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Happy mood decreases self-focused attention

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Research addressing the influence of happy mood on self-focused attention has yielded inconsistent results. Some studies found that happy mood decreased self-focus relative to sad mood. Other studies did not detect a significant difference between happy and neutral mood, and still other studies found that happy mood, relative to neutral mood, increased self-focus. These investigations have potential shortcomings, such as an insufficiently powerful happy mood induction and a confound between visualization mood inductions and self-focus itself. The present experiment addressed these shortcomings by inducing mood via musical selections, equalizing the approximate potency between happy and sad moods, and using a within-participants design. Relative to neutral mood, happy mood decreased self-focused attention.

Self-focused attention refers to the direction of attentional resources towards one's own thoughts and feelings rather than towards objects in the external environment (Carver & Scheier, 1981). The role of self-focused attention has been documented in phenomena as diverse as perceptions of control (Mikulincer, Gerber, & Weisenberg, 1990), group interaction (Mullen, 1991), alcohol consumption (Hull, 1981), prosocial behaviour (Berkowitz, 1987), and aggression (Scheier, Fenigstein, & Buss, 1974). Furthermore, heightened self-focused attention is a correlate of several clinical disorders, such as anxiety (Carver & Scheier, 1986), schizophrenia (Exner, 1973), and, most notably, depression (Gibbons *et al.*, 1985; Larsen & Cowan, 1988; Pyszczynski & Greenberg, 1985, 1986). Self-focused attention has been hypothesized to initiate, maintain, and even exacerbate depressive episodes (Ingram, 1990; Pyszczynski & Greenberg, 1987).

The link between depression and self-focus sparked experimental research on whether affect itself induces self-focused attention. Specifically, this research examined the influence of both sad and happy mood, relative to neutral mood, on self-focused attention. One reason sadness may increase self-focused attention is because sadness serves to alert the individual that a negative change from ordinary experience

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has taken place (e.g. the loss of a spouse or a personal defeat). Sadness is associated with passivity and withdrawal (Frijda, 1986). Turning attention inward is an effective first step towards coping with the loss (Sedikides, 1992a), perhaps because it helps to avoid reminders of the loss (Frijda, 1986). In addition, sadness may induce self-focused attention as the individual seeks to understand the meaning of the negative mood or seeks to repair the negative mood (Salovey, 1992; Wood, Saltzberg, & Goldsamt, 1990). Several empirical investigations have been consistent with these theoretical analyses: sad mood, relative to neutral mood, heightens self-focused attention (Salovey, 1992; Sedikides, 1992b; Wood *et al.*, 1990).

Though the impact of sad mood on self-focused attention is well documented, the influence of happy mood on self-focused attention remains controversial. Happiness may have evolved from a more primitive approach response (Plutchik, 1970) and is associated with an open and expansive orientation (Frijda, 1986). As such, happiness facilitates the strengthening of social bonds, affiliation, and reproduction (Cunningham, 1988; Frijda, 1986; Izard, 1991).

More generally, happiness can lead to greater focus on the outer world at the expense of the inner world. Researchers conceptualize attentional focus as falling on a bipolar continuum (Carver, 1979; Carver & Scheier, 1981; Duval & Wicklund, 1972). Therefore, greater external focus is achieved only via reduced self-focus. Roseman (1984) suggested that happiness leads to stimulation seeking. Lazarus, Kanner, and Folkman (1980) proposed that happiness enables individuals to persist in reaching important goals, a position consistent with more recent work on positive affect and self-regulation (Aspinwall, 1998; Trope & Neter, 1994). That is, positive affect might confer processing advantages as cognitive resources are diverted from self-protection concerns to focusing more squarely on progress toward ongoing goals. Reduced effort spent on protecting the positivity of the self-concept and greater focus on environmental factors relevant to ongoing goals are consistent with reduced self-focused attention. In summary, happiness is associated with stimulation seeking, a social orientation, and with monitoring progress towards important goals, which suggests that more attentional resources are devoted toward the external world and fewer attentional resources are devoted toward the self.

Although the conjecture that happy mood decreases self-focused attention relative to neutral mood appears to be logical, there currently is no compelling support for it. Carr, Teasdale, and Broadbent (1991) reported that happy mood reduced self-focused attention compared to sad mood. Other investigators (Wood *et al.*, 1990; Sedikides, 1992b) did not find a significant difference between happy and neutral mood in the elicitation of self-focus. Finally, Salovey (1992) reported that happy mood increased, rather than decreased, self-focus relative to neutral mood. We claim that all these investigations suffer from potential shortcomings, which we articulate below.

Carr *et al.* (1991) induced either a happy or sad mood state via musical selections. Self-focused attention was indexed by a shortened version of Exner's (1973) Self-Focus Sentence Completion. Happy participants wrote fewer self-focused responses than sad participants. These results support the proposition that happiness decreases self-focused attention. However, two limitations need to be highlighted. First, Carr *et al.* did not report the relevant statistical test, as they discussed happiness-related and sadness-related self-focus separately. More importantly, a comparison between happy and neutral mood is not possible, because a neutral mood condition was not included in the experiment. Thus, though this research provided evidence that sad mood elicits

greater self-focused attention than happy mood, the research can not speak directly to the happy vs. neutral comparison.

Wood *et al.* (1990) induced a sad, neutral, or happy mood through musical selections, and measured self-focused attention using either the Private Self-Consciousness (PSC) subscale of the Self-Consciousness Scale (Fenigstein, Scheier, & Buss, 1975) (e.g. 'Right now, I'm attentive to my inner feelings') or a thought-listing task. Happy participants did not differ significantly from neutral participants on degree of self-focus. However, concluding that happy and neutral moods do not differentially influence self-focus is unwarranted because manipulation check results suggest that the happy mood induction was not as potent as the sad mood induction.

Salovey (1992) induced sad, neutral, or happy mood by asking participants to imagine autobiographic events. Self-focus was indexed with either a pronoun choice task (Expt 1) or Linville's (1985) self-complexity procedure (Expt 2). A planned contrast testing the hypothesis that both happy and sad mood induce greater self-focus than neutral mood was significant in both experiments. However, the sad and happy scenes that participants visualized may have been more self-involving than the neutral scenes, leading to heightened self-focused attention in both conditions. That is, the mood induction itself may have been confounded with self-focus.

Sedikides (1992b) also investigated how moods influence self-focused attention. In Expt 1, mood was induced by instructing participants to imagine sad, neutral, or happy hypothetical events. The use of hypothetical rather than autobiographical events was thought to reduce the likelihood that the mood conditions would differ in how self-involving they were, and thus minimize the possible confounding between the mood induction and self-focus. The effort to prevent this confounding took on a more systematic form in Expt 2: participants imagined a friend, rather than the self, as the referent of the affect-inducing hypothetical event. Moreover, in Expt 3, body-centredness was manipulated directly. Half of the participants imagined hypothetical events that referred to their physical bodies, whereas the remaining participants imagined non-body-centred events. The statistical interaction between body-centredness and mood was not significant. In all three experiments, the neutral and happy conditions did not differ significantly on self-focus. However, these experiments also are not immune to criticism. The happy imagery tasks may have been less powerful than the sad imagery tasks.

In summary, the state of knowledge regarding the influence of happy mood on self-focused attention is far from settled. Some experiments showed that happy mood elicited less self-focus than sad mood (Carr *et al.*, 1991), but lacked a critical neutral-mood control condition. Other experiments (Sedikides, 1992b; Wood *et al.*, 1990) found no difference between happy and neutral mood, but these null results could be due to an insufficiently powerful happy mood manipulation. Still other experiments (Salovey, 1992) reported that happy mood increases self-focus relative to neutral mood, but a confound between self-focus and mood induction *per se* is a distinct possibility.

The present experiment was designed to provide a new test of the hypothesis that happy mood decreases self-focused attention by remedying the potential limitations of past research. First, we used a neutral-mood control group. Secondly, we attempted to overcome the potential confound between visualization mood induction procedures (e.g. imagining autobiographical events) and self-focused attention by using musical selections to induce mood.

Music mood manipulations possess a second advantage. A meta-analysis of 11 mood inductions (Westermann, Spies, Stahl, & Hesse, 1996) found that, overall, negative mood inductions were stronger than positive mood inductions. However, whereas several specific mood inductions (e.g. visualization tasks) yielded significantly larger effect sizes for sad mood than happy mood, music mood inductions did not yield significantly different effect sizes for happy and sad mood. Thus, using music to induce mood increases the likelihood that the happy and sad inductions will be approximately equal in potency.

Finally, we decided to employ a within-participants design for the critical happy vs. neutral comparison. The comparisons in all previous research were between-participants. That is, participants placed in a happy mood state were compared to different participants placed in a neutral mood state. Though the majority of mood research has fruitfully used between-participants designs, a within-participants comparison may afford several advantages. Individuals differ both in their baseline mood state and in the degree to which situational factors (such as experimental mood inductions) influence their mood. Moreover, most individuals report that their natural baseline mood is mildly positive. If each participant serves as his or her own control by experiencing a neutral mood state on one occasion and either a happy or a sad mood state on another occasion, differences between these conditions might be sensitive enough to reveal that happy mood indeed decreases self-focused attention relative to neutral mood. In addition, a within-participants design might increase the likelihood that the happy and sad inductions are approximately equal in potency. In order to assess most effectively whether or not the happy and sad mood inductions differ in potency, we included multiple mood manipulation checks that afford a statistical comparison between the neutral–happy and neutral–sad differences.

Method

Participants

Participants were 79 (42 female, 37 male) State University of New York at Stony Brook undergraduate students. They participated for fulfilment of an introductory psychology course option and were assigned randomly to the between-participants conditions.

Measures

Mood manipulation checks

Participants rated their moods on visual analogue scales, anchored by end-points 'not at all' and 'extremely'. Consistently with previous research (Wood *et al.*, 1990), we constructed two indices: happy (happy, hopeful, cheerful, energetic) and sad (depressed, sad). To ensure that participants were not simply reporting mood change when no actual mood change occurred, we also administered behavioural measures of mood. Participants counted aloud from 1 to 10 at their own pace into a tape-recorder; count times have been shown to discriminate reliably between happy and sad individuals (Clark & Teasdale, 1985). Participants also rated their desire to engage in eight potentially pleasant activities (e.g. go to a party) on a 9-point scale with anchors 1 (not at all) and 9 (very, very much). These 'incentive ratings' have also been demonstrated in previous research to discriminate reliably between mood states (Clark & Teasdale, 1985).

Self-focused attention

Participants provided a free-response thought sample in which they wrote down everything that came to mind for 2.5 minutes. Thought listing has been used extensively in mood and self-focus research (Sedikides, 1992b; Wood *et al.*, 1990) and is relatively impervious to demand characteristics due to its open-ended nature. The thought samples were decomposed into units consisting of simple sentences or independent clauses, and each unit was coded as self-focused or not self-focused (Sedikides, 1992b; Wood *et al.*, 1990). Self-focused units involved self-evaluations or references to traits, physical characteristics, or behaviours (e.g. 'I'm hungry'). Units that were not self-focused included references to other individuals (e.g. the experimenter), events, or objects (e.g. 'this room is drab'). As in prior research (Sedikides, 1992b; Wood *et al.*, 1990), mood-related thoughts were removed in order to avoid a potential confound (i.e. mood-related thoughts may reflect the impact of mood rather than the generation of self-relevant thoughts).[1] Self-focus ratios were computed by dividing the number of self-focused units by the total number of thought units. Two coders who were unaware of mood condition independently classified the thought units. Inter-coder agreement was .85.

Procedure

Participants listened to happy, neutral, or sad musical selections for 10 minutes. The happy selection was a version of Bach's Brandenberg Concerto No. 3, played by jazz flutist Hubert Laws. The neutral selection included two Chopin Waltzes: 'No. 11 in G flat' and 'No. 12 in F minor' played by Alexander Brailowsky. The sad selection was Prokofiev's 'Russia under the Mongolian Yoke' played at half speed. These selections have been used and validated in prior mood research (Wood *et al.*, 1990).

The experimenter first explained the upcoming tasks and how to use the tape-recorder, which was used to administer all instructions. The experimenter randomly assigned the participant to a particular mood condition after leaving the room and had no further contact with the participant until the conclusion of the session. After listening to the mood-inducing musical selections, participants wrote down their thoughts, counted into the tape-recorder, then completed the mood analogue scales and the incentive ratings. All the mood manipulation checks occurred after the assessment of self-focused attention.

At the conclusion of the experimental session, the experimenter ensured that the participant's mood had returned to normal and scheduled a second session to occur 1 to 2 weeks later. Participants who had experienced either the happy or sad induction at the first session were assigned to the neutral condition, whereas those who had experienced the neutral condition at the first session were assigned randomly either to the happy or sad condition. Participants were fully debriefed at the end of the second experimental session.

Results

Mood induction

One mood manipulation check consisted of happy and sad composite indices constructed from individual visual analogue scales. The happy index and sad index

[1] *We obtained similar results using the self-focused attention ratios that included mood-related thoughts.*

correlated negatively with each other, $r = -.41$, $p < .01$, so we subtracted the sad index from the happy index to form an overall mood measure. We then entered mood scores into a 2 (Mood: happy, sad) × 2 (Order: neutral mood first, neutral mood last) × 2 (Mood Comparison: happy and neutral, sad and neutral) ANOVA, in which the first two factors were between-participants and the last factor was within-participants.

The Mood × Mood Comparison interaction was significant, $F(1,75) = 75.89$, $p < .001$, so we analysed happy and sad mood conditions separately. Participants assigned to the happy mood condition reported being significantly happier ($M = 61.75$) after the happy mood induction than after the neutral mood induction on a separate occasion ($M = 21.75$), $t(39) = 5.77$, $p < .001$. Participants assigned to the sad mood condition reported being significantly sadder ($M = -39.85$) after the sad mood induction than after the neutral mood induction ($M = 25.41$), $t(38) = 6.11$, $p < .001$. Thus, the happy and sad mood inductions altered mood in the intended directions relative to the neutral mood induction.

The behavioural mood checks also confirmed the effectiveness of the mood manipulations. (A few individuals failed to provide count times or incentive ratings, so the degrees of freedom are inconsistent.) The Mood × Mood Comparison interaction was significant for count time scores, $F(1,70) = 11.84$, $p < .001$. Happy participants counted faster after the happy ($M = 6.60$) than the neutral ($M = 7.53$) mood induction, $t(37) = 2.87$, $p < .007$. In contrast, sad participants counted more slowly after the sad ($M = 7.66$) than the neutral ($M = 7.14$) mood induction, $t(33) = 1.95$, $p < .059$.[2] Finally, the Mood × Mood Comparison interaction was significant for incentive ratings, $F(1,73) = 10.80$, $p < .002$. Happy participants scored higher on the incentive ratings after the happy ($M = 48.97$) than the neutral ($M = 44.53$) mood induction, $t(37) = 3.50$, $p < .001$. Sad participants scored somewhat (but non-significantly) lower on the incentive ratings after the sad ($M = 42.82$) than the neutral ($M = 44.38$) mood induction, $t(38) = 1.44$, $p < .159$.

Testing the equivalency of the mood inductions

One potential shortcoming of previous research on the effects of mood upon self-focused attention is the possibility that the happy mood inductions were less potent than the sad mood inductions. The present research allows for an assessment of the relative magnitudes of the happy and sad mood inductions by comparing them to the neutral conditions. For each of the three mood manipulation checks, we constructed difference scores between happy and neutral, and sad and neutral conditions, then performed *t* tests between the sad and happy difference scores.

For the composite indices of the visual analogue scales, the difference between happy and neutral conditions was marginally smaller than the difference between sad and neutral conditions, $t(78) = -1.90$, $p < .062$. The difference scores for the count times were not significantly different for happy vs. sad participants, $t(70) = 1.37$, $p < .18$. Similarly, for the incentive ratings, the difference between happy and sad participants was not significant, $t(76) = 1.13$, $p < .26$. As a whole, the comparison of the manipulation check data argues against differential potency of the happy and sad mood inductions relative to their respective neutral mood inductions. It appears that the happy and sad mood inductions were approximately equal in potency.

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[2] *One count time that was approximately three standard deviations above the mean was removed prior to performing the analyses.*

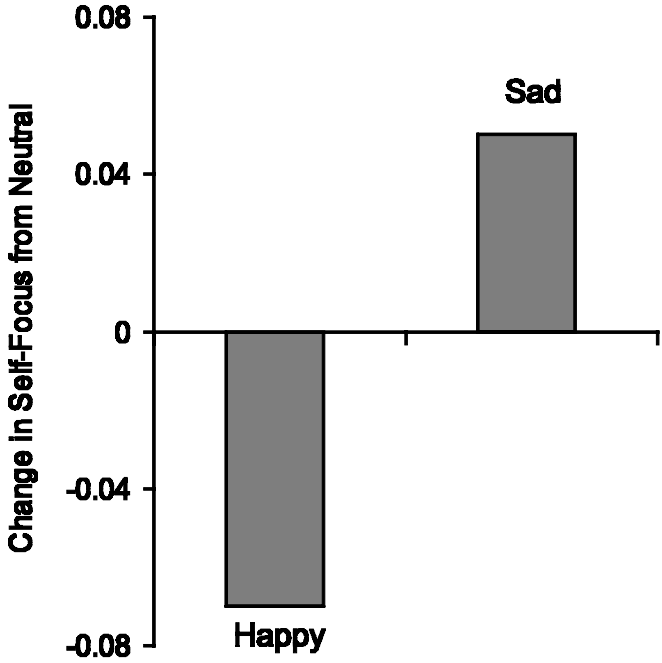

Figure 1. Change in proportion of self-focused thoughts relative to neutral mood.

Attentional focus

As with the three mood measures, we entered self-focused attention ratios into a 2 (Mood: happy, sad)×2 (Order: neutral mood first, neutral mood last)×2 (Mood Comparison: happy and neutral, sad and neutral) ANOVA, in which the first two factors were between-participants and the last factor was within-participants.[3]

The critical Mood×Mood Comparison interaction was significant, $F(1,75)=8.97$, $p<.004$. Figure 1 illustrates changes in self-focus from the neutral baseline. Participants became more self-focused when in a sad mood than when in a neutral mood, $t(38)=2.36$, $p<.02$. Sad mood increased self-focused attention relative to neutral mood, thus replicating past research (Salovey, 1992; Sedikides, 1992b; Wood *et al.*, 1990). More importantly, participants became less self-focused when in a happy mood than when in a neutral mood, $t(39)=2.09$, $p<.04$. Happy mood decreased self-focused attention relative to neutral mood. No other effects reached significance.

Discussion

We induced in participants a neutral mood state as well as a happy or sad mood state. We measured self-focused attention with an open-ended thought listing task. In line with past research, sad mood increased self-focus relative to neutral mood (Salovey,

[3] *As a reminder, participants did not experience all three mood conditions, in part because experiencing both happy and sad music might have heightened potential demand to provide different answers across mood conditions. Thus the design is not fully crossed: participants experienced either a sad or a happy mood manipulation, and all experienced a neutral manipulation on a separate occasion.*

1992; Sedikides, 1992b; Wood *et al.*, 1990). In contrast, happy mood decreased self-focus relative to neutral mood.

We believe that we have succeeded in illustrating an important effect by unmasking confounds present in previous research. Specifically, we induced mood through musical selections rather than visualization tasks. We increased the sensitivity of the testing procedure by switching from a between- to a within-participants design. Finally, we attempted to equalize the approximate potency of happy and sad mood inductions (Westermann *et al.*, 1996).

Assessing mood via both rating scales and behavioural measures allowed multiple comparisons of the relative strengths of the happy and sad mood inductions. The behavioural (i.e. count times and incentive ratings) and self-report mood measures indicated that the sad music and the happy music elicited approximately equal mood levels relative to their respective neutral mood baselines. Future research might benefit from (a) using musical selections to increase the likelihood of equal potency across happy and sad mood inductions, (b) assessing mood via multiple measures, and (c) testing directly the relative magnitude of the mood inductions relative to the neutral baseline.

Although the tests of the three mood manipulation checks suggest that the inductions did not differ significantly in strength, we do not mean to imply that happy and sad moods differ only on the dimension of valence. Happiness and sadness differ in their cognitive appraisal, physiological changes, and action readiness, among other dimensions (Green & Sedikides, 1999; Ortony, Clore, & Collins, 1988; Parkinson, 1997). Therefore, we caution against extending the present results to all positive and negative affective states. Indeed, recent relevant work has emphasized a dimension other than valence. This is the dimension of social vs. reflective orientation (Green & Sedikides, 1999). Positive affective states can be either socially-oriented (e.g. happiness) or reflectively-oriented (e.g. contentment). Likewise, negative affective states can be either socially-oriented (e.g. anger) or reflectively-oriented (e.g. sadness). Socially-oriented states (regardless of whether they are positive or negative) decrease self-focused attention, whereas reflectively-oriented affective states (regardless of whether they are positive or negative) increase self-focused attention. It is important to note that the four affective states, induced via imagination tasks (Expt 1) or imagination tasks combined with musical selections (Expt 2) in the Green and Sedikides investigation, were more concrete and specific than the global positive mood induced in the present experiment. Therefore, Green and Sedikides' study and the present investigation converge to provide a more complete portrait of affective states and self-focused attention and to clarify previous inconsistencies in the literature: global happy mood reduces self-focused attention, but more specific and discrete positive affective states may be either social (i.e. reduce self-focus) or reflective (i.e. increase self-focus) in orientation (Green & Sedikides, 1999).

Early research and theory proposed that individuals in a happy mood process information more superficially than individuals in a sad mood (e.g. Mackie & Worth, 1989), as a result of either reduced cognitive capacity or reduced motivation. However, more recent work has found that happy mood can elicit more extensive processing (e.g. Martin, Ward, Achee, & Wyer, 1993) or facilitate superior decision making relative to neutral mood (e.g. Isen, Rosenzweig, & Young, 1991). More generally, researchers have suggested that the effect of mood on cognitive processes is complex, and often depends on the contextual implications of the mood (Martin, Abend, Sedikides, & Green, 1997; Martin *et al.*, 1993; Sedikides & Green, 2001). Other researchers have

argued that positive moods elicit more creative and flexible thinking and decision making (Isen, 1993; Isen *et al.*, 1991) and confer advantages with respect to self-regulation (Aspinwall, 1998).

We believe that the present finding is consistent with the view that positive mood often leads to superior self-regulation relative to negative mood. Various research findings have converged to suggest that positive mood can act as a resource or a buffer, enabling individuals to process negative information more extensively. That is, a surplus of positive affect renders defensive self-protection, probably associated with greater self-focused attention, less necessary. Consequently, the individual is more free to face negative information or to accomplish goals (Tesser & Cornell, 1991; Trope & Neter, 1994). Thus, the notion that positive affect reduces self-focused attention appears to be consistent with these more recent formulations of the effect of positive affect on self-regulation.

Though the present experiment has broken new ground regarding the influence of happy mood on self-focused attention, we doubt strongly that it is the last word. The relation between affective states and self-focused attention has implications for social behaviour, self-regulation, and mood management (Sedikides & Green, 2000). We hope that future research continues to address the intricate relation between affective states and self-focused attention.

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