Current and former depression and their relationship to the effects of social comparison processes

Results of an internet based study

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Please keep in mind that there might be minor changes between this and the finally published version.

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Abstract

**Background:** According to cognitive vulnerability stress models of depression, negative cognitions are supposed to be stable characteristics of depressed individuals even between depressive episodes. Depressed people also interpret social information more negatively than healthy people, perhaps even between depressive episodes. Frequency of social comparison processes is correlated with low self-esteem and uncertainty, which is common in depression.

**Questions:** Do people with lifetime depressive episodes engage in social comparisons more often and do they react more negatively to an upward comparison than normal controls? And if they do, is this just due to current depressive symptoms?

**Method:** A questionnaire including the BDI II was administered as an internet link to all students or employees of a large University. 913 participants responded. After assessing social comparison orientation we used an upward comparison paradigm by asking the participants to compare themselves with a better-off person on several dimensions. Finally lifetime and current depressive symptoms were assessed.

**Results:** Depressed persons engage in social comparison processes more often than normal controls. Positive affect decreased in the whole sample as a reaction of the upward comparison. This effect was stronger among persons with at least one depressive episode in the past or presence, and this was not due to current depression.

**Conclusion:** Depressed persons engage more often in social comparison processes and they additionally react more negatively to upward comparisons than healthy controls. The result that even those not currently depressed with lifetime depressive episodes show a similar negative reaction to an upward comparison indicates that social comparisons are situations that interact with a stable cognitive vulnerability leading to negative affect and stronger negative reactions.
Affective disorders, especially depression, are one of the most common mental disorders with a lifetime prevalence of about 16% (Kessler et al., 1994). Depression is also highly recurrent, over 75% of the patients experience more than one depressive episode (Keller & Boland, 1998). Perhaps there are specific factors which lead to an increased risk for developing repeated episodes of this disorder. Besides the research on biological, genetic or environmental factors, research on psychological - especially cognitive and interpersonal risk factors - has a long tradition. Beck’s cognitive theory of depression (1967, 1976) and Abramson, Metalsky, and Alloy’s (1989) hopelessness theory of depression were the most influential theories in this field of research on cognitive vulnerability. Many studies support their hypotheses that there exists an interaction between cognitive vulnerability and stress that culminates in depressive symptoms. These studies also suggest that dysfunctional cognitions are not only a symptom of current depression; they seem to be trait-like and persist beyond the remission of a current episode. Several recent prospective studies showed that individuals with such a cognitive vulnerability exhibit depressive symptoms when they experience negative life events (e.g. Alloy & Abramson, 1999; Alloy et al., 2000; Hankin, Abramson, & Siler, 2001; Reilly-Harrington, Alloy, Fresco, & Withehouse, 1999). In summary, there exists broad evidence for the validity of cognitive vulnerability stress models of depression. One possible negative event that could activate dysfunctional cognitions is social comparison that is ubiquitous and almost inevitable in everyday life (e.g. Wheeler & Miyake, 1992).

Festinger (1954) hypothesized in his original theory of social comparison that individuals have a drive to evaluate their opinions and abilities. To function effectively, they need to appraise their abilities and to find out whether their opinions are accurate. Festinger thought that people best serve this need for self-evaluation against objective standards, but when such standards are unavailable, they compare themselves with other people. He hypothesized that people, for reasons of diagnosticity, prefer to compare themselves with other people who are
similar to themselves on the focal dimension. Although Festinger discussed social comparison processes only involving opinions and abilities, researchers have studied social comparisons involving all types of personal attributes, such as physical attractiveness, personality characteristics, or emotions (Wood & Lockwood, 1999).

Recently, Gibbons and Buunk (1999) proposed the concept of social comparison orientation to refer to the personality disposition of individuals who are strongly oriented to social comparison, for example who are strongly interested in their own standing relative to others. Social comparison orientation is positively correlated to variables such as neuroticism, social anxiety, and self-consciousness (Fenigstein, Scheier, Buss, 1975) and negatively to self-esteem (Rosenberg, 1965). People with a strong social comparison orientation seem to be more interpersonally than introspectively oriented, more sensitive to the behaviour of others, and they experience a degree of uncertainty about the self, along with an interest in reducing this self-uncertainty (Gibbons & Buunk, 1999). A series of experiments showed that a strong social comparison orientation is associated with interest in receiving information for example about the test scores of others after having performed a test. It also showed that those high in comparison orientation were more affected by social comparisons (Gibbons & Buunk, 1999).

There is reason to believe that social comparison processes could be central in people who are depressed. First, a major characteristic of depression (Beck, 1967) is a negative self-view, and peoples’ self-evaluations are believed to be based in part on social comparison processes. Second, many studies showed that comparisons with others who are better off in some way – upward comparisons – can lower one’s mood and self-esteem (Ahrens & Alloy, 1997; Gibbons & Gerrard, 1991; Lockwood & Kunda, 1997; Major, Testa, & Bylsma, 1991; Morse & Gergen, 1970). Third, depressed individuals have been shown to be more interested in and sensitive to social comparison information (Ahrens & Alloy, 1997; Swallow & Kuiper, 1990). Not surprisingly there is evidence that depressed individuals interpret social comparison information in a less self-serving way than non-depressed individuals do, and that
they tend to focus especially on the fact that others are better off than they are (e.g. Swallow & Kuiper, 1993; Wheeler & Miyake, 1992).

In summary one can postulate that current depression is associated with stronger negative reactions to upward comparisons. The question, however, remains if this is also true for people at risk for depression. Based on cognitive vulnerability-stress-models (e.g. Abramson et al., 1989; Beck, 1976) such situations in which upward social comparisons can take place are potentially self-threatening and could interact with the vulnerability and therefore affect current mood and self-esteem. If this is the case it is expected that not just current depression but also a lifetime history of depressive episodes (i.e. vulnerability) will be associated with stronger negative reactions when comparing oneself with someone who seems to be better off on commonly important dimensions (e.g., more successful, more attractive or more liked).

More precisely, we expect a decrease in positive affect in the whole sample as a reaction to the upward comparison, and this decrease should be stronger for for individuals with current depressive symptoms and those with a lifetime history of depression, i.e. going beyond the effect of current depression. Additionally we examine if this association is moderated by interindividual differences in social comparison orientation (e.g. Buunk & Brenninkmeijer, 2001; Gibbons & Buunk, 1999).

METHOD

Participants. In summer 2003 an email was sent to about 16.000 students and employees of a large German University. This email also contained an internet link with the questionnaires. Nine-hundred-thirteen persons completed the questionnaire. The mean age was M = 29.45 (SD = 9.17) with a range between 17 and 69. Four-hundred-forty-nine were women (54.7%), 394 men (43.2%), 20 did not provide the information about their sex (2.2%). The sample is nearly completely academic with 531 (58%) having had attended school for 13 years (secondary school final exam) and additionally 301 (33%) with a university education, 36
(4%) had 10 years of education (O-level), six (1%) had 9 years of education (CSE), four
(0.5%) had not finished any school and thirty five (4%) did not mention their attained
educational status. Five-hundred-eleven were students, 268 employees, 43 civil servants, 29
self-employed, 20 trainees, 10 unemployed, eight non-professionals and 24 did not mention
their profession. Most of the respondents were single (n = 698, 76.5%), 146 married (16%),
20 were divorced, eleven were divorced and remarried, eleven had a registered gay partner
and two were widowed.

Materials

Positive and Negative Affect Schedule (PANAS, Krohne, Egloff, Kohlmann & Tausch,
1996). This is a validated translation of the original form from Watson, Clark, and Tellegen
(1988). The PANAS is a widely used affect rating scale that includes 10 adjectives to assess
positive affect (PA) and 10 adjectives to assess negative affect (NA). Each item is rated using
a 5-point rating scale. Cronbach’s alphas are comparable for the English and German
versions, varying for PA between .85 and .90 and for NA between .84 and .87 (Krohne et al.,
1996; Watson et al., 1988), and factor analytic results support the statistical independence of
the positive and negative affect dimensions (e.g. Krohne et al., 1996; Schmukle, Egloff &
Burns, 2002; Terraciano, McCrae & Costa, 2003). The Cronbach's alphas in the present
sample were .86 for both PA and NA.

Iowa-Netherlands Comparison Orientation Measure (INCOM, Gibbons & Buunk, 1999).
This 11-item scale consists of statements reflecting social comparison activities and interests
to measure social comparison orientation. Sample items are: “I often compare myself with
others with respect to what I have accomplished in life” and “If I want to learn more about
something, I try to find out what others think about it”. The items were measured on a 5-point
rating scale. The INCOM does not correlate with social desirability, and has a test-retest-
reliability over 8 months of .72 (Gibbons & Buunk, 1999). The coefficient alpha of the
German version of the INCOM in the present sample was .85.
Beck Depression Inventory-II (BDI II, Beck, Steer, & Brown, 1996). The revised BDI measures the severity of self-reported depression but is also used for screening purposes (e.g. Kumar, Steer, & Teitelman, 2002). The 21 item BDI II is scored by summing the highest ratings for each of the 21 symptoms, and each symptom is rated on a 4-point rating scale ranging from 0 to 3. Total scores can range from 0 to 63. In contrast to the original BDI the time frame for the BDI II is the “past 2 weeks, including today”. The coefficient alpha of the German version of the BDI II (Hautzinger, Kühner et al., in preparation) in the present sample was .91 and is comparable to the scores reported by others (e.g. Beck et al., 1996; Kumar et al., 2002). The mean score for this sample was 8.29 (SD = 8.13, range 0 – 54).

Depression Screening Questionnaire (DSQ,Wittchen & Perkonig, 1997). The DSQ originally consists of 15 questions screening major depressive disorder and can be used in combination with an interview. The questions of the DSQ asking for specific symptoms of depression focus on a two-week period (Wittchen & Pfister, 1997). Retest-reliability varied between .68 and .92 in different samples and the authors report that the validity for a diagnosis of major depression is high (.76; Wittchen & Pfister, 1997). In the version used for this internet based study nine items covered all criteria of the DSM IV for a major depressive episode. The original 3-point scale was also modified. Each question was rated on a 4-point scale and the response format was “yes”, “rather yes”, “rather no” and “no”. To save time and space two questions about increased and decreased appetite were integrated to one question, also two questions about increased and decreased motor activity. Questions about frequency, duration and course of depressive episodes were modified to assess former and not current depression. Internal consistency for the DSQ was sufficient in the present study with $\alpha = .81$. To determine if someone has a lifetime history of major depression, we only counted definite “yes”-answers. In addition to this sum score, a lifetime history of major depression was coded following the rules of the DSM IV, if the DSQ sum score was 5 and above and included either “depressed mood” or “anhedonia/loss of interest”.
Procedure

The first section of the questionnaire included demographic variables as well as the Positive and Negative Affect Schedule (PANAS, Krohne et al., 1996; Watson et al., 1988) to assess positive and negative affect. In addition the social comparison orientation was assessed with the Iowa-Netherlands-Comparison-Orientation-Measure (INCOM, Gibbons & Buunk, 1999). The participants were then asked to imagine a friend or acquaintance of the same age and gender, “who attains nearly always what he/she wants in his/her job or his/her studies. The person has a good working relationship for some time. He/she gets to know new friends easily and is able to mostly realise his/her interests during his/her leisure/free time”. Five questions followed so that participants compared themselves with this person in several dimensions. Then mood was assessed again using the PANAS. Additionally current and lifetime depressive episodes were assessed with the Beck’s depression inventory (BDI II, Beck et al., 1996) and the depression screening questionnaire (DSQ, Wittchen & Perkonig, 1997).

Statistical analyses

As a manipulation check, we tested if positive and negative affect were influenced in the total sample due to the upward comparison. To test our main hypotheses we used multiple regression analyses with changes in affect as dependent variable. First we examined if the social comparison orientation and current depression are significant predictors, as expected. Then we additionally included former depression to examine if a history of depression explains variance of change in affect beyond that of current depression. Finally, we examined if a history of depression predicts the emotional reaction to the upward social comparison in people who are currently not reporting any depressive symptoms. We included only cases without any missing data (N = 704) in our regression analyses. Probably because of the length of the questionnaire, we had some non-completers among our participants, which can at least partly explain the drop-out-rate of 209. There were no statistical differences between the two
groups with or without missing data, neither in age nor in BDI-, DSQ-, INCOM- and PANAS-scores (t < 1.14, n.s.). The only significant difference was in gender with women having more missing data than men (23.6% vs. 18%, $\chi^2 = 4.18$, p < .05, n = 893).

**RESULTS**

To get an idea about the prevalence rates, 218 (23.9%) of the total sample (including those with missing values in single measures) have probably had a depressive episode in the past, whereas 111 (12%) are likely to be currently depressed. If one only takes into account those without missing data, the equivalent prevalence rates is identical with 23.9 % for lifetime depression but slightly higher for current depression with 19.5 %. The descriptive statistics for the latter two groups without any missing data are displayed in Table 1 and 2.

**Manipulation checks**

The manipulation was partly successful. As expected, positive affect decreased in the whole sample as a reaction to the upward comparison (t (845) = 4.74; p< .001). Surprisingly the negative affect decreased (t (848) = 10.62; p< .001).

**Major findings**

There was a significant correlation between current depressive symptoms and social comparison orientation (Pearson r = .25; p<.001), indicating that higher BDI-scores are associated with higher INCOM-scores.

A stepwise multiple linear regression analysis was conducted to test the hypotheses that social comparison orientation and current depression predict changes in affect. The change of mood was the dependent variable and INCOM and BDI were the independent variables. INCOM had no significant influence, but the BDI had (see Table 3). To test the influence of former depressive episodes a second regression analysis with the three independent variables INCOM, DSQ and BDI was conducted, which produced a significant effect for the BDI, while DSQ and INCOM remained not significant.
Because BDI and DSQ scores were correlated ($r = .35$, $p < .01$, $n = 798$) we ran a further analyses to check if a history of depression predicts the emotional reaction to the upward social comparison in people who are currently reporting low levels of depressive symptoms. According to Beck et al. (1996) this is indicated by BDI-II scores $\leq 13$. This regression analysis was conducted with the two independent variables INCOM and DSQ but only for participants who were not likely to have a current episode of major depression (BDI score $\leq 13$). The DSQ had a significant influence on mood change. Results of the regression analyses are again displayed in Table 3.

We also conducted linear regression analyses for negative affect as well, but there were only two effects on change in negative affect. If only INCOM and DSQ were used as predictors in people with low depression (BDI $\leq 13$), INCOM was associated with a stronger decrease in negative affect ($R = .09, R^2 = .01, F(1, 565) = 4.21, p < .05$). If INCOM, BDI and DSQ were all three used as predictors in this group of people with low level of depression, only BDI remained a significant predictor. The lower the level of depressive symptoms, the less change was observed in negative affect ($R = .12, R^2 = .01, F(1, 565) = 7.75, p < .01$).

**DISCUSSION**

Based on prior research we predicted a decrease in positive affect in the whole sample as a reaction to the upward comparison, and this decrease was expected to be stronger for participants high in social comparison orientation and also for individuals with current depressive symptoms. Furthermore we were interested if a lifetime history of depressive episodes affects the reaction to an upward comparison, even beyond the effect of current depressive symptoms. The reasoning for this was that such upward comparisons might activate negative cognitions and lead to changes in affect as cognitive vulnerability stress models would predict (e.g. Abramson et al., 1989; Beck, 1967). These hypotheses were partly confirmed. The upward comparison induced a change in positive affect, and participants with
current depressive symptoms demonstrated a greater change in positive affect than participants without current depressive symptoms. Even participants with current low depression but with former depressive episodes experienced a greater change in mood than participants without depressive episodes in the past. Social comparison orientation did, however, not have an influence on positive affect but was associated with more decrease in negative affect.

In line with findings of earlier studies (e.g. Brewer & Weber, 1994; Heidrich & Ryff, 1993; Lyobomirsky & Ross, 1997; Weary, Elbin, & Hill, 1987; Wheeler & Miyake, 1992), the present research shows again the negative effect of an upward comparison, at least if one looks at the decrease in positive affect. Swallow and Kuiper (1988) proposed a link between social comparison processes and depression such that the negative self-concept of depressives is at least partly based on such social comparisons (Swallow & Kuiper, 1988). The results of this study show that people reporting current symptoms of depression report a stronger orientation towards social comparisons than non-depressed individuals. These social comparisons and the way they are interpreted might be one way in which their negative self-concept and depressed mood is maintained and reinforced.

Of more interest, however, is the finding that people who are currently not depressed but report a lifetime history of depression also showed a reaction to upward social comparison similar to that of people who are currently depressed. This is in line with the hypothesis of cognitive vulnerability stress models that describe negative cognitions such as dysfunctional attitudes (Beck, 1967) or a depressogenic attributional style (Abramson et al., 1989) as stable characteristics which represent vulnerability for a depressive episode.

In line with former studies in which social comparison orientation moderated the effect of comparison information in so far as individuals high in comparison orientation showed a stronger affective response to upward comparisons (Buunk & Brenninkmeijer, 2001; Buunk, Oldersma & De Dreu, 2001; Buunk, Ybema, Gibbons & Ipenburg, 2001), but this was only
true for negative affect in people who reported fairly low levels of depression, i.e. BDI-II scores $\leq 13$ indicating only minimal symptoms according to Beck et al. (1996). The decrease in negative affect associated with higher social comparison orientation implies that the person described in the upward comparison did not result in a threat to self-esteem. However, BDI- and INCOM-scores were correlated ($r = .25$, $p < .01$, $n = 774$). Perhaps more important than interindividual differences in social comparison orientation themselves are interindividual differences in current depression which might mediate this effect.

Before drawing final conclusions one should keep the following limitations in mind. First, contrary to expectations negative affect decreased and was not consistently influenced by current or former depression. Only positive affect confirmed expectations, and here the decreases in positive affect were associated with depression. Perhaps it is easier to induce a decrease in positive affect than inducing an increase in negative affect. However, if one takes into account the baseline score of the negative affect and compares it with other studies (e.g. Krohne et al., 1996), it seems more likely that this drop in negative affect scores is due to regression-to-the-mean. Second, the variance explained by our variables is small. We assume that this is partly due to the design of the study. On one hand the internet provided us with a sample size that included enough people with probable current and former depression, but on the other hand there was no experimental control over such things as how long it took people to complete the questionnaire (e.g. being interrupted by a phone call) or choice of comparison target. Even more problematic is that not much is known about the self-selection bias that might be associated with participating in an internet study or not and the fact that only 913 participated out of 16,000 originally circulated highlights this problem. Furthermore the design of the study only allowed for the use of self-report questionnaires that cannot replace structured clinical interviews, especially regarding the diagnoses of current or former episodes of major depression.
Conclusions: Despite the limitations, it seems interesting to further pursue the idea that former depression might be an indicator of something that moderates the effects on cognition and emotion of upward social comparisons. Perhaps a cycle starts where negative mood after such social comparison triggers the need for further social comparisons, resulting in more and more negative self-evaluations. Furthermore it would be interesting to clarify if such a history of lifetime depression has to be seen as a scar or if it is reflecting the effect of cognitive vulnerability factors such as dysfunctional attitudes or attributional styles prior to the previous episode.
References


Foot note

1 It might seem surprising that people mentioned ‘unemployed’ but this can happen because former students or employees might keep their email account for some time after having left the university.
Table 1:

Descriptive statistics for the two groups “current clinical depressive symptoms” vs. “low current depression”

<table>
<thead>
<tr>
<th></th>
<th>BDI ≤ 13</th>
<th></th>
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<th>BDI &gt;13</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>M</td>
<td>SD</td>
<td>N</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>567</td>
<td>5.02</td>
<td>3.90</td>
<td>137</td>
<td>21.82</td>
<td>7.42</td>
</tr>
<tr>
<td>Female</td>
<td>278</td>
<td>2.18</td>
<td>2.34</td>
<td>45</td>
<td>3.92</td>
<td>2.58</td>
</tr>
<tr>
<td>Age</td>
<td>567</td>
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<td>8.85</td>
<td>137</td>
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<td>8.33</td>
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<td>5.02</td>
<td>3.90</td>
<td>137</td>
<td>21.82</td>
<td>7.42</td>
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<tr>
<td>DSQ</td>
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<td>2.34</td>
<td>137</td>
<td>3.92</td>
<td>2.58</td>
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<td>6.94</td>
<td>137</td>
<td>24.12</td>
<td>6.09</td>
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<td>7.00</td>
<td>137</td>
<td>23.58</td>
<td>6.03</td>
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<tr>
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<td>4.80</td>
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<td>5.40</td>
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Note: Only cases with no missing data at all were included (n = 704). BDI: Becks Depressions Inventory II; DSQ: Depressions-Screening Questionnaire; INCOM: Iowa-Netherlands Comparison Orientation Questionnaire; PA-PRE: positive affect at first measuring time; PA-POST: positive affect at second measuring time; NA-PRE: negative affect at first measuring time; NA-POST: negative affect at second measuring; Difference PA: PA-Post minus PA-Pre; Difference NA: NA-Post minus NA-Pre
Table 2: Descriptive statistics for the persons with “probably a lifetime depressive episode” vs. those “probably without any lifetime depressive episode”

<table>
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<tr>
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<td></td>
<td></td>
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<tr>
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<td>536</td>
<td>28.97</td>
<td>8.64</td>
<td>168</td>
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</table>

Note: Only cases with no missing data at all were included (n = 704). BDI: Becks Depressions Inventory II; DSQ: Depressions-Screening Questionnaire; INCOM: Iowa-Netherlands Comparison Orientation Questionnaire; PA-PRE: positive affect at first measuring time; PA-POST: positive affect at second measuring time; NA-PRE: negative affect at first measuring time; NA-POST: negative affect at second measuring.
Table 3: Results of the regression analyses with change in positive affect as dependent variables

1) INCOM and BDI as independent variables (N = 704)

<table>
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<th>R²</th>
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<td>n.s.</td>
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<tr>
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<td>.10</td>
<td>.01</td>
<td>.10</td>
<td>.008</td>
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</table>

2) INCOM, BDI and DSQ as independent variables (N = 704)

<table>
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<tr>
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<th>R²</th>
<th>β</th>
<th>Significance</th>
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<td>INCOM</td>
<td>-</td>
<td>-</td>
<td>-04</td>
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<tr>
<td>DSQ</td>
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<td>-</td>
<td>.06</td>
<td>n.s.</td>
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<tr>
<td>BDI</td>
<td>.10</td>
<td>.01</td>
<td>.10</td>
<td>.008</td>
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</table>

3) INCOM and DSQ as independent variables for participants with low current depression only (N = 567)

<table>
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<th>β</th>
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</table>

4) INCOM, BDI and DSQ as independent variables for participants with low current depression only (N = 567)

<table>
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<td>n.s.</td>
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</tbody>
</table>

Note: BDI: Becks Depressions Inventory II; DSQ: Depressions-Screening Questionnaire (indicating a history of depression); INCOM: Iowa-Netherlands Comparison Orientation Questionnaire.