Feeling guilty as a source of information and OCD

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Running Head: Guilt affect as information

Feeling guilty as a source of information about threat and performance.

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Abstract

OCD patients experience increased feelings of guilt, threat and uncertainty about harm prevention. As to the relation between these phenomena, it was hypothesised that the experience of guilt acts as “information” that increases the sense of threat and decreases the sense that preventive action is effective. We tested whether state guilt is used as information about risk and prevention effects and whether people high in trait guilt do so more than others. Participants high and low in trait guilt were included. Three types of affect were experimentally induced: guilt, anxiety and a neutral affect. Then, participants estimated the likelihood and severity of a negative outcome, and the dissatisfaction with preventive performances in 2 OCD relevant scenarios. Relative to low trait guilt participants, people high in trait guilt had higher ratings of risk after induction of state guilt. With regards to dissatisfaction with preventive performance, there was only a trend for high trait guilt participants to respond stronger to state guilt. The results suggest that people with a general inclination to feel guilty use temporary feelings of guilt as information about the threat content of a situation and do so even if the source of state guilt is unrelated to the situation. Implications for the understanding of OCD are discussed.
Keywords: Guilt; affect-as-information; emotional reasoning; evaluative judgements; obsessive-compulsive disorder

Introduction

One of the several ways in which affect may influence cognition is by people using affect as a source of information (e.g. Arntz, Rauner, & van den Hout, 1995; Schwarz & Clore, 1983; Schwarz & Clore, in press) about external events. *Ex consequentia reasoning*, *emotional reasoning* and *affect-as-information* are terms referring to a unique psychological mechanism which may lead people to take their emotions as information about the external world even if the emotion is not generated by the situation to be evaluated. Emotional states may influence judgments when they are experienced as providing judgment-relevant information (Clore, 1992; Schwarz & Clore, 1988; 1996). When making evaluative
judgments, people may simply ask themselves how they feel about an event, an activity, or a topic to be evaluated (Schwarz & Clore, 1988).

Under these circumstances, it is difficult to distinguish affective responses to the event (how one feels about it) from pre-existing affect that is irrelevant to the event (how one just happens to feel at that particular moment). Pre-existing emotions may thus bias evaluative judgements of unrelated events or topics (Gasper & Clore, 1998). For example, Schwarz and Clore (1983) demonstrated that people who were asked to write about a negative life event said that they were less satisfied with their lives than those who wrote about a positive life event.

Gasper and Clore (1998) and Scott and Cervone (2002) investigated the affect-as-information mechanism in normal subjects. In their numerous and seminal studies, these researchers found that normal adult participants used laboratory-induced negative affect as information for performance standards (the level of performance people adopt as a personal standard for evaluating their achievement) and for judgements of risk (likelihood and severity of a negative outcome). For example, in a series of experiments, Scott and Cervone (2002) found that negative affect can lead to the construction of higher performance standards even if the nature of the performance is unrelated to the source of the negative affect. Scott and Cervone argue that their results have implications for the understanding and treatment of depression. They suggest that depressed individuals tend to use their negative feelings to validate their thoughts and start a vicious circle that contributes to their depression being maintained. Depressed mood may increase performance standards, decreasing the chance that the standards are met, decreasing mood, increasing standards and so on. Moreover, Gasper and Clore (1998) showed that negative affect influences risk estimates: participants with an induced negative affect estimated both personal and impersonal negative events as more
likely and severe than the participants with an induced positive affect. The authors also found a relationship between *trait*-affect and *emotional reasoning*, thus demonstrating the role of *trait* affect in people’s use of *state* affect when making judgements of risk. High-trait-anxious individuals estimated more risk after a negative mood induction, whereas low-trait anxious individuals did not. This result suggests that an important difference between individuals scoring high and low in trait anxiety may consist in the faith in the informational value of anxious feelings. In this perspective, greater chronic anxiety may lead to greater perceived risk.

The apparent informational value of affective cues may be thus influenced by dispositional affective differences. The more people experience a particular kind of affect, the more they may rely on it as a source of valid information. Indeed, in a number of studies it was found that adult anxious patients tend to use anxious affect to evaluate danger (Arntz et al., 1995; Engelhard, Macklin, McNally, van den Hout, & Arntz, 2003; Engelhard, van den Hout, & Arntz, 2001; Engelhard, van den Hout, Arntz, & McNally, 2002). It seems, then, that anxious patients tend to engage in *emotional reasoning*: they draw invalid conclusions about a situation on the basis of their subjective emotional response.

This process of emotional reasoning has been described by Beck, Emery and Greenberg (1985): “many anxious patients use their feelings to validate their thoughts and thus start a vicious circle: I’ll be anxious when I ask for the date so there must be something to fear” (p.198). In Arntz et al.’s (1995) experiment on emotional reasoning, adult anxiety patients inferred danger on the basis of their anxious response, whereas normal controls inferred danger primarily on the basis of objective information. The authors argued that this tendency to infer danger on the basis of subjective anxiety (*ex-consequentia reasoning*) may
play a role in the development and maintenance of anxiety disorders by starting a vicious circle: anxiety induces a sense of threat, further stimulating anxiety and so on.

Mood as information has been used in the explanation of OCD by Clark (2004), MacDonald and Davey (2005), O’Connor (2002) and Rachman (1998; 2002) but to the best of our knowledge only MacDonald and Davey (2005) have studied it empirically. The authors argued that perseveration occurs whenever people a) experience a negative mood and b) ask themselves “Did I do as much as I can with this task?” They found that healthy participants checked more whilst correcting a text with numerous errors when they used the “Did I do as much as I can?” stop rule and were in a negative mood relative to participants who were in a negative mood but used a different stop rule (“Do I feel like continuing?”). While the authors took the results to support a ‘mood as input’ explanation of compulsive checking, recent results put into question this conclusion (van den Hout, Kindt, Luigjes, & Marck, in press). That is, the experimental ‘perseveration’ observed in the MacDonald and Davey paradigm occurs only for complex tasks like checking a complicated text and the ‘perseveration’ is functional in that it helps to detect errors. Compulsive perseveration occurs typically for very simple tasks (e.g. checking electric apparatus) and it is inherently non-functional: task performance does not increase with repetition. The MacDonald and Davey results disappear once the task is made simpler and more OCD-relevant. Thus its may be doubted whether this application of the ‘mood-as-input’ serves as a valid model of OC checking.

There is another way in which ‘mood as input’/emotional reasoning may be relevant to understanding OCD. Note that an inflated sense of responsibility and the fear of guilt for having acted irresponsibly appear to be central to the emergence, development, and perpetuation of obsessions and compulsions (Mancini, 2001; Mancini & Gangemi, 2004; Niler & Beck, 1989; Rachman, 1993; Salkovskis, 1985; 2002; Van Oppen & Arntz, 1994)
(but see Frost & Steketee (2002) for criticisms on the role of responsibility and guilt in OCD). Obsessions and compulsions could be considered as activities aimed at preventing the anticipated experience of guilt for having acted irresponsibly. Compulsive perseveration may result from the obsessive patient’s goal of avoiding the risk of not complying with one’s own perceived responsibilities. That is, OC perseverations may follow from the fear of behaving irresponsibly and of causing unjustified damage to oneself or to others, and/or violating a moral norm (Freeman, Pretzer, Fleming, & Simon, 1990; Ladouceur, Rhéaume, Freeston, Aublet, Jean, Lachance, Langlois, & De Pokomandy-Morin, 1995; Mancini, 2001; Mancini, D'Olimpio & Cieri 2004; Mancini & Gangemi, 2004).

The question addressed here is whether the experience of guilt is causally related to the increased sense of threat and the decreased belief in the effectiveness of normal washing, checking, or other preventive activities. In this study, we investigated whether, in line with the earlier studies on affect-as-information, feeling guilty might, in and by itself, increase the sense of threat and reduce the satisfaction with preventive action even when the source of the guilt experienced has nothing to do with the situation the threat value of which is to be evaluated. If so, this phenomenon would perhaps be observable in anyone experiencing guilt, and this hypothetical guilt-as-information mechanism would possibly be stronger in people with high levels of ‘trait guilt’. It was hypothesised that a) state guilt should produce an increase in risk ratings (likelihood and severity of a negative outcome) and a decrease in satisfaction with preventive action and that b) this effect should be stronger in participants with high trait guilt.

In the present task, participants were divided into high and low trait guilt groups on the basis of a trait measure of guilt. In both groups, state guilt was experimentally induced. To assure that possible effects of induced guilt were really due to state guilt as such and not to
negative affect in general, participants were assigned to one of three affect induction conditions (guilt, anxiety, neutral). Affect was induced by making participants write about a guilt related, anxiety related, or neutral life event. The emotional states were neither generated by, nor related to the task used later in the experiment. This task consisted of estimating the likelihood and severity of a negative outcome, and the dissatisfaction with preventive performance in 2 scenarios related thematically to OCD. Individuals were asked to consider two situations that if unchecked, may cause harm or negative outcomes for which they may evaluate themselves guilty for having acted irresponsibly (see Mancini & Gangemi, 2004).

Trait- and state-guilt were assessed by the Guilt Inventory (Jones & Kugler, 1990; 2000). We included also a measure of Negative Affect (Positive and Negative Affect Scale, PANAS; see Watson, Clark & Tellegen, 1988) to be sure that in both the negative affect induction groups (guilt vs. anxiety) the manipulation of affect would actually result in a negative affect.

Method

Participants and design.

Participants were 120 undergraduate and postgraduate students recruited from the University of Cagliari (Italy) Ages ranged from 18 to 43 yr with a mean age of 22.4. All of the participants were volunteers. They were randomly assigned to one of 6 groups in a 2 X 3 between subject design. Groups differed on the level of trait guilt (high vs. low; median split), and on the affect induction they were to receive (guilt, anxiety, neutral).

Materials and procedure

Participants were tested in three groups of 40 people. Three days before the experimental session they were given the Trait Guilt Inventory (see below). At the beginning of the experimental session, they were given the State Guilt Inventory, the PANAS scales (see below), a booklet with written instruction manipulations, 2 scenarios and the
questionnaire containing our dependent variables. The questionnaire contained six 100mm Visual Analogue Scales (VASs) that related to the likelihood and the severity of the negative event, and the dissatisfaction with preventive action, that is to our dependent variables. Informed consent was obtained.

*High and low trait-guilt group.* The Trait and State Guilt Inventory (Jones & Kugler, 1990; 2000) consists of 30 items assessing *trait guilt (20 items)* and *state guilt (10 items).* Responses were rendered using a 5-point scale in which a low score indicated strong disagreement and a high score indicated strong agreement.

Both the subscales were averaged to form reliable scales (C's .89, and 83, respectively; from Jones & Kugler, 1990; 2000). Test-retest correlations for trait and state guilt were reported to be .72 and .56, respectively, over a 10-week period. Validity was assessed by comparing these scales with several independent measures of guilt (e.g. Mosher Guilt Inventory (Mosher, 1988), Hogan Personality Inventory Guilt Scale (Hogan, 1985), with supportive results. Each scale was more strongly related on the average with alternative scales within its domain than it was with alternative scales in other domains (Jones & Kugler, 1990; 2000).

We used the total Trait Guilt Inventory score (20-100) by summing the scores of the 20 items with higher scores indicating higher trait guilt. Participants were classified as either low or high in trait guilt on the basis of a median split.

*Baseline Affect.* We assessed baseline differences in guilt, anxiety and negative affect by asking participants to fill in 2 different questionnaires at the beginning of the experiment. Specifically, to assess the current level of guilt affect we used the State Guilt Inventory (Jones & Kugler, 1990; 2000). The total score (range 10-50) was calculated by adding scores on the 10 items. Items were coded such that higher numbers reflect greater state guilt.
We assessed baseline negative affect using the Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988), which consists of 20 emotion terms on which participants indicate their present feelings (1 = very slightly or not at all, 5 = extremely). These 20 items are grouped around two subsets, one measuring positive affect and one measuring negative affect, and both subsets were averaged to form reliable scales (as .73 and .88, respectively). We combined all ten negative items from the PANAS into one negative-affect factor (eigenvalue = 5.78, 48% of variance explained). Using principal-components analysis, we also combined two anxiety-related items from the PANAS (jittery and nervous) into an “anxiety factor” (eigenvalue = 2.15, 72% of variance explained).

Affect induction. Following the procedure used by Schwarz & Clore (1983), affect was manipulated by having participants describe either a guilt-related (guilt induction group), or an anxiety-related (anxiety induction group) or a neutral (control group) personal life event. They were instructed to describe this guilt related/anxiety related/ neutral event in their recent life as vividly as possible and to include details of what they were feeling and thinking. All three groups were said they would have 15 min. to write the biographical event. At the end of the affect induction period, participants were once again asked to complete the State Guilt Inventory (for quantifying the guilt induction effect through the total State Guilt Inventory score) and the PANAS Scales (for quantifying the anxiety induction effect through the “anxiety factor” score and the negative affect effect through the negative-affect factor score).

The stories. All participants then read 2 scenarios like the following one:

You are at your home together with your friends. Your parents are away. You and your friends decide to go to a pub to join other friends. You and your friends leave your house
while you are playing around and joking. Later, while staying in the pub, it strikes you that you might not have checked the shutters and that the house might have been burgled.

Evaluations of likelihood, severity and prevention efficacy. After reading the scenarios, all participants completed the questionnaire containing the dependent measures for this experiment. This questionnaire comprises two sections: the first includes 4 VASs to assess the judgements of the likelihood of the negative event occurring (for the “burglar” scenario reported above: *How likely is it that burglars had broken into your home?*; *How likely is that your home had been ransacked?* For the other scenario: *How likely is it that the car had rolled down the hill?*; *How likely is that the car had injured someone rolling down?*) and 4 to measure the estimation of the severity of the negative event (for the “burglar” scenario: *How severe would the harm suffered by your family be in the case of housebreaking?* *How severe would the harm be if burglars broke into your home?* For the other scenario: *How severe would the harm suffered by your family be in the case of car accident?* *How severe would the harm be if the car had injured someone?*). Ratings of likelihood and severity were made within the range of 0 to 100, with anchors at 0 (*not at all likely/severe*) and 100 (*totally likely/severe*). The average of the responses to the items pertaining to each dimension was considered as dependent variable.

The second section includes 4 VASs to assess satisfaction with preventive performance (for the “burglar” scenario: *How differently should I have behaved, i.e. paying more attention to checking the window?*; *How differently should I have behaved before leaving my home?* For the other scenario: *How differently should I have behaved, i.e. paying more attention to checking the handbrake?*; *How differently should I have behaved while parking the car?*). Ratings of satisfaction were made within the range of 0 to 100, with anchors at 0 (*not at all
differently) and 100 (totally differently). The average of the responses to the two items was considered as dependent variable.

Results

1) Manipulation check: measures of mood induction. Table 1 shows the mean affect ratings on scales of guilt, anxiety and negative affect for participants in all three affect induction conditions both before and after the affect induction procedure. Each measure was subjected to a 2 X 3 ANOVA comparing Time (before vs. after) as a within group factor and Affect Induction group (guilt, anxiety, neutral) as between group factor.

For state guilt, a significant Time X Affect Induction group interaction was found, $F(2, 117) = 24.9$, $p < .001$, $\eta^2 = .3$. The nature of the interaction was analysed by studying what groups displayed a significant pre-to-post increase in state guilt. As suggested by Table 1, the increase in the guilt induction group was significant ($t(35) = 8.7$, $p < .001$, $d = 2.9$), but no significant effect was found in the anxiety induction group ($t(42) = .4$, $ns$). In the neutral group, a pre-to-post decrease in state guilt was found ($t(40) = 3.7$, $p < .001$, $d = 1.2$). Thus, apparently the manipulation was overall successful in inducing the relevant affect. Meanwhile, to see whether the successful manipulation had differential effects in high- and low-trait guilt groups, a 2 (Time) X 3 (Affect Induction) X 2 (Trait guilt) ANOVA was carried out. While the pattern of significance, observed with the earlier 2 X 3 ANOVA, was found with this analysis too, the Time x Affect Induction x Trait guilt interaction was non significant, $F(2, 114) = .6$, $ns$. High trait-guilt individuals were no more responsive to the affect induction than low-trait-guilt individuals. Thus, it is unlikely that differences in risk estimates and in performance standards were due to high-trait-guilt individuals having a greater change in state guilt than low-trait-guilt individuals.\(^1\)
Also for the anxiety measure there was a significant Time X Affect Induction group interaction, $F(2, 117) = 23.9$, $p < .001$, $\eta^2 = .3$. The nature of the interaction was analysed by studying what groups displayed a significant pre-to-post increase in state anxiety. A significant pre-to-post increase in state anxiety was found in the anxiety induction group ($t(42) = 8.6$, $p < .001$, $d = 2.6$). No significant effects were found in the guilt induction group ($t(35) = 1$, $ns$) and in the neutral group ($t(40) = 1$, $ns$).

Finally, in the case of the negative affect measure, there was a significant Time X Affect Induction group interaction was found, $F(2, 117) = 16.7$, $p < .001$, $\eta^2 = .2$. A significant pre-to-post increase in negative affect was displayed by both the anxiety induction group ($t(42) = 7.1$, $p < .001$, $d = 2.2$) and the guilt induction group ($t(35) = 5.6$, $p < .001$, $d = 1.9$). No significant effect was found in the neutral group ($t(40) = 1$, $ns$).

Therefore it seems that the affect experimental manipulation was successful. The guilt induction did induce an increase in state guilt but the other manipulations did not. Likewise, the anxiety induction was attended by increases in anxiety while no anxiety increase were observed in the other conditions. Finally, negative affects increased in both the guilt- and the anxiety induction groups, but it did not in the control group.

Please, insert Table 1 about here.

2) Evaluations of likelihood, severity and prevention efficacy. The mean likelihood, severity and preventive performance ratings as a function of Affect Induction (guilt vs. neutral vs. anxiety) and Trait guilt (high vs. low) are shown in Figures 1-3. The three dependent variables (likelihood, severity, and preventive performance) were simultaneously entered into a $3 \times 2$ multivariate analysis of variance model with Affect Induction (guilt; anxiety and neutral) and Trait Guilt (high and low) as independent variables.
Wilks’ Lambda coefficients revealed significant main effects of both Affect Induction (F (2,114) = 3.6, p<.005, $\eta^2=.1$), and trait guilt (F (1,114) = 15.6, p<.001, $\eta^2=.3$), and a significant interaction effect (F (2,114) = 2.5, p<.05, $\eta^2=.1$).

A significant main effect of Affect Induction emerged on both likelihood (F (2, 114) = 5.3, p<.01, $\eta^2=.1$) and severity of a negative event (F (2, 114) =, p<.005, $\eta^2=.1$). Individuals in the guilt induction group rating the risk (likelihood: M= 57.5, SD= 28.1; severity: M=59.5; SD= 31.6) higher than both participants in the neutral condition (likelihood: M= 35.9, SD=22.8, t(75)=3.7, p<.001, one-tailed, $d=.8$; severity: M= 34.9; SD=20.5, t (75)=4.1, p<.001, one-tailed, $d=.9$) and in the anxiety induction group (likelihood: M= 43.1, SD=27.7, t (77)=2.3, p<.05, one-tailed, $d=.5$; severity: M= 42.; SD= 27.6, t (77)=2.6, p<.05, one-tailed, $d=.6$). A significant main effect of Affect Induction was also obtain for the judgements of the preventive performance (F (2, 114) = 3.2, p <.05, $\eta^2=.1$). Participants in the guilt induction condition evaluated their preventive performance as less satisfactory (M= 53.9, SD=30.3) than both individuals in the anxiety condition (M= 42.8, SD=23.5; t (77)=1.8, p < .05, one-tailed, $d=.4$) and in the neutral condition (M= 38.1, SD=18.5, t (75)=2.8, p<.01, one-tailed, $d=.6$).

The trait guilt effect was also significant (likelihood: F (1, 114) = 18.5, p < .001, $\eta^2=.1$; severity: F (1, 114) = 22.8, p < .001, $\eta^2=.2$; preventive performance: F (1, 114) = 24.6. High trait guilt individuals rating the likelihood (M= 54.1, SD= 26), and the severity (M= 54.8, SD=28.2) of a negative event higher relative to low trait guilt participants (likelihood: M= 34.5, SD= 25.6; severity: M= 33.4, SD= 24.1). Moreover, high trait individuals evaluated their preventive performance as less satisfactory (M= 53.9, SD=23.3) than participants low in trait guilt (M= 33.7, SD=22.5).
Feeling guilty as a source of information and OCD 15

Work in progress

Significant Affect induction by Trait guilt interaction effects were found for both likelihood ($F (2, 114) = 3.2, p < .05, \chi^2 = .5$) and severity ($F (2, 114) = 4.8, p < .05, \chi^2 = .1$). High trait individuals in the ‘guilt induction’ group rated the risk as more likely (M= 69.3, SD=18.9) and severe (M= 74.6, SD= 24.3) than both high trait guilt participants in the anxiety condition (likelihood: M= 56.4, SD=25.4, $t (39)=1.9, p<.05$, one-tailed, $d=.6$; severity: M= 53.8, SD=25.6, $t (39)=2.7, p<.05$, one-tailed, $d=.8$) and in the neutral condition (likelihood: M= 37.6, SD=23.1, $t (43)=5, p<.001$, one-tailed, $d=1.5$; severity: M= 36.7, SD=21.1, $t (43)=5.6, p<.001$, one-tailed, $d=1.7$), (see Figures 1-2; left bars). The right bars of Figure 1 and 2 suggest that the experimental manipulations had no effect on likelihood and severity estimates in the low trait guilt participants. Indeed, none of the between group comparisons in the low-trait guilt participants reached significance (guilt group vs. anxiety group: likelihood: $t (36)=.7; ns$; severity: $t (36)=.3; ns$; guilt group vs. neutral group: likelihood: $t (30)=.5; ns$; severity: $t (30)=.4; ns$; anxiety group vs. neutral group: likelihood: $t (40)=.2; ns$; severity: $t (40)=.0; ns$).

Please insert Figure 1 and Figure 2 about here

Finally, although the interaction between Affect Induction and Trait guilt did not reach statistical significance ($F(2, 114) = 2.3, p = .1$), high trait-guilt individuals showed a tendency to use the information provided by their guilt affective state as a basis for judgments of preventive performance, whereas low trait-guilt individuals did not (see Figure 3). In the high trait guilt condition, participants in the guilt induction condition rated the dissatisfaction with their preventive performance (M= 66.3, SD= 25.1) higher than both individuals in the anxiety condition (M= 53.6, SD=20, $t (39)=1.8, p<.05$, one-tailed, $d=.6$) and in the neutral condition (M= 42.3, SD=19, $t (43)=3.6, p<.01$, one-tailed, $d=1.1$). No differences due to the affect
Work in progress

manipulation occurred in the low trait guilt groups (guilt group vs. anxiety group: $t(36)=.2; \text{ns}$; guilt group vs. neutral group: $t(30)=.2; \text{ns}$; anxiety group vs. neutral group: $t(40)=.2; \text{ns}$).

Please insert Figure 3 about here.

Discussion

We investigated if trait guilt influences the way state guilt is used as information on the judgment of risk (likelihood and severity of a negative outcome) and on the evaluation of preventive performance. To this aim, we observed how low- and high-trait-guilty participants used feelings of guilt and anxiety induced in the laboratory. Affect was manipulated by making participants write about either a guilt-related life event, or an anxiety-related life event or a neutral life event. Results can be summarized as follows. Guilt had specific effects on threat estimates. Although guilt and anxiety share the negative valence, guilt induction led participants to estimate the negative event as more severe and more likely than “anxious” participants. These findings were qualified by an interaction with trait guilt. High-trait-guilty individuals evaluated the occurrence of a negative event as more severe and likely after the guilt induction than after both the anxiety and neutral affect induction. Low-trait-guilty individuals did not display this pattern.

Moreover, we found that guilt had specific effects on performance standards too. Guilt induction led participants to evaluate their performance aimed to prevent a negative outcome as more unsatisfactory relative to participants in the anxiety induction group. Although the predicted crucial Trait guilt X guilt induction interaction on judgements of dissatisfaction with preventive performance failed to reach significance and only represented a trend ($p=.07$), high-trait-guilty individuals tended to express higher levels of dissatisfaction with their preventive actions after a guilt than both an anxiety and a neutral affect induction, whereas low-trait-guilty individuals did not. A possible explanation for the lack of significance on the
Feeling guilty as a source of information and OCD

Work in progress

evaluation of preventive performance may have to do with the scenarios used in the study. The OCD checking scenario for burglary and car situation may not have been relevant to some participants, depending on their living situation or ownership of a car. If some participants for whom this was less relevant simply imagined how they would feel, their emotional reactions may have been less intense, affecting results for the performance scale on which findings were non significant. The lack of effects on preventive performance may also be due to the use of a median split analysis that may have produce a loss in power. Thus, it appears that high trait-guilt influences the way temporary affect is used as information on judgment of the severity and the likelihood of a negative outcome and on evaluation of preventive performance, while in the low-trait guilt participants the state affect had no effect.

From a general point of view, our findings are consistent with a growing body of evidence that judgments and choices are influenced by emotions the occurrence of which may be irrelevant to the judgements and choices. (e.g. Lerner & Keltner, 2000; 2001; Mellers, Schwartz & Ritov, 1999; Slovic, Finucane, Peters & MacGregors, 2002). Taken with the earlier findings of Arntz et al. (1995), Scott and Cervone (2002) and Gasper and Clore, (1998), the current data suggest that risk expectancies can be emotion-based. Individuals high in trait guilt tend to use feelings of guilty as information when they evaluate threat. This type of reasoning (Arntz et al., 1995) may play a role in maintaining dysfunctional beliefs. Individuals may use negative affect to validate thoughts and beliefs that are consistent with the initial negative affect. This mechanism may help to explain the development, maintenance and aggravation of OCD. OC patients experience guilt for having acted irresponsibly in a chronic fashion (Mancini, 2001; Mancini & Gangemi, 2004; Niler & Beck, 1989; Rachman, 1993; Van Oppen & Arntz, 1994), and might use this feeling as indication that the aversive
event will occur and that it will be very serious (overestimation of threat, Obsessive Compulsive Cognitions Working Group, 1997).

One may argue that our results may be explained by an “inference based” approach to OCD (e.g. O’Connor, Aardema & Pilissier, 2005). According to this approach the person with OCD arrives at an obsessional inference or judgement through a narrative or a story, which characteristically consists of subjective information that goes beyond objective information in the here and now. Note however that the inference based approach to OCD posits that the inferential reasoning is specific for OCD and in order for the theory to explain the present data it should be broadened and postulate that inferential reasoning also occurs in non-OCD individuals who are high in trait guilt.

The present results were obtained with analogue samples. The results make it plausible that OCD patients use the feeling of guilt as information, but plausibility aside, it is acknowledged that this issue awaits testing in clinical participants. The fact, however, that a). people with a general inclination to feel guilty tend to use temporary feelings of guilt as information about the threat content of a situation and do so even if the source of state guilt is unrelated to the situation and b). that guilt affects threat estimates in a non-clinical, student sample, suggests that it may be a robust phenomenon. One would expect, if anything, that the relation might even be stronger in a clinical group of subjects who are particularly sensitive to issues of guilt.
Feeling guilty as a source of information and OCD

Work in progress
Feeling guilty as a source of information and OCD  

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Feeling guilty as a source of information and OCD

**Work in progress**


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Note that the PANAS contains one guilt item that is relevant for the present study. It allowed us to cross validate the manipulation check. The 2 (Time) X 3 (Affect Induction) ANOVA was repeated using the PANAS guilt item as dependant variable. It was found that a significant Time X Affect Induction group interaction was found, $F(2, 117) = 5.3$, $p < .01$, $\eta^2 = .1$. The nature of the interaction was analysed by studying what groups displayed a significant pre-to-post increase in state guilt. The increase in the guilt induction group was significant (pre-induction: $M= 1.7$, $SD= .7$, post-induction: $M= 3.2$, $SD= 1.4$, $t(35) = 5.2$, $p<.001$, $d=1.7$), but no significant effect was found in the anxiety induction group (pre-induction: $M= 1.5$, $SD= .9$, post-induction: $M= 1.6$, $SD= .9$, $t(42)= .8$, $ns$) and in the neutral group (pre-induction $M= 1.5$, $SD= .9$, post-induction: $M= 1.7$, $SD= 1$, $t(40)= 1.3$, $ns$).
Table 1

*Mean affect ratings (and standard deviations) by the three affect induction groups (guilt, anxiety, neutral), before and after the affect induction.*

<table>
<thead>
<tr>
<th></th>
<th>Guilt ratings</th>
<th>Anxiety ratings</th>
<th>Negative affect ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-affect</td>
<td>Post-affect</td>
<td>Pre-affect</td>
</tr>
<tr>
<td>Guilt-group</td>
<td></td>
<td></td>
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<tr>
<td>(n=36)</td>
<td>26.6 (5.3)</td>
<td>30.9 (6.7)</td>
<td>4.2 (2.8)</td>
</tr>
<tr>
<td>Anxiety-group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n=43)</td>
<td>26.5 (6.1)</td>
<td>26.2 (6)</td>
<td>3.6 (1.7)</td>
</tr>
<tr>
<td>Neutral-group</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| (n=41) | 28.7 (4.9) | 25.8 (6.1) | 4.2 (2.2) | 3.9 (2.1) | 17.1 (5.8) | 17 (6.4) |

**Figure captions**

**Figure 1.** Mean likelihood ratings as a function of Affect Condition (guilt vs. neutral vs. anxiety) and Trait guilt (high vs. low).

**Figure 2.** Mean severity ratings as a function of Affect Condition (guilt vs. neutral vs. anxiety) and Trait guilt (high vs. low).
Figure 3. *Mean preventive performance ratings as a function of Affect Condition (guilt vs. neutral vs. anxiety) and Trait guilt (high vs. low).*
Feeling guilty as a source of information and OCD

Work in progress
Feeling guilty as a source of information and OCD

Work in progress

![Bar chart showing severity scores for guilt induction, anxiety induction, and neutral condition for high-trait and low-trait guilt.](chart_image)

- **Guilt induction**
- **Anxiety induction**
- **Neutral condition**

High-trait guilt

Low-trait guilt
Guilt induction
Anxiety induction
Neutral condition
Work in progress