Psychology Press
Taylor & Francis Group

BRIEF REPORT

When the ends outweigh the means: Mood and level of identification in depression

Edward R. Watkins[1], Nicholas J. Moberly[1], and Michelle L. Moulds[2]

[1]College of Life and Environmental Sciences, University of Exeter, Exeter, UK
[2]School of Psychology, University of New South Wales, Sydney, NSW, Australia

Research in healthy controls has found that mood influences cognitive processing via level of action identification: happy moods are associated with global and abstract processing; sad moods are associated with local and concrete processing. However, this pattern seems inconsistent with the high level of abstract processing observed in depressed patients, leading Watkins (2008, 2010) to hypothesise that the association between mood and level of goal/action identification is impaired in depression. We tested this hypothesis by measuring level of identification on the Behavioural Identification Form after happy and sad mood inductions in never-depressed controls and currently depressed patients. Participants used increasingly concrete action identifications as they became sadder and less happy, but this effect was moderated by depression status. Consistent with Watkins' (2008) hypothesis, increases in sad mood and decreases in happiness were associated with shifts towards the use of more concrete action identifications in never-depressed individuals, but not in depressed patients. These findings suggest that the putatively adaptive association between mood and level of identification is impaired in major depression.

Keywords: Depressed; Mood; Abstract; Concrete; Identification.

The hypothesis that goals, events, and actions can be mentally represented within a hierarchical framework that ranges from more abstract to more concrete levels of identification is an important concept within a number of social-cognitive theories (e.g., control theory, Carver & Scheier, 1982, 1990; Powers, 1973; construal level theory, Trope & Liberman, 2003; action identification theory, Vallacher & Wegner, 1987). The conceptualisation of abstract versus concrete that is common to all of these theories is that an abstract level of identification involves general, superordinate, and decontextualised mental representations that convey the essential meaning of goals and events, including the "*why*" aspects of an action and the ends consequential to

1214

it. In contrast, a concrete level of identification involves subordinate, contextual, and specific details of goal, events, and actions that denote the feasibility, mechanics, and means of "*how*" to do the action.[1] Control-theory approaches hypothesise that goals, events, and behaviours are hierarchically organised and can be processed at different levels of abstraction, with more abstract, superordinate goals and standards guiding and informing more concrete, subordinate goals and standards (Carver & Scheier, 1982, 1990, 1998; Powers, 1973). Similarly, within action identification theory (AIT; Vallacher & Wegner, 1987), an abstract identification represents the purpose and ends of an action ("why it is carried out"), whereas a concrete identification represents the action's process and means ("how it is carried out"). Thus, within AIT, the same action (e.g., "locking my door") can be identified in abstract terms (e.g., "maintaining security", the purpose why the door is locked, i.e., a higher level in the goal hierarchy) or in more concrete terms (e.g., "turning a key", the means how the action is implemented, i.e., a lower level in the goal hierarchy).

Control theory and AIT, as well as recent elaborations on these theories (Watkins, 2008, 2010) generate a number of hypotheses concerning the relationship between level of goal/action identification and affect. First, these theories propose that the prepotent and active level of goal/action identification can shift moment to moment as a function of whether the individual is focusing on a more abstract or more concrete level of processing (Carver & Scheier, 1982). Second, these theories propose that there is an optimal level of identification that varies with circumstances including mood state (Vallacher & Wegner, 1987), such that it can be detrimental to adopt a level of identification that is too concrete, too abstract, or that fails to link abstract levels to concrete levels (Carver & Scheier, 1998). Thus, these theories propose that for the psychologically healthy, shifts in level of goal/action identification occur adaptively in response to circumstances in order to match the level of identification with the needs of the current situation, whereas psychopathology is characterised by inappropriate or inflexible identifications. Third, these theories hypothesise that different levels of goal/action identifications have distinct functional effects, with abstract identifications aiding long-term goal pursuit, and concrete identifications more adaptive in difficult circumstances.

More specifically, these theories predict that the level of goal/action identification adopted will causally influence emotional response to a negative event, with more concrete identifications resulting in less emotional reactivity than abstract identifications (Carver & Scheier, 1990). Consistent with this prediction, Watkins, Moberly, and Moulds (2008) found that prior practice at adopting concrete identifications resulted in less negative

---

[1] Because the terms abstract and concrete are used multifariously (and often vaguely) in psychology (and in lay speech), it is useful to define exactly what is meant by abstract versus concrete identifications in the current analysis. The current analysis is grounded within control theory and action identification theory, and, as such, the current analysis operationalises more abstract identifications as those representing superordinate goals including the purpose, meanings, and ends of a goal or action ("why it is carried out"), and more concrete identifications as those representing subordinate goals including the process and means of a goal or action ("how it is carried out"). Level of goal/action identification was chosen as the operationalisation of abstraction because: (a) the current analysis is grounded within control theory/action identification accounts and level of goal/action identification is the primary feature of abstract versus concrete processing within this theoretical approach; (b) means versus ends is the operationalisation of abstractness that is common to all the theoretical perspectives considered; and (c) there are advantages in clarity, parsimony, and theoretical rigour in adopting a narrow and specific operationalisation of abstraction. Moreover, it is important to note that the distinction between abstract and concrete levels of representation used here differs from accounts in which concrete levels of representation are associated with "hot" emotionally arousing representations, whereas abstract levels of representation are associated with "cool", less arousing representations (Ayduk, Mischel, & Downey, 2002; Kross, Ayduk, & Mischel, 2005, who report that distanced, non-emotionally immersed processing can be adaptive when focused on anger; see Metcalfe & Mischel, 1999, for a theoretical account). The level of identification accounts discussed here do not make links between level of processing and emotional arousal, rather degree of emotional arousal/distance is conceptualised as a separate dimension.

emotional response to a subsequent unexpected failure than prior practice at adopting abstract identifications. Elaborations on these theories (Watkins, 2008, 2010) also hypothesise that mood state will causally influence the level of identification adopted, with sad mood leading to adoption of more concrete identifications relative to happy mood. There is not scope in the current article to provide a detailed account of the rationale behind all these hypotheses—a full account is provided in Watkins (2008, 2010).

Within these theories, the potential advantages and disadvantages of an abstract versus concrete level of identification centre around their relative sensitivity to contextual and situational detail. Relative to a concrete level of identification, an abstract identification insulates an individual from the specific context, making the individual less distractible, less impulsive, and enabling more consistency and stability of goal pursuit across time, but also making the individual less responsive to the environment and to any situational change, and providing fewer specific guides to action and problem solving because of their distance from the mechanics of action. Thus, control theory and AIT generate the hypothesis that under circumstances that are safe, familiar, and straightforward or that require focus on long-term goals, an abstract level of identification is adaptive, as it enables stability and flexibility in goal pursuit, whereas a concrete level of goal/action identification is hypothesised to be adaptive under circumstances of complexity, unfamiliarity, difficulty, or stress, because it facilitates detailed guidance as to what to do next.

Moreover, since control theory accounts hypothesise that mood is a function of relative goal progress, with negative versus positive affect resulting from less versus greater progress towards a goal than desired and expected (Carver & Scheier, 1990), it is hypothesised that an adaptive response to negative affect would be associated with a shift to a more concrete level of goal/action identification relative to positive affect. Similar predictions have been made by theories that propose that affect influences the process of cognition (Bless & Fiedler, 2006; Fiedler, 2001;

Forgas, 2008). Like AIT and control theory, this effect of mood on level of goal/action identification is hypothesised to be adaptive in that it matches the level of cognitive processing to situational need (Beukeboom & Semin, 2005; Bless, Schwarz, Clore, Golisano, & Rabe, 1996; Forgas, 2008). Thus, if a happy mood is assumed to signal goal progress, the absence of difficulties or threats, and/or the presence of a benign situation, it would be adaptive to rely on more abstract identifications that maintain focus on long-term goals in such a mood. Moreover, engendering abstract representations may be beneficial because they enable transfer of learning from one situation to another (Förster & Higgins, 2005; Vallacher & Wegner, 1987). Conversely, if a sad mood is assumed to signal a problematic situation, then a shift to more concrete identifications in response to sadness would be adaptive because concrete processing provides more contextual detail about the specific means and alternatives by which to proceed when faced with difficult situations (Vallacher & Wegner, 1987) and would reduce emotional vulnerability (Carver & Scheier, 1990; Watkins et al., 2008).

There is considerable evidence consistent with the hypothesis that different levels of goal/action identifications have distinct functional effects, with abstract identifications aiding long-term goal pursuit, and concrete identifications more adaptive in difficult circumstances. First, when giving a speech, focusing on the concrete process of giving the speech resulted in less anxiety and less performance dissatisfaction when the task was perceived to be difficult, whereas focusing on the abstract purpose of the speech resulted in less anxiety and less performance dissatisfaction when the task was perceived to be easy (Vallacher, Wegner, McMahan, Cotter, & Larsen, 1992; Vallacher, Wegner, & Somoza, 1989). Second, a concrete level of identification can facilitate effective behavioural self-regulation by improving problem solving (Watkins & Baracaia, 2002; Watkins & Moulds, 2005a), and by focusing attention on the immediate demands of the present situation, and freeing up cognitive resources (e.g., Gollwitzer, 1999; Webb & Sheeran,

2003). Third, experimentally manipulating level of goal/action identification influences emotional response to a subsequent stress failure task (Moberly & Watkins, 2006; Watkins et al., 2008), with more concrete identifications resulting in less emotional reactivity. Fourth, a habitual tendency towards more abstract level of identification is associated with more persistent and stable behaviour, greater self-motivation, less impulsiveness, and fewer action errors (Vallacher & Wegner, 1989). Fifth, inducing an abstract level of identification produces greater self-control on experimental tasks than inducing a concrete level of identification (Fujita, Henderson, Eng, Trope, & Liberman, 2006). Watkins (2008, 2010) provides a fuller analysis of the conditions under which abstract versus concrete levels of identification are adaptive versus maladaptive.

Likewise, there is considerable evidence consistent with the hypothesis that level of goal/action identification shifts in response to circumstances including mood state. First, individuals tend by default to use a more abstract level of identification (Wegner & Vallacher, 1987; Wegner, Vallacher, Kiersted, & Dizadji, 1986; Wegner, Vallacher, Macomber, Wood, & Arps, 1984), yet when faced with difficult, novel or complex situations, people often move towards more concrete identifications (Vallacher, Wegner, & Frederick, 1987; Wegner et al., 1984). For example, when given an unwieldy cup that made drinking more difficult, participants tended to provide more concrete descriptions of the act of drinking than individuals given normal cups (Wegner et al., 1984).

Second, there is extensive evidence supporting the hypothesis that level of goal/action identification shifts with mood. Happy mood is associated with more global and abstract level of goal/action identification, whereas sad mood is associated with a more local, concrete level of goal/action identification that is more attentive to detailed, external information (e.g., Beukeboom & Semin, 2005, 2006; Bless et al., 1996; Forgas, 2007; Forgas & East, 2008; Gasper & Clore, 2002, Storbeck & Clore, 2005). For example, Beukeboom and Semin

(2005) used the Behavioural Identification Form (BIF), which presents participants with a list of behaviours (e.g., "eating"), and asks them to endorse one of two subsequent descriptions differing in their level of action identification, e.g., "getting nutrition" (abstract—why the action is performed) versus "chewing and swallowing" (concrete—how the action is performed). Participants in a happy mood endorsed descriptions of actions that were more abstract than participants in a sad mood.

Thus, there is evidence in non-clinical research samples that level of goal/action identification is flexibly regulated in response to circumstances, and, in particular, in response to mood state. Consistent with control theory and AIT, non-clinical participants adopt the level of goal/action identification hypothesised to be most adaptive to the current circumstances. Furthermore, there is evidence consistent with the hypotheses that different levels of goal/action identification have distinct functional effects. Taken together, the extant evidence suggests that level of goal/action identification is adaptively regulated to circumstances in healthy controls.

However, there is at least one salient exception to this hypothesised functional linkage between affect and level of goal/action identification: *the level of identification adopted in clinical depression*. Rather than sad mood being associated with more concrete identifications of events, goals, and behaviours, mental representations of depressed patients are instead characterised by overgeneralisation and abstraction for negative outcomes (Beck, Rush, Shaw, & Emery, 1979; Carver, La Voie, Kuhl, & Ganellen, 1988). Patients with depression tend to overgeneralise from a single negative event, such that a single failure is represented in terms of a global and characterological personal inadequacy (e.g., "I am worthless", a highly abstract identification). Moreover, a recent review (Watkins, 2008) has summarised evidence that the pathological form of rumination, which contributes to the onset and maintenance of depression, is characterised by more abstract identifications focused on the meanings and

implications of negative events, and asking "Why?" negative events happen.

To account for this apparent inconsistency, Watkins (2008, 2010) hypothesised that, in depression-prone individuals (as well as anxiety-prone individuals; Watkins, 2010), mood state is less effective at shifting the level of identification used to represent difficult events or actions and negative circumstances. More specifically, this *level of identification dysregulation hypothesis* proposes that currently depressed individuals have an impairment in flexibly regulating level of identification in response to situational demands, and consequently are less likely to use increasingly concrete representations in response to difficult circumstances (i.e., situations in which there are increases in sad mood and/or decreases in happy mood). Critically, this hypothesis suggests that major depression may be characterised by the failure of the normal function for more negative mood (whether increasing sad mood or decreasing happy mood) to engender more concrete identifications. This failure may result from cognitive and motivational factors such as deficient executive/inhibitory control (Joormann, 2006) and beliefs that it is important to understand feelings and problems in more abstract terms (Watkins & Moulds, 2005b). This analysis proposes that despite the extreme and prolonged nature of the mood disturbance in depression, including high levels of sadness and low levels of happiness (anhedonia), patients with major depression do not adopt more concrete levels of identification in response to negative circumstances. It is important to note that theoretical models and previous empirical studies (e.g., Beukeboom & Semin, 2005, which compared a happy mood induction between-subject to a sad mood induction) leave unresolved whether increases in sadness and/or reductions in happiness are associated with the shift in level of identification.

To date, studies of the effects of mood on the abstraction of cognitive processing have been conducted in non-clinical samples. The objective of the present research was to directly test the level of identification dysregulation hypothesis

with currently depressed and never-depressed participants. Following a methodology similar to Beukeboom and Semin (2005), we used Vallacher and Wegner's (1989) Behavioural Identification Form to assess the level of identification adopted following happy and sad mood inductions in patients with major depression and never-depressed controls. Elaborating on the findings from Beukeboom and Semin (2005), we hypothesised that in never-depressed controls there would be a linear relationship between change in mood from happy to sad mood inductions and change in concreteness from happy to sad mood inductions, i.e., we hypothesised that the extent of change in identifications would be directly related to change in mood state, such that for a greater change in mood, there would be greater change in adoption of concrete identifications. We therefore predicted that identifications of behaviour would become increasingly concrete as participants reported increasing levels of sad mood and/or decreasing levels of happy mood, thereby conceptually replicating Beukeboom and Semin's (2005, 2006) findings using a within-subjects design. We used a within-subjects design to examine the change in concreteness and change in mood within each individual between happy and sad mood inductions, which allowed us to test this assumption that there was a direct relationship between degree of mood change and degree of identification change with each participant acting as his/her own control. However, we also predicted that this association between change in mood and change in level of identification would be weaker or absent in currently depressed patients. Thus, we predicted that the association between mood change and shifts in level of identification would be moderated by depression status. Given that previous studies have not distinguished between the effects of increasing sadness versus reducing happiness in determining change in level of action identification, we separately analysed both ratings of sadness and happiness to explore whether the change in level of identification was associated with change in sadness and/or change in happiness.

METHOD

Participants

Participants were 23 individuals who met criteria for major depression on the Structured Clinical Interview for Diagnosis (SCID; First, Spitzer, Gibbon, & Williams, 2002) and 23 controls who had never experienced any psychiatric disorder (see Table 1 for details). Some individuals in the depressed group also met criteria for current comorbid diagnoses, including generalised anxiety disorder ($n = 6$), specific phobia ($n = 5$), social phobia ($n = 4$), panic disorder ($n = 4$), posttraumatic stress disorder ($n = 2$), and dysthymia ($n = 1$). Groups were matched for age and gender, Fs < 1. Participants were recruited via community notice boards and reimbursed £10 (US$16).

Measures and materials

Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). The BDI is a 21-item self-report scale that indexes the presence and severity of depression symptoms over the past week. The BDI possesses good psychometric properties, with alpha coefficients of .86 and .81 for psychiatric and non-psychiatric populations respectively (Beck, Steer, & Garbin,

1988). In this sample, coefficient alpha was .94. The depressed group scored significantly higher on the BDI than controls, $t(27.39) = 14.10$, $p < .001$ (degrees of freedom adjusted for unequal variances).

Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990). The PSWQ is a 16-item self-report scale assessing trait worry. The scale has good psychometric properties and successfully discriminates between individuals with all, some, or none of the diagnostic criteria for generalised anxiety disorder (Meyer et al., 1990). In our sample, coefficient alpha was .92. The depressed group scored significantly higher on the PSWQ than controls, $t(44) = 6.08$, $p < .001$.

Behavioural Identification Form (Vallacher & Wegner, 1989). Two parallel versions of this instrument were administered to assess level of identification when describing behaviours. Each form contains 17 behaviours (e.g., "eating"), each followed by a choice of two descriptions differing in their level of action identification, e.g., "getting nutrition" (abstract) versus "chewing and swallowing" (concrete). Participants select the description that they consider best describes the behaviour.

Table 1. *Means (SDs) for demographics, mood ratings, and concrete completions pre- and post-induction for currently depressed and never-depressed participants*

	Currently depressed	Never depressed
Gender	12 females, 11 males	14 females, 9 males
Age	39.1 (12.0)	38.8 (14.1)
BDI	23.6 (6.8)	2.3 (2.4)
PSWQ	58.6 (9.6)	40.2 (10.9)
Sadness pre-happy induction	53.91 (18.27)	23.48 (23.08)
Sadness post-happy induction	35.65 (23.32)	7.61 (14.13)
Sadness pre-sad induction	48.70 (22.62)	13.91 (17.77)
Sadness post-sad induction	75.87 (17.62)	43.04 (27.87)
Happiness pre-happy induction	39.57 (16.09)	68.70 (18.66)
Happiness post-happy induction	63.04 (23.63)	84.57 (13.39)
Happiness pre-sad induction	45.87 (19.11)	72.83 (16.29)
Happiness post-sad induction	30.65 (18.35)	51.30 (25.81)
Concrete completions post-sad induction	6.43 (2.94)	6.29 (3.21)
Concrete completions post-happy induction	7.24 (2.43)	5.14 (2.63)

Note: BDI = Beck Depression Inventory; PSWQ = Penn State Worry Questionnaire. Concrete completion is the number of selections of concrete descriptions of the actions on the Behavioural Identification Form.

Importantly, none of the behaviours relate to depression or depressive symptoms. The total number of concrete choices was summed to provide a measure of concrete action identification.

Mood ratings. Visual analogue scales were used to measure mood pre- and post-mood induction. Participants rated the degree to which they felt sad and happy respectively on two 0–100 scales, where $0 = $ "*I do not feel at all sad [happy]*" and $100 = $ "*I feel extremely sad [happy]*". Correlations between sad and happy items at each assessment were high (rs between $-.70$ and $-.84$, all ps $< .001$).

Design and procedure

In summary, participants were administered a mood induction (happy or sad), and then completed one form of the Behavioural Identification Form (Form A or B). The procedure was then repeated; that is, a second (alternate) mood induction was delivered, followed by the completion of the alternate version of the Behavioural Identification Form. Both the order of the mood inductions (happy, sad) and the order of delivery of the two versions of the Behavioural Identification Form (Form A, form B) were counterbalanced. As such, participants completed the procedure in one of four possible (randomised) sequences; namely: (i) happy induction, Form A; sad induction, Form B; (ii) happy induction, Form B; sad induction, Form A; (iii) sad induction, Form A; happy induction, Form B; or (iv) sad induction, Form B; happy induction, Form A.

After arriving at the laboratory and giving informed consent, participants completed the mood ratings to provide baseline measures. Next, in order to induce mood, participants were then instructed to recall either a happy or a sad memory, as follows:

I would now like you to think about a very happy [sad] memory. For the next few minutes, I would like you to close your eyes and focus your attention on that memory. Think about what happened, who was with you, and what your thoughts and feelings were at the

time. Try to picture the memory as clearly as possible. Keep the memory in your mind until I tell you to open your eyes.

Participants were instructed to think about the memory without verbalisation, although they were asked for a brief description of the memory on completion of the task to ensure that an appropriately valenced memory had been recalled. Mood ratings were then administered again, before participants completed the parallel version of the Behavioural Identification Form, and then completed filler tasks for 30 minutes. We then repeated the procedure with the remaining mood induction, i.e., participants rated their mood, recalled a second memory (of opposite valence to the first memory), re-rated their mood, and completed the alternate version of the Behavioural Identification Form. Finally, participants were debriefed and reimbursed.

RESULTS

Effectiveness of mood manipulation

We examined the effectiveness of the mood manipulations by conducting separate repeated-measures analyses of variance (ANOVAs), with Induction (happy vs. sad) and Time (pre-induction vs. post-induction) as the within-subjects variables, Group (currently depressed vs. never-depressed) and Order of mood induction (happy-then-sad vs. sad-then-happy) as the between-subjects variables, and with ratings of sadness and happiness respectively as the dependent variables.

When the rating of sadness was the dependent variable, significant main effects of Group and Induction indicated that currently depressed participants reported greater sadness than never-depressed participants, $F(1, 42) = 37.29$, $MSE = 44,814.71$, $p < .001$, $\eta_p^2 = .47$, and that the sad mood induction (pre- and post-induction scores) was associated with greater sadness than the happy mood induction, $F(1, 42) = 69.33$, $MSE = 10,752.61$, $p < .001$, $\eta_p^2 = .62$. Crucially, the Time $\times$ Induction interaction was significant, $F(1, 42) = 88.49$, $MSE = 23,810.36$, $p < .001$,

$\eta_p^2 = .68$. As can be seen in Table 1, sadness increased from before to after the sad mood induction, $t(45) = 9.13$, $p < .001$, but decreased from before to after the happy mood induction, $t(45) = 5.81$, $p < .001$. This pattern was not moderated by group status (Time × Induction × Group interaction: $F < 1$), or mood induction order (Time × Induction × Mood Induction Order interaction: $F < 1$).

When the rating of happiness was the dependent variable, significant main effects of Group and Induction indicated that currently depressed participants reported less happiness than never-depressed participants, $F(1, 42) = 30.24$, $MSE = 3,325.61$, $p < .001$, $\eta_p^2 = .42$, and that the happy mood induction (pre- and post-induction scores) was associated with greater happiness than the sad mood induction, $F(1, 42) = 37.68$, $MSE = 8,713.03$, $p < .001$, $\eta_p^2 = .47$. Crucially, the Time × Induction interaction was significant, $F(1, 42) = 79.65$, $MSE = 16,600.79$, $p < .001$, $\eta_p^2 = .65$. As can be seen in Table 1, happiness increased from before to after the happy mood induction, $t(45) = 7.03$, $p < .001$, but decreased from before to after the sad mood induction, $t(45) = 6.80$, $p < .001$. This pattern was not moderated by group status (Time × Induction × Group interaction: $F < 1$), or mood induction order (Time × Induction × Mood Induction Order interaction: $F < 1$). Thus, the mood inductions were therefore similarly effective for both groups and in both orders of administration, and on both self-report ratings of mood status.

## Change in level of identification with changing mood

The *level of identification dysregulation hypothesis* predicts that healthy individuals, but not depressed individuals, will use increasingly concrete identifications of goals and actions as their mood becomes sadder and/or less happy. To test this hypothesis, we first calculated three change scores. Change in concrete identification indexed

the extent to which participants gave more concrete responses on the Behavioural Identification Form after the sad mood induction than after the happy mood induction. Paralleling our assessment points for concreteness of identification, change in sadness indexed the extent to which participants reported greater sadness after the sad mood induction than after the happy mood induction, and change in happiness indexed the extent to which participants reported less happiness after the sad mood induction than after the happy mood induction. We then conducted hierarchical regression analyses in which change in concrete identification was regressed on group (0 = never-depressed, 1 = currently depressed) and change in sadness or happiness in the first step, and then additionally on the interaction between group and change in mood in the second step. Change in mood was mean-centred prior to analysis.[2] The *level of identification dysregulation hypothesis* predicts that there should be a significant interaction between group and change in mood in predicting change in concrete identification.

Separate regression analyses were calculated for change in happiness and change in sadness. For the happiness rating, in the first step of the regression analysis, a significant coefficient emerged for change in happiness, indicating that the greater the decrease in happiness from post-happy to post-sad mood induction, the greater the shift towards more concrete identification, $\beta = -0.34$, $t(43) = 2.42$, $p < .05$. Controlling for change in happiness, group was not associated with change in identification, $\beta = -0.21$, $t(43) = 1.48$, *ns*. These two variables explained 12% of the variance in change in concrete level of identification, $F(2, 43) = 4.08$, $MSE = 37.00$, $p < .05$. Crucially, in the second step, the interaction between group and change in happiness was significant, $\beta = 0.55$, $t(42) = 2.87$, $p < .01$. This interaction explained a further 13% of the variance in change in concrete identification, and

---

[2] Order of induction and order of BIF form did not significantly moderate the results found in the regression, and are thus not reported further.
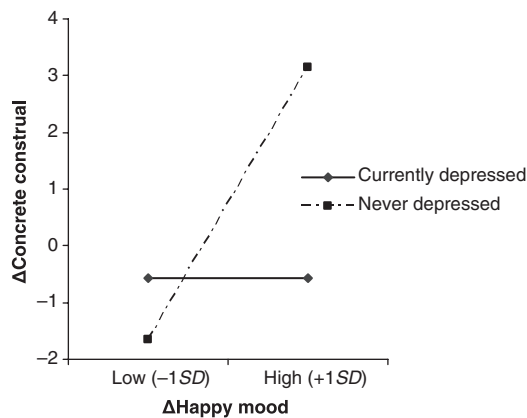
Figure 1. *Increase in concrete level of identification with low versus high decrease in happiness in currently depressed and never depressed participants.*

the overall model remained significant, $F(3, 42) = 5.93$, $MSE = 46.04$, $p = .001$. As shown in Figure 1, and consistent with predictions, the significant interaction indicates that the extent to which participants use more concrete identification with reducing happiness was moderated by depression status. For never-depressed participants, greater reductions in happiness were associated with greater shifts towards the use of more concrete identification, $r(21) = -.66$, $p < .001$. However, for currently depressed participants, there was no significant relationship between change in happiness and change in concrete identification, $r(21) = .00$, *ns*.

For the sadness rating, in the first step of the regression analysis, there was not a significant coefficient for change in sadness, $\beta = 0.23$, $t(43) = 1.58$, $p = .12$. Controlling for change in sadness, group was not associated with change in identification, $\beta = -0.23$, $t(43) = 1.60$, $p = .12$. These two variables explained 6% of the variance in change in concrete identification, $F(2, 43) = 2.33$, $MSE = 22.66$, $p = .11$. Crucially, in the second step, the interaction between group and change in sadness was significant, $\beta = -0.57$, $t(42) = 3.07$, $p < .005$. This interaction explained a further 15% of the variance in change in concrete identification, and the overall model was significant, $F(3, 42) = 5.00$, $MSE = 40.76$, $p = .005$. Consistent with predictions, the significant interaction indicates that the extent to which participants use more concrete identification with increasing sadness was moderated by depression status. For never-depressed participants, greater increases in sadness were associated with greater shifts towards the use of more concrete identifications, $r(21) = .59$, $p < .001$. However, for currently depressed participants, there was no significant relationship between change in sadness and change in concrete identification, $r(21) = -.22$, $p = .32$ (see Figure 2).[3]

DISCUSSION

Our results support previous findings that mood influences cognitive processing in healthy controls. To the extent that participants' mood became less happy and/or more sad, descriptions of behaviours became more concrete, more focused on "how" to implement the behaviour,

---

[3] An alternative analysis is to conduct a 2 (Group: depressed vs. control) × 2 (Level of identification post-happy induction vs. Level of identification post-sad induction) ANOVA on the concreteness of choices on the Behavioural Identification Form. We note that such an analysis is less sensitive than the initial regression analysis because it does not account for the within-subject relationship between change in mood and change in level of action identification. Thus, it is not sensitive to one individual showing a large degree of mood change and another individual showing no mood change, which is hypothesised to impact the degree to which within any individual their level of action identification changes. Because a difference in mood state between the post-happy induction and the post-sad induction is a requirement for testing the effect of mood on level of identification, we excluded those participants who did not differ on ratings of sadness or happiness between the two mood inductions (2 in depressed group, 2 in control group). There was a significant interaction of Group by Induction, $F(1, 40) = 4.13$, $p < .05$, $\eta_p^2 = .09$, replicating the pattern of findings from the regression analysis, i.e., identification is more concrete post-sad induction than post-happy induction for the never-depressed controls but not for the depressed patients. There was no main effect of Induction, $F(1, 40) = 0.12$, nor of Group, $F(1, 40) = 2.38$, $p = .13$, $\eta_p^2 = .06$, indicating that in general depressed patients were not more abstract nor more concrete than controls.
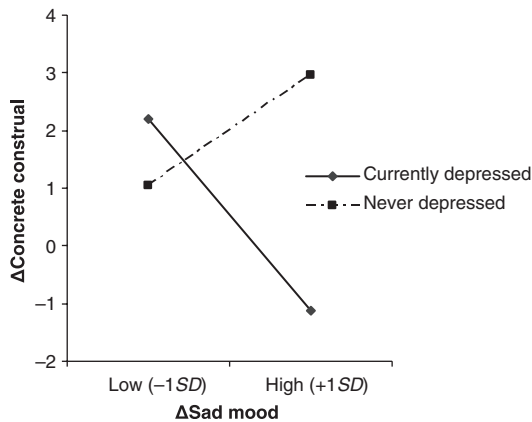
Figure 2. *Increase in concrete level of identification with low versus high increase in sadness in currently depressed and never depressed participants.*

and less focused on "why" one carries out the behaviour. This finding conceptually replicates Beukeboom and Semin's (2005, 2006) results using a within-subject comparison of happy versus sad mood states, rather than their between-subject comparison. Moreover, these findings further strengthen the proposal that there is a direct relationship between change in mood and change in concrete level of identification, indicating a linear relationship between mood and level of identification in healthy controls. Consistent with the *level of identification dysregulation hypothesis* (Watkins, 2008, 2010), this association between change in mood and change in level of identification was moderated by depression status: unlike never-depressed individuals, depressed individuals did not shift towards using more concrete identifications as their mood became sadder and less happy. These findings suggest that a normal and potentially adaptive function of mood on cognitive processing—the calibration of level of identification to situational demands as hypothesised within control theory and AIT—is impaired in individuals with depression.

We note that the current findings suggest that increases in sadness and reductions in happiness have equivalent effects on change in level of goal/action identification, with both being positively correlated with increases in concreteness, in the non-depressed controls. In addition, there was no overall group difference in level of identification between the depressed patients and the control group. While superficially this appears at odds with the hypothesis that depressed patients are more abstract than controls, there are several reasons to be cautious about such an interpretation. First, the level of identification was only assessed after a mood induction, such that there was no assessment of the baseline or default response for either depressed participants or non-depressed controls. Second, the items in the Behavioural Identification Form describe relatively neutral to mildly positive events, rather than events that are negatively valenced. This is important because, as noted earlier, depression is specifically characterised by abstraction to negative events and outcomes. Thus, the materials used in the current study do not provide a good test of whether depressed patients, compared to never-depressed controls, have a tendency towards abstraction to negative events. Rather, the materials and design are appropriate for the goal of the study, which was to build on the work of Beukeboom and Semin (2005) by testing whether changes in mood state influence the adoption of level of identification differentially in depressed patients versus non-depressed controls. Third, this lack of a group difference in level of identification occurred in the context of the depressed group having significantly higher levels of sadness and significantly lower levels of happiness than the never-depressed controls. This pattern of findings, coupled with the finding that change in mood is not related to change in identification in the depressed group, is consistent with the hypothesis that mood state has less impact on level of action identification in depressed patients.

Disruption of the hypothesised functional linkage between mood and level of identification means that, despite experiencing persistent and exacerbated negative mood, a depressed individual may not derive the potential benefits of concrete processing on problem solving, planning, focused attention, and reduced emotional response, when faced with a loss or difficulty. As such, this disruption could contribute to the onset and

maintenance of depression, as shifts to more concrete level of identification may reduce the underlying problems that cause the sad mood (or reduction in happy mood) and thereby potentially limit its duration. Moreover, a tendency to maintain more abstract processing when faced with difficult events, setbacks, and losses may make individuals more vulnerable to making negative overgeneralisations and more prone to rumination, both of which are implicated in the onset and development of depression (Watkins, 2008, 2010). Thus, dysregulation of the relationship between mood and level of identification may have far-reaching consequences for psychological health, by conferring vulnerability for future depression.

If this speculation is correct, it raises the possibility that for depressed patients, it may be beneficial to encourage a concrete level of goal/action identification to negative outcomes (e.g., focus on how an event happened and how a goal could be pursued for depressed patients when ruminating) in order to reduce depressive symptoms. Interestingly, CBT treatments involve a number of techniques that involve promoting a shift towards a concrete level of goal/action identification (e.g., detailed Socratic questioning, situational analysis, detailed activity scheduling, breaking down tasks into steps). Consistent with this analysis, a recently developed treatment for rumination, which has encouraging preliminary results, explicitly coaches ruminators to shift away from their predominant abstract level of goal/action identification to adopt a more concrete level of goal/action identification during self-focus (Watkins et al., 2007). Furthermore, an intervention designed to train depressed individuals to be more concrete when faced with difficulties involved repeated practice at asking "How?" and focusing on specific details, and reduced depression, rumination, and anxiety relative to a no-training control in a proof-of-principle study (Watkins, Baeyens, & Read, 2009).

These results may also provide a potential account for the observation that depressed individuals are unresponsive to their communication partners, violate communication norms, and do not meet the demands of the communication situation. The ability to fine tune cognitive processes such as the level of identification adopted in response to affective signals and conversational demands is considered an important ability in effective communication, with speakers becoming more abstract in response to positive affective expressions of listeners that indicate understanding but becoming more concrete in response to negative affective expressions that suggest criticism or misunderstanding (Beukeboom, 2009). However, the potential breakdown of the relationship between mood and level of identification in depression may mean that depressed patients are less able to adapt their communication to situational demands, leading to poor communication.

These results provide further insight into the variables that influence how individuals construe and represent events and behaviours. The level of identification adopted when representing goals, events, and behaviours is important in many aspects of cognitive and social functioning, and has been shown to guide prediction, evaluation, and behaviour (e.g., Trope, Liberman, & Wakslak, 2007). A number of dimensions influence level of identification, including mood state (Beukeboom & Semin, 2005), novelty and unfamiliarity (Vallacher et al., 1987; Wegner et al., 1984) and psychological distance, such that greater temporal distance, spatial distance, social distance and reduced probability all produce more abstract level of identifications (see Trope et al., 2007, for a review). Our findings add a further factor, depression status, which moderates the effect of one of these dimensions, namely mood, on level of identification. It remains unknown whether depression status moderates the effects of any of these other dimensions on level of identification. Future research needs to determine the relative contributions, causal directions, and dependence/independence of all these dimensions on identification level.

This study has a number of limitations. First, we cannot disentangle whether the impaired relationship between mood and level of level of identification in depression is a state effect due

to an individual's current symptoms of depression or a trait effect that reflects underlying processes involved in depression that persist after recovery. Watkins (2008, 2010) proposed that level of identification dysregulation is a trait phenomenon that is associated with proneness to depression, rather than a state phenomenon that reflects the presence of a current depressive episode. Second, our use of currently depressed patients as the only clinical group means that it is not possible to determine from these studies if the level of identification dysregulation is specific to depression or whether it is associated with other psychopathology. The inclusion of other psychological disorders in future research would help to clarify this issue. We note that our current sample is best characterised as patients with depression and comorbid anxiety, and, thus, a cautious conclusion is that the level of identification dysregulation effect only applies to this particular group. However, it is important to recognise that the presence of comorbid anxiety is the norm in patients with major depression and thus our sample is characteristic of the clinical presentation of depressed clients. Moreover, the level of identification dysregulation hypothesis was derived from considerations of pathological repetitive thought, including depressive rumination and worry (Watkins, 2008), and predicts that not only depression but other psychological disorders characterised by pathological repetitive thought (e.g., anxiety disorders) would demonstrate this dysregulation (Watkins, 2010). As such, finding the effect in the current sample is consistent with the hypothesis. Third, we only used one measure of level of identification: the Behavioural Identification Form. This was an appropriate instrument given that it has been successfully used to demonstrate the effect of mood on level of action identification by Beukeboom and Semin (2005, 2006), and has been repeatedly shown to be sensitive to manipulations of level of abstraction in the action identification and construal theory literature (e.g., Fujita et al., 2006, Study 1). Nonetheless, increased confidence in these results would be afforded by their replication using

alternative means to assess level of identification such as semantic classification of participant-generated descriptions or differences in categorisation (Stapel & Semin, 2007). Finally, we used inductions to manipulate sad mood versus happy mood, but it is unclear whether similar group differences on change in level of identification would be obtained for manipulations of other negative moods, such as anger.

In conclusion, these studies confirm that mood regulates level of identification, consistent with the findings of Beukeboom and Semin (2005), but suggest that this effect is impaired in currently depressed individuals. These results are consistent with Watkins' (2008, 2010) level of identification dysregulation hypothesis, which proposes that depressed individuals are compromised in their ability to regulate their level of goal/action identification in response to situational demands such that they show a reduced shift towards more concrete representations in response to increasing sadness or reducing happiness. Importantly, these results suggest that clinical depression may be characterised by the failure of the normal and adaptive function of mood to engender more concrete identifications in order to deal with difficult situations. More generally, our findings raise the possibility that it may not always be appropriate to assume that the cognitive consequences of sadness or reduced happiness in non-depressed individuals are analogous to those in patients with clinical depression.

REFERENCES

Ayduk, O., Mischel, W., & Downey, G. (2002). Attentional mechanisms linking rejection to hostile reactivity: The role of "hot" versus "cool" focus. *Psychological Science*, *13*, 443–448.

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression*. New York, NY: Guilford Press.

Beck, A. T., Steer, R. A., & Garbin, M. G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review*, 8, 77–100.

Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry*, 4, 561–571.

Beukeboom, C. J. (2009). When words feel right: How affective expressions of listeners change a speaker's language use. *European Journal of Social Psychology*, 39, 747–756.

Beukeboom, C. J., & Semin, G. R. (2005). Mood and representations of behaviour: The how and why. *Cognition and Emotion*, 19, 1242–1251.

Beukeboom, C. J., & Semin, G. R. (2006). How mood turns on language. *Journal of Experimental Social Psychology*, 42, 553–566.

Bless, H., & Fiedler, K. (2006). Mood and the regulation of information processing. In J. P. Forgas (Ed.), *Affect in social cognition and behavior* (pp. 65–84). New York, NY: Psychology Press.

Bless, H., Schwarz, N., Clore, G. L., Golisano, V., & Rabe, C. (1996). Mood and the use of scripts: Does a happy mood really lead to mindlessness? *Journal of Personality and Social Psychology*, 71, 665–679.

Carver, C. S., La Voie, L., Kuhl, J., & Ganellen, R. J. (1988). Cognitive concomitants of depression: A further examination of the roles of generalization, high standards, and self-criticism. *Journal of Social and Clinical Psychology*, 7, 350–365.

Carver, C. S., & Scheier, M. F. (1982). Control theory: A useful conceptual framework for personality-social, clinical, and health psychology. *Psychological Bulletin*, 92, 111–135.

Carver, C. S., & Scheier, M. F. (1990). Origins and functions of positive and negative affect: A control-process view. *Psychological Review*, 97, 19–35.

Carver, C. S., & Scheier, M. F. (1998). *On the self-regulation of behavior*. Cambridge, UK: Cambridge University Press.

Fiedler, K. (2001). Affective influences on social information processing. In J. P. Forgas (Ed.), *The handbook of affect and social cognition* (pp. 163–185). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (2002). *Structured clinical interview for DSM–IV–TR Axis I Disorders, Research Version*. New York, NY: Biometrics Research.

Forgas, J. P. (2007). When sad is better than happy: Negative affect can improve the quality and effec-tiveness of persuasive memories and social influence strategies. *Journal of Experimental Social Psychology*, 43, 513–528.

Forgas, J. P. (2008). Affect and cognition. *Perspectives in Psychological Science*, 3, 94–101.

Forgas, J. P., & East, R. (2008). On being happy and gullible: Mood effects on scepticism and the detection of deception. *Journal of Experimental Social Psychology*, 44, 1362–1367.

Förster, J., & Higgins, E. T. (2005). How global versus local perception fits regulatory focus. *Psychological Science*, 16, 631–636.

Fujita, K., Henderson, M. D., Eng, J., Trope, Y., & Liberman, N. (2006). Spatial distance and mental construal of social events. *Psychological Science*, 17, 278–282.

Gasper, K., & Clore, G. L. (2002). Attending to the big picture: Mood and global versus local processing of visual information. *Psychological Science*, 13, 34–40.

Gollwitzer, P. M. (1999). Implementation intentions: Strong effects of simple plans. *American Psychologist*, 54, 493–503.

Joormann, J. (2006). Differential effects of rumination and dysphoria on the inhibition of irrelevant emotional material: Evidence from a negative priming task. *Cognitive Therapy and Research*, 30, 149–160.

Kross, E., Ayduk, O., & Mischel, W. (2005). When asking "why" does not hurt: Distinguishing rumination from reflective processing of negative emotions. *Psychological Science*, 16, 709–715.

Metcalfe, J., & Mischel, W. (1999). A hot/cool-system analysis of delay of gratification: Dynamics of willpower. *Psychological Review*, 106, 3–19.

Meyer, T. J., Miller, M. L., Metzger, R. L., & Borkovec, T. D. (1990). Development and validation of the Penn State Worry Questionnaire. *Behaviour Research and Therapy*, 28, 487–495.

Moberly, N. J., & Watkins, E. R. (2006). Processing mode influences the relationship between trait rumination and emotional vulnerability. *Behavior Therapy*, 37, 281–291.

Powers, W. T. (1973). *Behavior: The control of perception*. Chicago, IL: Aldine.

Stapel, D. A., & Semin, G. R. (2007). The magic spell of language: Linguistic categories and their perceptual consequences. *Journal of Personality and Social Psychology*, 93, 23–33.

Storbeck, J., & Clore, G. L. (2005). With sadness comes accuracy; with happiness, false memory: Mood and the false memory effect. *Psychological Science*, 16, 785–791.

Trope, Y., & Liberman, N. (2003). Temporal construal. *Psychological Review*, *110*, 403–421.

Trope, Y., Liberman, N., & Wakslak, C. (2007). Construal levels and psychological distance: Effects on representation, prediction, evaluation, and behavior. *Journal of Consumer Psychology*, *17*, 83–95.

Vallacher, R. R., & Wegner, D. M. (1987). What do people think they're doing: Action identification and human behavior. *Psychological Review*, *94*, 3–15.

Vallacher, R. R., & Wegner, D. M. (1989). Levels of personal agency: Individual variation in action identification. *Journal of Personality and Social Psychology*, *57*, 660–671.

Vallacher, R. R., Wegner, D. M., & Frederick, J. (1987). The presentation of self through action identification. *Social Cognition*, *5*, 301–322.

Vallacher, R. R., Wegner, D. M., McMahan, S. C., Cotter, J., & Larsen, K. A. (1992). On winning friends and influencing people: Action identification and self-presentation success. *Social Cognition*, *10*, 335–355.

Vallacher, R. R., Wegner, D. M., & Somoza, M. P. (1989). That's easy for you to say: Action identification and speech fluency. *Journal of Personality and Social Psychology*, *56*, 199–208.

Watkins, E. R. (2008). Constructive and unconstructive repetitive thought. *Psychological Bulletin*, *134*, 163–206.

Watkins, E. R. (2010). Dysregulation in level of goal and action identification across psychological disorders. *Clinical Psychology Review*. Advance online publication. doi: 10.1016/j.cpr.2010.05.004

Watkins, E. R., Baeyens, C. B., & Read, R. (2009). Concreteness training reduces dysphoria: Proof-of-principle for repeated cognitive bias modification in depression. *Journal of Abnormal Psychology*, *118*, 55–64.

Watkins, E., & Baracaia, S. (2002). Rumination and social problem-solving in depression. *Behaviour Research and Therapy*, *40*, 1179–1189.

Watkins, E. R., Moberly, N. J., & Moulds, M. L. (2008). Processing mode causally influences emotional reactivity: Distinct effects of abstract versus concrete construal on emotional response. *Emotion*, *8*, 364–378.

Watkins, E., & Moulds, M. (2005a). Distinct modes of ruminative self-focus: Impact of abstract versus concrete rumination on problem solving in depression. *Emotion*, *5*, 319–328.

Watkins, E., & Moulds, M. (2005b). Positive beliefs about rumination in depression: A replication and extension. *Personality and Individual Differences*, *39*, 73–82.

Watkins, E., Scott, J., Wingrove, J., Rimes, K., Bathurst, N., Steiner, H., et al. (2007). Rumination-focused cognitive behaviour therapy for residual depression: A case series. *Behaviour Research and Therapy*, *45*, 2144–2154.

Webb, T. L., & Sheeran, P. (2003). Can implementation intentions help to overcome ego-depletion? *Journal of Experimental Social Psychology*, *39*, 279–286.

Wegner, D. M., & Vallacher, R. R. (1987). The trouble with action. *Social Cognition*, *5*, 179–190.

Wegner, D. M., Vallacher, R. R., Kiersted, G. W., & Dizadji, D. (1986). Action identification in the emergence of social behavior. *Social Cognition*, *4*, 18–38.

Wegner, D. M., Vallacher, R. R., Macomber, G., Wood, R., & Arps, K. (1984). The emergence of action. *Journal of Personality and Social Psychology*, *46*, 269–279.