Perseverative cognition : the impact of worry on health

Verkuil, B.

Chapter 8

Interacting effects of worry and anxiety on attentional disengagement from threat

Bart Verkuil, Jos F. Brosschot, Peter L. J. Putman & Julian F. Thayer

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Abstract

Recent work suggests that the ability to disengage attention from threatening information is impaired in people who suffer from anxiety and dysphoria. It has been suggested that this impaired ability to disengage from threat might specifically be associated with the tendency to perseverate about threat (i.e. worry), which is a main characteristic of anxiety disorders and a wide range of other psychopathologies. However, no studies have yet addressed this issue. The present study examined whether trait worry as well as worry intensity after experimental worry induction are associated with impaired ability to disengage attention from threatening cues (angry faces), independently from or in conjunction with anxiety. Sixty-one participants performed a visual cueing experiment that required detection of a target stimulus at one of two possible locations. Prior to the target neutral, happy or angry facial cues appeared at one of these two locations; An overall faster responding to invalidly cued trials relative to validly cued trials is believed to indicate inhibition of return (IOR) to a recently attended location, or, in other words, attentional disengagement. Lower disengagement from angry faces was only found when both trait worry and anxiety were high. When anxiety was kept constant, both trait worry and state worry was associated with reduced attention allocation to neutral faces instead. The results seem to suggest that specific threat-related deficiencies in disengagement may be a function of the co-occurrence of worry and anxiety.

Introduction

Perseverative thinking such as worry is a central feature of a wide range of psychopathologies and has been proposed to be an important transdiagnostic process (Harvey, Watkins, Mansell, & Shafran, 2004). Worry predicts anxiety and depressive affect (Hong, 2007), and it is the main characteristic of generalized anxiety disorder (GAD; American Psychiatric Association, 1994). In addition, it is found in social phobia (Mellings & Alden, 2000), panic disorder (Casey, Oei, & Newcombe, 2004), obsessive compulsive disorder (Comer, Kendall, Franklin, Hudson, & Pimentel, 2004), eating disorders (Sassaroli et al., 2005) and in depression (Diefenbach et al., 2001). More recently, it has been suggested that worry prolongs physiological stress responses beyond the actual presence of stressors, thereby contributing to the total wear and tear of stressors on the human body (Brosschot et al., 2006; Pieper et al., 2007; Brosschot et al., 2007). Given this seemingly broad importance of worry in the development and maintenance of mental and somatic health problems, studies that investigate its cognitive underpinnings are warranted.

A large number of studies conducted with extreme worriers, that is, people suffering from GAD, have shown that they show biased processing of threat-related information that is associated with the excessiveness of their worrying. For example, they interpret ambivalent information in a more negative way (Hazlett-Stevens & Borkovec, 2004), have biased explicit memory (Friedman, Thayer, & Borkovec, 2000) and selectively attend to concern-related threatening information (Mathews & MacLeod, 1985; Mathews, Mogg, Kentish, & Eysenck, 1995; Mogg, Mathews, & Weinman, 1989; Mogg, Bradley, Millar, & White, 1995). These biases in the processing of threat are thought to contribute to the prolongation of worry episodes in GAD.

Still, although biased attention seems to be associated with worry, it is not known what aspects of attention are specifically associated with worry. Attention can be divided into three processes (Posner & Petersen, 1990): orienting towards a stimulus, engaging attention and eventually disengaging from it. Especially the delayed disengagement from threatening information, or prolonged dwell time, is believed to lead to worry and rumination (Georgiou et al., 2005; Fox et al., 2001). This makes sense from a phenomenological point of view: A main characteristic of pathological worry is that high worriers find it extremely difficult to disengage from their worry topics, and the same threatening thoughts occur over and over again. They find it extremely difficult to stop worrying and to mentally disengage (or 'decenter') from their sorrows.

The inability to disengage attention from neutral or threatening information has mainly been studied with regard to enduring negative affect such as in dysphoria (Koster, De Raedt, Goeleven, Franck, & Crombez, 2005) and in trait anxiety (Yiend & Mathews, 2001; Fox et al., 2002; Koster, Crombez, Verschuere, & De Houwer, 2004; Waters, Nitz, Craske, & Johnson, 2007; Derryberry &

Reed, 2002). These studies showed that negative affect is especially associated with reduced ability to disengage attention from threatening information. Although these studies did not directly address whether delayed disengagement from threat was particularly associated with worry, they all focused on emotions that are likely to be caused by perseverative cognition such as worry (Hong, 2007) or rumination (Nolen-Hoeksema, 2000). Tentatively, it might be that delayed disengagement from threat seen across several psychopathologies is due to an association between attention processes and the transdiagnostic process of worrying. We therefore conducted the present study to investigate whether worry is associated with delayed attentional disengagement from threatening information.

To investigate the association between worry and attentional disengagement, we used an emotional modification of Posner's exogenous cueing task (Posner, 1980), which is often used in studies concerned with attentional disengagement. In this task, participants have to respond to a target presented at one of two locations, which is preceded by a cue that has either been presented at the same location as the target (a valid trial) or at the opposite location (an invalid trial). When there is a short period of time between the cue and the target (stimulus onset asynchrony (SOA) < 300 ms), responses appear to be faster to the valid trials. At longer SOAs (> 300 ms) responses to the valid trials are instead slower, which is thought to be due to inhibition of attention to the location on the screen that has previously been attended to (because a cue was presented), a phenomenon called inhibition of return (IOR; Posner & Cohen, 1984). Recent clinical studies of the emotional modulation of this phenomenon however prefer to use the term 'disengagement' instead of 'inhibition of return', since the debate is still ongoing whether these findings can best be explained by an attentional *inhibitory* mechanism, or by a biased attentional shifting mechanism (for a detailed account of the attentional mechanisms explaining the IOR effect see: MacLeod, Dodd, Sheard, Wilson, & Bibi, 2003; Spalek & Hammad, 2005). This spatial cueing task is made an emotional one by presenting as cues either schematic or realistic pictures of threatening (angry), neutral or happy faces (e.g., Fox et al., 2002; Fox et al., 2001), IAPS pictures (e.g., Yiend & Mathews, 2001) or arrows indicating wins and losses in a game (Derryberry & Reed, 2002). In the present study, we tested whether people with a strong tendency to worry (high trait worry) show a diminished disengagement, that is, a lower IOR effect, to angry faces, as compared with happy or neutral faces.

Trait worry is only one way to measure the tendency to worry, and tests for trait worry actually only predict behavior partially (Verkuil, Brosschot, & Thayer, 2007). Therefore, we also used a worry induction procedure, to test whether induced worry intensity is also associated with a reduced ability to disengage attention from angry faces.

Additionally, we wanted to examine whether the role of anxiety is important in these hypothesized relationships of worry with disengagement. Although worry and anxiety are closely related, several studies have made clear that worry and anxiety have independent associations with health outcomes (e.g., Brosschot & Van Der Doef, 2006) and stress management strategies (Davey, Hampton, Farrell, & Davidson, 1992). We therefore also examined whether the hypothesized association between worry and attentional disengagement from threat was independent of the previously found association for anxiety (Yiend & Mathews, 2001; Koster et al., 2004; Fox et al., 2002; Waters et al., 2007; Derryberry & Reed, 2002), or whether it was the interaction between worry and anxiety that reduces attentional disengagement from threat.

In short, the present study was conducted to examine the following hypotheses: (1) trait worry is associated with decreased attentional disengagement from angry faces, relative to neutral and happy faces, independent of or in interaction with trait anxiety; (2) This association is also found for worry intensity after an experimental worry induction.

Method

Participants

Data were gathered from sixty-one student participants (mean age = 24.61, range 17 – 50). Sixty-seven percent of the sample was female. This study formed part of a larger study of the cognitive and physiological associates of worry and parts of this larger study have been reported elsewhere (Verkuil, Brosschot, Borkovec, & Thayer, in press). Participants were asked to perform several tasks for this experiment among which were the exogenous cueing task (see paragraphs 2.2 and 2.3) and the experimental worry induction (see paragraph 2.5). The order of these tasks was counterbalanced.

Apparatus and stimuli

To measure attentional disengagement, we used a task that was highly similar to the one used by Fox et al. (2002; experiment 2). Three schematic face types: ‘angry’, ‘happy’, and ‘neutral’ faces were used as cues. Each of the faces was 2 cm in diameter on the computer screen. The target that the participants had to localise was a black dot with a diameter of 0.5 cm. The cue and target stimuli were presented inside two light grey boxes that were continuously present on the computer screen. These boxes were 5 cm high by 3.0 cm wide and were displayed 2.25 cm to the left and the right of a central fixation point (shape: +). All stimuli were presented on a Dell computer with a 17" Dell LCD monitor (resolution: 1280 * 1024).

Procedure

Each trial started with a fixation point which was presented at the centre of the screen for 800 ms. A schematic face cue was then presented for 300 ms in either the left or the right box. This cue was then blanked out and 200 ms later the central cross was presented in bold type for 300 ms. The initial fixation display was then presented for 160 ms. Following this, the target was presented in the lower half of either the left or the right box for 33 ms (Lupianez et al, 1997). Subsequently, the initial fixation display was presented until the participant responded (or until 2000 ms elapsed). This resulted in a cue-target onset asynchrony (SOA) of 960 ms. We used an intertrial interval of 1000 ms. Similar to the procedure used by Fox et al. (2002), each participant completed 16 practice trials, followed by 360 experimental trials, divided into five blocks of 72 trials. Fifty percent (180) of the experimental trials were valid (i.e., the target appeared in the same box as the cue), and 50% (180) were invalid (i.e., the target appeared in the opposite box to the cue). Angry, happy and neutral face cues appeared 60 times each on valid trials and 60 times each on invalid trials. The probability of any particular cue appearing in the left- and right-hand side boxes was equal, as was that of the types of faces.

All participants were seated 50 cm from the computer screen. They were told that the position of the cue did not predict the location of the target and therefore they should ignore the cue and keep their eyes focused on the centre of the screen and respond as quickly and as accurately as possible (Fox et al., 2002). The participant's task was to respond to the target which appeared either on the left or the right hand location by pressing the "Z" on the keyboard when the target was located on the left hand side of the screen and the "M" when the target was located on the right hand side of the screen. A standard QWERTY keyboard was used.

Trait questionnaires

Penn State Worry Questionnaire (Meyer, Miller, Metzger, & Borkovec, 1990; Dutch version; van Rijsoort, Emmelkamp, & Vervaeke, 1999). This trait worry questionnaire consists of 16 self-report items that are directed at the excessiveness, duration and uncontrollability of worry. The PSWQ has demonstrated high reliability as well as high temporal stability and substantial validity in the assessment of trait-worry (Meyer et al., 1990; van Rijsoort et al., 1999; Verkuil et al., 2007).

State Trait Anxiety Inventory-Trait Form (STAI-T; Dutch version: van der Ploeg, Defares, & Spielberger, 1980). For measuring trait-anxiety we administered the trait version of the State-Trait Anxiety Inventory. The STAI-T is a questionnaire that measures the participants' predispositions to anxiety. It consists of 20 self-report items and earlier use has shown good internal consistency and validity (van der Ploeg et al., 1980).

State measures

Experimental worry induction. Following the work of Borkovec and others (Lyonfields, Borkovec, & Thayer, 1995; Thayer, Friedman, & Borkovec, 1996; McLaughlin, Borkovec, & Sibrava, 2007), participants were asked to write down three personal worry topics, before receiving further instructions. To minimize participant's social evaluative concerns about writing down a personal worry topic, they were notified that they could take home or destroy the paper on which they wrote their worry topic. Thereafter, participants were asked 'to worry as you usually do' (Lyonfields et al., 1995; Thayer et al., 1996; McLaughlin et al., 2007). After the worry induction, participants were asked to indicate on a ten point scale (1) the intensity with which they were able to worry, (2) the extent to which one negative thought led to another negative thought and (3) the extent to which the same thoughts occurred over and over again. The scores on these items were combined into a short state worry scale (Cronbach's alpha = .71).

State anxiety. The amount of state anxiety after the worry induction was assessed using visual analog scales (Brosschot et al., 1992; Johansson, 1976). Participants rated their level of anxiety at the start of the experiment (baseline) and after the worry induction. For this rating the participants was first asked to rate their 'mood as usual' with a vertical line, and then to indicate with a cross their 'mood during the preceding period'. The change between 'mood as usual' and 'mood during the preceding period' was used to address the second hypothesis.

Statistical analyses

To investigate whether trait worry, trait anxiety or their interaction were associated with reduced disengagement from angry faces, but not from neutral and happy faces, we conducted a repeated measures ANOVA with Valence and Validity as within subjects factors, and trait worry, trait anxiety, and their interaction as continuous between subjects variables. To be able to examine significant interactions, we calculated cue validity effects for each of the three valences (Waters et al., 2007). Cue validity effects were obtained by subtracting the response latencies to valid trials from the response latencies to invalid trials (CV = RT invalid – RT valid). Negative values therefore indicated faster responses to invalid trials (suggesting IOR, i.e. attention away from the cue), whereas positive values indicated faster responses to valid trials (i.e. no IOR, but attention towards the cue). Relative cue validity effects were calculated by subtracting the CV effect for neutral faces from the CV effect for angry or happy faces. To test whether trait worry, trait anxiety and the worry induction measures were associated with the (relative) cue validity effects we calculated partial correlations and conducted simple slopes analysis in order to examine significant interactions. The predictor variables

were centered in order to reduce multicollinearity (Aiken & West, 1991; (Frazier, Tix, & Barron, 2004). Because of our specific hypotheses we used one-tailed tests.

Results

Descriptive statistics

Table 1 shows the means and standard deviations for scores on the trait questionnaires and on the state measures. The mean levels of trait worry and trait anxiety were in line with previous studies conducted with student participants (Startup & Erickson, 2006). There were no gender differences in trait anxiety, intensity of induced worry, state anxiety and the response latencies on the spatial cueing task (*p*s > .05). Women (M = 47.67, SD = 12.50) had a slightly higher score on the PSWQ than men (M = 41.58, SD = 12.71; *t*(34) = 1.74, p = .091). Reaction times on the different trials are presented in figure 1.

Table 1 *Means and standard deviations of and Pearson correlations between the trait questionnaires, induced worry intensity and state anxiety*

	M	SD	PSWQ	STAI-T	Induced worry intensity
PSWQ [1]	46.11	12.96			
STAI-T [2]	39.69	10.07	.73**		
Worry intensity	15.79	5.09	.49**	.30*	
State anxiety	0.55	1.79	.06	.18	.21

Note: [1] PSWQ = Penn State Worry Questionnaire; [2] STAI-T = State Trait Anxiety Inventory – Trait Version; ** Correlation significant at the .001 level (1-tailed); * correlation significant at the .05 level (1-tailed).

Spatial cueing task

Errors

The percentage of errors was 3.44%. No significant difference between the percentage rates of errors was found between the conditions. Trials in which the responses were incorrect were excluded from the analyses. In addition, trials on which the RTs were faster than 150 ms (anticipatory responding) and trials on which the RTs were longer than 2000 ms (misses) were excluded from the analyses (1.33%).

Reaction times

Mean reaction times were submitted to a repeated measures ANOVA with Valence and Validity as within subjects factors. This analysis showed a significant main effect of Validity ($F(1,62) = 57.39$, $p < .0001$, $\eta^2 = .48$), indicating a general IOR effect (invalid trials M = 297.81; valid trials M = 313.62). There was no significant effect of Valence, and no interaction between Validity and Valence.

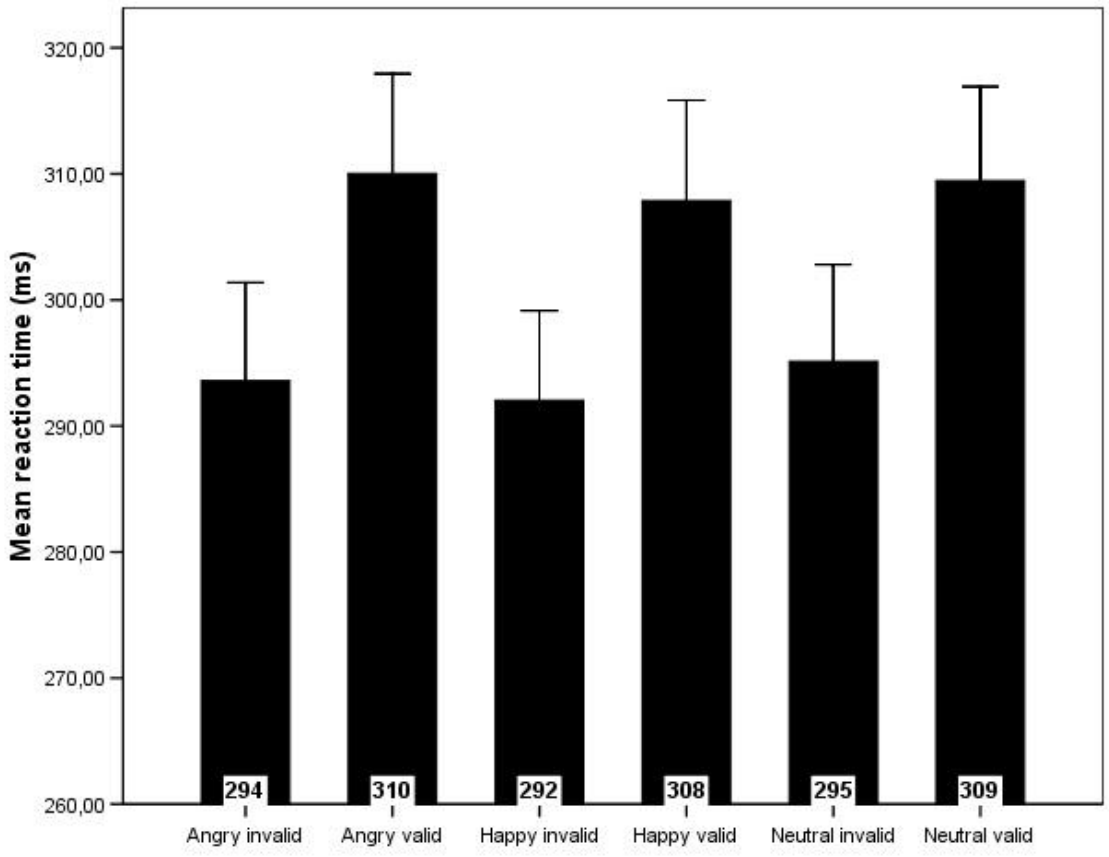

Figure 1. Mean reaction times on the spatial cueing task.

Association between traits and attentional disengagement

The results showed a significant interaction between Trait Worry and Valence x Validity ($F(2,116) = 2.63$, $p < .05$, $\eta^2 = .04$), and a marginally significant effect of Trait Anxiety x Valence x Validity $F(2,116) = 2.37$, $p < .06$, $\eta^2 = .04$). In addition, the four-way interaction of Trait Worry x Trait Anxiety x Valence x Validity was significant ($F(2,112) = 2.81$, $p < .05$, $\eta^2 = .05$). This four way interaction was further examined by inspecting the partial correlations between the cue validity effects and the interaction between trait worry and trait anxiety.

Partial correlation analyses on the CV effect for *angry* faces relative to neutral faces yielded a significant association with the interaction between trait worry x trait anxiety ($r(58) = .23$, $p < .05$).

This association was due to the association between trait worry x trait anxiety and the cue validity effect for angry faces ($r(58) = .24$, $p < .05$), while no association was present for the CV effect for neutral faces. A simple slopes regression analysis on the cue attentional bias index for angry faces confirmed that attentional allocation to angry faces was associated with the interaction between trait worry and trait anxiety ($\beta = .26$, $p < .05$), while there were no main effects of trait worry and trait anxiety. Figure 2 indicates that only when both trait worry and trait anxiety were high, disengagement from angry faces was reduced. Significance tests on the separate regression slopes showed that the slope of the high trait anxiety line was significant ($\beta = .36$, $p < .05$).

Partial correlations analyses on the CV effect for *happy* faces relative to neutral faces yielded a significant association with trait worry ($r(58) = .31$, $p < .05$), and, in the opposite direction, with trait anxiety ($r(58) = -.29$, $p < .05$). Yet, there were no significant associations between the cue validity effect for happy faces with trait worry or trait anxiety. Analyses on the CV effect for *neutral* faces however showed an association with trait worry ($r(58) = -.21$, $p < .06$), and an association with trait anxiety, again in the opposite direction ($r(58) = .24$, $p < .06$). This suggests that trait worry, independent of trait anxiety, is associated with reduced attention to neutral faces, whereas trait anxiety, independent of trait worry, is associated with prolonged attention to neutral faces.

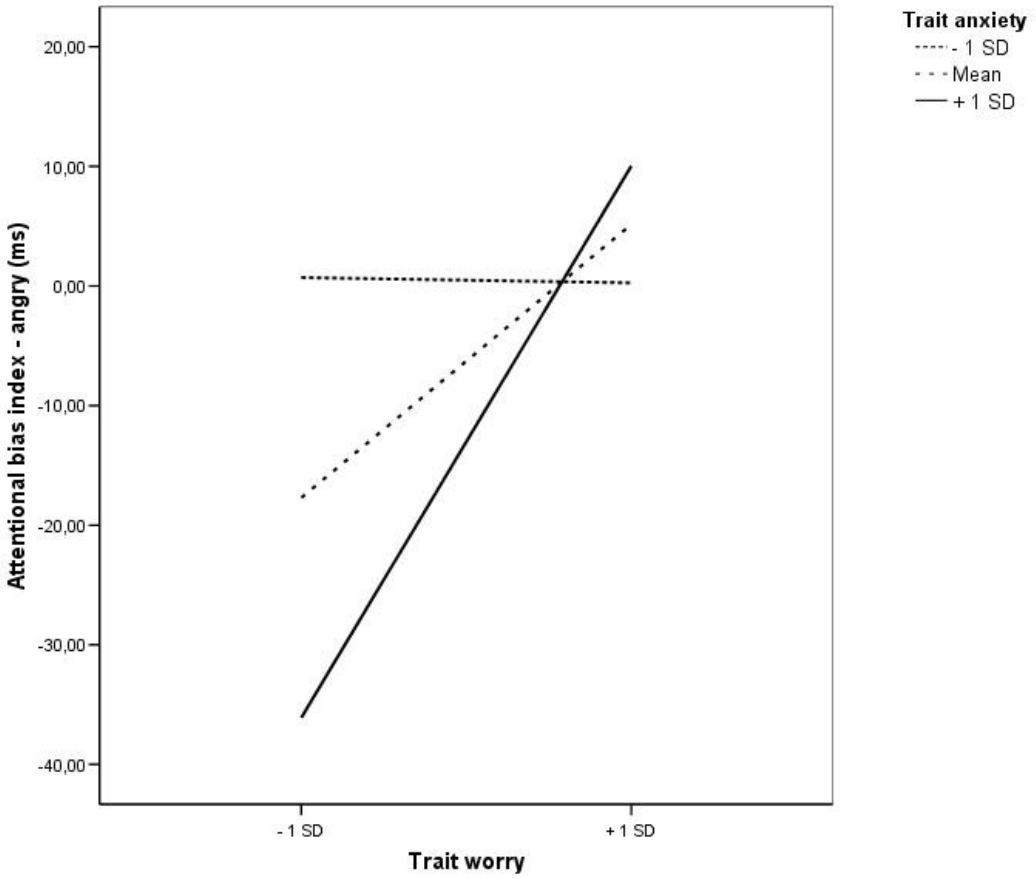

Figure 2. Attentional disengagement from angry faces relative to neutral faces as a function of trait worry and trait anxiety.

Association between induced worry intensity, state anxiety and disengagement

A repeated measures ANOVA with Valence and Validity as within subjects factors and induced worry intensity and state anxiety as continuous between subjects variables yielded a significant Induced Worry Intensity x Valence x Validity interaction ($F(2,114) = 4.61$, $p < .05$, $\eta^2 = .07$).

To examine this interaction, we calculated partial correlations between induced worry intensity and the attentional indices, while controlling for state anxiety and the induced worry intensity x state anxiety interaction. The results showed that induced worry intensity was significantly associated with the cue validity effect of angry faces, relative to neutral faces ($r(57) = .25$, $p < .05$) and with those of happy faces ($r(57) = .39$, $p < .05$). Yet, further inspection of this association showed that induced worry intensity was negatively associated with the CV effect for neutral faces ($r(57) = -.31$, $p < .05$), but not with the CV effects for angry or happy faces.

Trait and state predictors of attentional disengagement from threat

As trait and state variables are often found to have independent associations with performance on attentional tasks (e.g. Fox et al, 2001) and with health outcomes (Cohen et al), we assessed which of

the trait and state variables was most directly associated with the attentional bias indices (Table 2). A forced entry regression analysis showed that the cue validity effect of angry faces was best predicted by the interaction between trait worry and trait anxiety (β = .28, p < .05), and by state anxiety (β = .26, p < .05). No significant predictors were found for the CV effect for happy faces. The CV effect for neutral faces was negatively predicted by induced worry intensity (β = -.33, p < .05).

Table 2. *Hierarchical regression analyses on the CV effects for angry, happy and neutral faces*

	CV angry faces				CV happy faces				CV neutral faces			
	β	t	p	R^2	β	t	p	R^2	β	t	p	R^2
Predictors				.18				.11				.14
(Constant)		-6.77	.00			-5.21	.00			-3.31	.00	
PSWQ	-.11	-0.52	.30		.06	0.29	.38		-.12	-0.54	.29	
STAI-T	.03	0.15	.44		-.15	-0.73	.23		.27	1.34	.09	
Ind. worry int.	-.02	-0.17	.43		.09	0.59	.28		-.33	-2.19	.02	
State anxiety	.26	1.97	.03		.16	1.12	.13		.07	0.51	.31	
PSWQ x STAI-T	.28	2.02	.02		-.09	-0.59	.28		-.10	-0.68	.25	
Ind. worry int. x State anxiety	.15	1.12	.13		.22	1.56	.06		.06	0.44	.33	

Note: PSWQ = Penn State Worry Questionnaire; [2] STAI-T = State Trait Anxiety Inventory – Trait Version; Ind. worry. int. = Induced worry intensity.

Discussion

The main aim of this study was to investigate whether trait worry and induced worry intensity were associated with lower attentional disengagement from threatening stimuli, i.e. angry faces and whether this was independent of anxiety or interacted with it. The results showed that trait worry was associated with lower disengagement from angry faces, but only when trait anxiety was also high. In addition, we found that both trait worry and worry during a worry induction were associated with reduced attention to neutral faces, an effect that was not dependent on anxiety. In contrast, trait anxiety was associated with prolonged attention to neutral faces.

The finding that at high anxiety levels worry is associated with reduced disengagement from angry faces provides further evidence for the proposal that pathological worry (worry that is associated with anxiety) is associated with enhanced elaboration of threatening information, as found in previous studies (Hazlett-Stevens & Borkovec, 2004; Friedman et al., 2000; Mathews & MacLeod, 1985; Mathews et al., 1995; Mogg et al., 1989; Mogg et al., 1995). However, this study

adds to this previous work evidence that enhanced elaboration of threatening information may be particularly due to a reduced ability to *disengage* from it. A weak or deficient ability to disengage from threatening information will easily lead to the prolongation of worry episodes, which, in the long term, might exacerbate worry as a core psychological problem, and instigate meta-worry, the core problem of GAD. According to the perseverative cognition hypothesis (Brosschot, Gerin & Thayer, 2006), this prolonged worrying can also lead to *somatic* pathology because it adds to the total time that mental representations of threatening information provoke stress related physiological activation, which could eventually affect somatic health (Brosschot, Gerin & Thayer, 2006).

In addition, the correlation analyses suggested that trait worry and trait anxiety had independent opposing relations with the cue validity effect of neutral faces. Whereas trait worry was associated with reduced attentional disengagement from neutral faces, trait anxiety was associated with prolonged attention to neutral faces. Since it is unclear how participants interpreted these neutral schematic faces the main effects of worry and anxiety have to be interpreted cautiously. Still, the finding that worry was associated with reduced attention to neutral faces was also found when perseverative worry was measured after a proxy for a real-life worry bout (which usually also lasts 8 minutes on average; Brosschot, van Dijk & Thayer, 2007). Moreover, in the regression analysis induced worry intensity was the only significant predictor of attention to neutral faces. This might suggest that worry in essence is associated with an enhanced inhibition of return when neutral information is present, thereby biasing the attentional system away from neutral information, towards more salient information. Yet, this suggestion is tentative and should be addressed in future studies. How worriers attend to and interpret neutral information certainly deserves more attention given the findings that GAD patients show smaller cardiac orienting responses and impaired habituation of cardiac orienting to neutral information (Thayer, Friedman, Borkovec, Johnsen, & Molina, 2000) and show equally enhanced BOLD responses when presented with neutral information as well as worry related information (Hoehn-Saric, Schlund, & Wong, 2004).

There are several limitations that have to be addressed. Foremost, we used a relatively young and non-clinical group. Although worry might even have adverse effects on health at non clinical levels and student samples are suitable to measure worry on the full severity range (Ruscio, 2002), it remains unclear to what extent our findings extend to pathological worry as observed in GAD. In addition, one could argue that the use of the STAI-T as a measure of trait anxiety has its limitations, as several items of the STAI-T seem to tap into depression (Bieling, Antony, & Swinson, 1998). However, worry has been found to be not only associated with anxiety, but also with sad mood and it could be that reduced attentional disengagement from threat found in anxiety and

depression is mainly associated with the transdiagnostic process of worrying. Therefore the confounding between anxiety and depression in the STAI-T actually might add to the generalizability of the present results. Finally, we only examined reduced attentional disengagement at one stimulus onset asynchrony (SOA of 960 milliseconds between cue and target onset) and future studies should use more SOAs to be able to more specifically address the temporal aspects of this reduced attentional disengagement (Samuel & Kat, 2003).

A possible implication of the present findings might be that interventions might do well to focus more on the engagement-disengagement dimension in the worry process. The success of some novel therapies, such as mindfulness-based cognitive behavioral therapy, may be fruitful because they treat this dimension as an important first target (Ortner, Kilner, & Zelazo, 2007). For example, mindfulness based cognitive therapy is aimed less on changing the content, or threat value of worrisome cognitions, as in traditional CBT, but instead aims at disengaging or decentering from these thoughts through the use of meditation or breathing exercises. From a research standpoint a next step might be to conduct studies that investigate how these findings obtained in a laboratory setting transfer to the experience of worry episodes in daily life, for example by linking reduced attentional disengagement from threat to the frequency and duration of worry episodes as captured by momentary assessments. It might be that people that are high in trait worry, but who do not report anxiety, experience other kinds of worry episodes in their daily lives, relative to people high in both trait worry and trait anxiety. It might be that the former experience frequent but short lasting worry episodes, possibly indicating successful problem solving, whereas the latter experience frequent and long lasting episodes that are characteristic of pathological worry.

All in all, the results of this study suggest that specific threat-related deficiencies in disengagement may be a function of the co-occurrence of worry and anxiety.