with a mean age of 24 years). All participants were volunteers and were paid a small fee for their participation.

3.1.2. Procedure

Participants were assigned randomly to one of three groups. These groups were labeled Negative ($N = 20$), Positive ($N = 20$) and Neutral ($N = 20$) depending on the valence of the mood induction they were to experience. Half of the participants in each mood group were assigned randomly to the High Responsibility Condition ($N = 10$) and the other half to the Low Responsibility Condition ($N = 10$). After signing a consent form, participants were then asked to rate their current levels of anxiety, sadness and happiness on separate visual-analogue 100-point scales (where 0=not at all anxious/sad/happy, and 100=extremely anxious/sad/happy). All participants were then asked to complete the Penn State Worry Questionnaire and the Responsibility Questionnaire (see Experiment 1).

3.1.2.1. Stage 1 (Mood induction) This study used similar mood-induction procedures to those reported by Startup and Davey (2001). At the end of the mood induction period, participants were once again asked to complete 100-point visual-analogue mood scales.

3.1.2.2. Stage 2 (Manipulation of responsibility) Half of the participants in each mood condition ($N = 10$) were then presented with instructions that a pilot study had indicated induced a state of high responsibility. The instructions asked participants to take part in an interview about worries they have about issues of dyslexia, they were informed that their responses “may be used to compile a booklet for public distribution…. which may influence the budget received by such students…."

The other half of the participants ($N = 10$) in each mood condition read low responsibility instructions. These instructions were similar in content except that participants were informed that “your responses are of no real importance beyond the purpose of this experiment”.
3.1.2.3. Stage 3 (Manipulation check) In order to verify that the manipulation of responsibility had been successful, participants were asked to rate how responsible they felt ‘in general’ and how responsible they felt about ‘individuals with dyslexia’ specifically (responses made on 9 point Likert-scales, 1=not at all responsible, and 9=extremely responsible).

3.1.2.4. Stage 4 (Catastrophising interview) Participants were first presented with an example catastrophising sequence. Then the scenario of their close friend suffering from dyslexia was subjected to the catastrophising interview (see Davey and Levy, 1998 for procedure). After the interview the number of steps generated by each participant was calculated. (see Davey and Levy, 1998 for cut off criteria).

3.2. Results

3.2.1. Trait personality measures (PSWQ and RQ) For details of the mean trait personality measures per mood group (positive vs. negative vs. neutral) and per responsibility condition (high vs. low) see Table 2.

3.2.2. Mood measures Happiness ratings showed no significant difference between groups on the pre-induction measure (F(2, 59) = 1.66, p > 0.05), however, there was a significant difference on post induction

<table>
<thead>
<tr>
<th>Responsibility condition</th>
<th>Mood condition</th>
<th>PSWQ Mean and range</th>
<th>RQ Mean and range</th>
<th>PSWQ Mean and range</th>
<th>RQ Mean and range</th>
<th>PSWQ Mean and range</th>
<th>RQ Mean and range</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Negative</td>
<td>49.6 (9.55)</td>
<td>74.5 (11.18)</td>
<td>52.6 (11)</td>
<td>64.7 (15.87)</td>
<td>48.2 (11.71)</td>
<td>78.5 (12.72)</td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>50.2 (11.13)</td>
<td>74.3 (18.43)</td>
<td>52 (15.87)</td>
<td>72.4 (10.44)</td>
<td>41.4 (12.8)</td>
<td>69.5 (12.74)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>36–75</td>
<td>36–100</td>
<td>35–79</td>
<td>54–89</td>
<td>21–64</td>
<td>53–90</td>
</tr>
<tr>
<td>Low</td>
<td>Negative</td>
<td>49 (12.22)</td>
<td>72.31 (13.95)</td>
<td>21–79</td>
<td>36–110</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Positive</td>
<td>36–100</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Neutral</td>
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</tbody>
</table>

5 Analyses revealed that across both trait measures all scores were equivalent across experimental conditions
6 This variable broke the assumption of homogeneity of variance and was therefore subjected to a square root transformation. The variances (Levene’s test >0.05) had been successfully stabilized.
measures (F(2,59) = 11.08, p < 0.001). Pairwise comparisons showed that groups Positive and Neutral experienced significantly higher happiness ratings than group Negative (LSD, p < 0.05). There was, however, no significant difference in post induction ratings between groups Positive and Neutral (p > 0.05). Within-group comparisons showed a significant decrease in happiness ratings between time 1 and time 2 for group Negative (t(19) = 2.95, p < 0.01) and a significant increase for group Positive (t(19) = −2.53, p < 0.05). Group Neutral, however, showed no significant change in happiness between time 1 and time 2 (t(19) = −0.8, p > 0.05).

Negative affect measures were subject to a group (negative vs. positive vs. neutral) × rating (pre-induction vs. post-induction) analysis of variance. For Negative effect, although there was no significant difference between groups on the pre-induction measure (F(2,59) = 2.49, p > 0.05), there was a significant difference on the post-induction measure (F(2,59) = 13.91, p < 0.001). Pairwise comparisons showed that Group Negative had significantly higher negative affect ratings than groups Positive and Neutral (LSD, p < 0.05). There was, however, no significant difference in post-induction negative affect ratings between groups Positive and Neutral (p > 0.05). Within-group comparisons showed no significant change in negative affect rating between time 1 and time 2 for Group Negative (t(19) = 1.72, p > 0.05). However, both groups Positive (t(19) = 4.2, p < 0.001) and Neutral (t(19) = 2.56, p < 0.05) showed a significant decrease in negative affect between time 1 and time 2.

3.2.3. Responsibility manipulation check

Following the high responsibility manipulation, individuals endorsed higher responsibility ratings than those who underwent the low responsibility manipulation (F(2,53) = 13.21, p < 0.001). This effect was true both in the case of the first retrospective question (high responsibility mean=5.37, S.D. 1.54, low responsibility mean=3.47, S.D. 1.87) and in the case of the second retrospective question (high worriers mean=4.55, S.D. 2.35, low worriers mean=2.35, sd 1.69).

3.2.4. Main analyses

There was a significant main effect of mood group (positive vs. negative vs. neutral) (F(2,54) = 4.46, p < 0.05). Disregarding the responsibility condition, pairwise comparisons revealed that Group Negative generated overall significantly more catastrophising steps than Group Neutral (LSD, p < 0.05) and there was a trend in the direction of Group Negative scoring higher on this measure than Group Positive (LSD, p = 0.078). Group Positive and Neutral, however, did not differ on this measure (LSD, p > 0.05).

The group (high responsibility vs. low responsibility) × mood (positive vs. negative vs. neutral) interaction was also significant (F(1,36) = 11.72, p < 0.005). In order to test the hypothesis that responsibility would have differential effects on perseveration depending on the mood condition it was operating under, a number of within mood group comparisons were made. Within the negative mood condition, participants performing under conditions of high responsibility generated significantly more catastrophising steps than participants performing under conditions of low responsibility (t(18) = 2.4, p < 0.05). Within the positive mood condition however, it was participants performing under the condition of low responsibility who generated significantly more steps than the participants in the high responsibility group (t(18) = −2.8, p < 0.05). There was, however, no significant difference in the number of steps generated between responsibility conditions in the case of the neutral mood group (t(18) = 1.23, p > 0.05).
Regarding the high responsibility condition, there was a significant difference across mood groups in terms of the number of catastrophising steps generated ($F(2,29) = 7.42, p < 0.01$). Pairwise comparisons revealed that Group Negative scored higher on this measure than both Groups Positive and Neutral (LSD, $p < 0.05$). Groups Positive and Neutral, however, did not differ on this measure (LSD, $p > 0.05$). Regarding the low responsibility condition, there is a significant difference across mood groups in terms of the number of catastrophising steps generated ($F(2,29) = 3.51, p < 0.05$). Pairwise comparisons revealed that Group Positive generated significantly more catastrophising steps than Group Neutral (LSD, $p < 0.05$). Groups Negative and Positive and Negative and Neutral did not differ on this measure (LSD, $p > 0.05$).

3.3. Discussion

The results of Experiment 2 indicate that both mood and responsibility manipulations affect persistence at a catastrophising task. First, the results indicated a main effect of mood in which negative mood generated significantly greater catastrophic perseveration than positive mood regardless of the responsibility manipulation. Second, high responsibility participants show significantly greater persistence when in a negative mood than in a positive mood, but when participants are in a positive mood, persistence is greatest in the group subjected to a low responsibility manipulation. This latter finding might suggest that individuals under conditions of low responsibility are adopting a ‘feel like continuing’ stop rule, thus persisting for longer when in a positive but not negative mood. This is a condition acknowledged by the mood-as-input hypothesis, but perhaps has less clinical significance than the ‘many as can’/negative mood condition (cf. Martin & Davies, 1998). This suggests a relatively complex relationship between responsibility and mood, where there are conditions in which high responsibility does not generate greater persistence than low responsibility.

4. General discussion

The experiments reported in this paper provide further evidence for a mood-as-input explanation of perseverative catastrophising in pathological worriers. Experiment 1 demonstrated that high worriers begin a catastrophising task with high self-reported levels of responsibility towards fully considering all issues involved. Experiment 2 suggested that inflated responsibility has a direct causal effect on perseveration at the catastrophising task (rather than being a simple non causal by-product of excessive worrying), but that inflated responsibility facilitates catastrophising only in the presence of negative mood.

These findings are consistent with mood-as-input explanations of exacerbated catastrophising in worriers, in which perseverative catastrophising is seen as being generated by a combination of negative mood and the use of strict ‘as many as can’ stop rules for the task (Startup & Davey, 2001). In particular, the present results indicate that worriers do possess stricter ‘as many as can’ stop rules, reported in the form of significantly higher levels of responsibility towards fully considering all issues involved than low worriers (Experiment 1).

If inflated responsibility (whatever its specific form) does contribute to establishing stricter ‘as many as can’ stop rules in worriers, then the mood-as-input hypothesis does not view either
inflated responsibility or relatively strict ‘as many as can’ stop rules as affecting perseveration independently of mood. As the results of Experiment 2 appear to indicate, inflated responsibility influences perseverative catastrophising in conjunction with mood, and may not have a simple direct effect on persistence. Thus, if the mood-as-input account is viewed as a plausible mechanism for perseverative psychopathology in both pathological worrying (Startup & Davey, 2001) and obsessive-compulsive disorder (Davey, Startup, Zara, & MacDonald, submitted), then inflated responsibility is not seen as fuelling perseveration independently of negative mood. This is in contrast to many contemporary models of obsessive-compulsive disorder, which view inflated responsibility and negative mood as relatively independent contributors to obsessive perseveration (e.g. Salkovskis, Wroe, Gledhill, Morrison, Forrester, Richards, Reynolds, & Thorpe, 2000).

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References