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The effect of subjective social status on depressive thinking: An experimental examination

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ABSTRACT

Subjective social status (SSS) predicts health outcomes above and beyond objective measures of social status. Both objective and subjective measures of social status are strongly related with depression. Cognitive mechanisms such as depressive cognitions, rumination, and a negative cognitive style are seen as both concomitant and antecedent to depression. This experiment examined the causal role of SSS in developing depressive thinking. Participants were randomly assigned to a low and a high status group and followed a manipulation procedure targeting their SSS. Depressive thinking was subsequently assessed by depressive cognitions, stress-reactive state rumination and negative cognitive style. Low status participants exhibited higher levels of depressive cognitions and rumination compared to their high status counterparts, but both groups did not differ regarding their cognitive style. Findings support the causal nature of the relationship between SSS and depressive thinking. Several mechanisms of how low SSS may lead to depression are discussed.

1. Introduction

A person's relative position in society shapes their actions, thoughts and perspectives on the world. Prior psychological research highlighted the impact of people's social positions on physical and mental health (e.g. Adler et al., 1994). To explore the exact role one's social status plays in predicting health, a measure of subjective social status (SSS) was developed that assesses a person's subjective rank relative to others in the socioeconomic hierarchy (Adler et al., 2000). In recent years, SSS was not only found to be related to a vast amount of physiological and psychological health outcomes (for a review, see Euteneuer, 2014) but also to predict health beyond objective measures of socioeconomic status (SES) such as income, education, and occupation (Singh-Manoux et al., 2005). Research in this area has shown that SES is a predictor of depression (Lorant et al., 2003) and cross-sectional studies found a robust relation between SSS and depression (e.g., Scott et al., 2014). Although a recent prospective study suggests a causal effect of SSS on depressive symptoms (Diaz et al., 2014), further research is still needed to move beyond correlation to establish causation.

Since Beck (1967) proposed the first cognitive theory of depression, much research has been conducted on cognitive mechanisms among people with depression. Beck identified various negative thoughts (e.g. “I am worthless”) to be a typical cognitive content among depressed people. In addition to these depressive cognitions, cognitive processes such as stress-reactive rumination and negative cognitive style were found to be strong predictors of depression onset (Robinson and Alloy, 2003). People who ruminate rehearse negative cognitive content after stressful events (Nolen-Hoeksema et al., 1994). People with a negative cognitive style attribute negative life events to stable (enduring) and global (widespread) causes leading to the inference of further negative consequences and negative self-worth implications (Abramson et al., 1989). Depressive cognitions refer to cognitive content that is distinct from but related to these cognitive processes (for a review, see Gotlib and Joormann, 2010). However, depressive cognitions, rumination, and negative cognitive style predict depression independently and are commonly conceptualized in a diathesis-stress-account (Hyde et al., 2008).

Although experimental manipulation of individuals' SSS has been shown to affect behaviors and abilities (e.g. empathic accuracy; Kraus et al., 2010) the impact of SSS on depression or health-relevant outcomes has not yet been studied experimentally. The present study examined the impact of experimentally manipulated SSS (i.e. low SSS vs. high SSS) on depressive cognitions, rumination, and negative cognitive style. By manipulating SSS, we intended to provide experimental support for the hypothesis that

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people's perceived social position is a causal factor for developing depressive thinking. Accordingly, participants in the low status group were expected to exhibit more depressive thinking evidenced in their cognitive content and cognitive processes.

2. Methods

2.1. Participants

Participants were recruited via a university mailing list. Assuming an effect size of d = 0.54 (for the effect of the social class manipulation on subjective social status as reported by Kraus et al., 2010), we tried to collect data from 88 participants for a power of 0.80. After an online screening of 97 students, only non-depressed undergraduates (Patient Health Questionnaire-9; PHQ-9 < 15) were invited to the lab experiment. In total, 86 Caucasian students participated in the experiment and were compensated monetarily (10€/h) or with course credit. Of the original sample, 8 participants failed to follow instructions and 6 participants guessed the experimental hypothesis correctly and were excluded. Pairwise comparisons showed no differences between included and excluded participants in any sociodemographic variable or depressive symptoms (PHQ-9). After exclusion, 72 participants remained for analysis. Table 1 shows sample characteristics and dependent measures of depressive thinking for both experimental groups.

2.2. Procedure

Participants completed questionnaires assessing sociodemographic variables, depressive symptoms and SES online, on average one week prior to the lab session. When they arrived, participants were given a brief overview of the study which included speaking in front of a camera (unbeknownst to participants, the camera was fake). After all procedures were described in detail, participants signed the informed consent form and were randomly assigned to the experimental groups (low vs. high SSS). Next, the experimenter turned on the camera, started a video clip, and left the room. The video clip was an adapted version of the manipulation by Kraus et al. (2010) presenting a ladder with 10 rungs representing "where people in Germany stand". According to their experimental group, participants were either asked to think about what distinguishes them from people at the top of the ladder (low status group) or the bottom of the ladder (high status group). During the first two minutes, participants were instructed to name as many differences as possible between themselves and those at the top (at the bottom) of the ladder. During the following two minutes, they were asked to explain in which way they felt disadvantaged (privileged) compared to people at the top (bottom) of the ladder. Following the five-minute task, SSS, depressive cognitions, cognitive style and stress-reactive rumination were assessed. Participants were told that their videos would be used only anonymously for scientific purpose. The fake camera was set up to increase the induced stress of social comparisons and thus strengthen the manipulation of SSS. Participants were fully debriefed at the end of the experiment. The study was approved by the local ethics committee.

Table 1
Sociodemographics, baseline variables and variables of depressive thinking.

	Low status (n=36)	High status (n=36)	Statistic	df	p
Sociodemographics					
Age	22.78 (2.27)	23.67 (4.60)	t=–1.04	70	0.30
Year of study	3.04 (0.25)	3.18 (0.40)	t=–0.29	70	0.77
Gender, female, n (%)	28 (77.78)	29 (80.56)	χ^2=0.08	1	0.77
Winkler-Index, parents	13.12 (4.02)	12.54 (3.98)	t=0.60	67	0.55
Winkler-Index, own	7.42 (1.02)	7.53 (1.08)	t=–0.45	68	0.66
Baseline variables					
Depression, PHQ-9	5.33 (3.13)	5.08 (3.42)	t=0.32	70	0.75
Negative affect, PANAS	12.14 (1.61)	13.72 (3.66)	t=–2.38*	70	0.02
Stress	29.89 (23.12)	35.64 (26.52)	t=–0.99	70	0.33
Depressive thinking (post-manipulation)					
Depressive cognitions, DCS	10.61 (5.92)	8.08 (4.51)	F=4.16*	1, 70	0.05
Stress-reactive rumination	3.31 (1.47)	2.50 (1.41)	F=5.65*	1, 70	0.02
Negative cognitive style, CSQ-SF	135.83 (26.90)	134.81 (32.35)	F=0.02	1, 70	0.88

PHQ-9 Patient Health Questionnaire (Depression Module), *PANAS* Positive and Negative Affect Schedule, *DCS* Depressive Cognition Scale, *CSQ-SF* Cognitive Style Questionnaire Short Form. Standard deviations appear in parenthesis beside means.

* p=0.05.

2.3. Measures

2.3.1. Manipulation check

The German Version of the MacArthur Scale (Euteneuer et al., 2014) of subjective social status (Adler et al., 2000) was used to assess participants' SSS directly after the manipulation. Participants were instructed to place themselves on a ten-rung ladder that represents German society "with people at the bottom (low scores) having the *lowest* education, the *least* money and the worst jobs and people at the top (high scores) having the *highest* education, the *most* money and the *best* jobs".

2.3.2. Depressive cognitions

The Depressive Cognition Scale (DCS, Zauszniewski, 1995) measures depressive cognitions on eight items and has demonstrated to be valid and reliable (Sousa et al., 2010). As items are positively phrased (e.g. "I'm a worthwhile human being"), items were recoded for analysis with higher values indicating more depressive cognitions (α = 0.86).

2.3.3. Negative cognitive style

The Cognitive Style Questionnaire measures cognitive vulnerability to depression by assessing participants' cognitive style. Its short form (CSQ-SF; Meins et al., 2012) consists of eight hypothetical negative situations in the interpersonal and achievement context. For each situation, participants identify the most probable reason that could have caused this situation and rate its degree of internality, globality, stability as well as inferences regarding negative consequences and self-worth implications on nine items. The extent of negative cognitive style is composed of the latter four scales (globality, stability, negative consequences and self-worth implications) which have demonstrated to be valid and reliable (α = 0.94 for this sample). The CSQ-SF composite ranges from 64 to 320 with higher values indicating more depressogenic attributions.

2.3.4. Stress-reactive state rumination

A one-item-scale of rumination during the task was used similar to studies that assessed rumination after mood-induction (Ottaviani et al., 2011). After completing the task, participants were asked how much they agreed with the following item referring to the speech about their status: "During the past 10 min I have been thinking a lot about the situation" (from 1 = *totally disagree* to 6 = *totally agree*).

2.3.5. Negative affect and stress

Negative affect (NA) was measured by the Positive and Negative Affect Schedule (PANAS; Krohne et al., 1996). Participants rated how well ten adjectives (e.g. guilty) represent their momentary feelings (α = 0.77). Actual stress levels were measured on a Visual Analogue Scale (VAS, Bond and Lader, 1974). Participants marked a spot on a bipolar line (from 1 to 100 mm) resembling their subjective appraisal of stress perception.

2.3.6. Baseline depression and sociodemographics

Participants' depressive symptoms were measured using the German version of the Patient Health Questionnaire depression module (PHQ-9; range 0–27; α = 0.77; Kroenke et al., 2001) which is based on DSM-IV criteria and has good reliability. Participants' objective SES and their parents' SES was assessed via the Winkler-Index, which combines participants' self-reports of their own (their parents') income, education level, and occupational status (Winkler and Stolzenberg, 2009).

3. Results

No multivariate outliers were detected (using Mahalanobis and Cook's distances); all further assumptions for the following analyses were tested and met. Pairwise comparisons of sociodemographic and baseline variables indicated a successful randomization; none of the variables differed between the groups with the exception of NA, which was higher for high status participants, $t(70) = -2.38$, $p < 0.05$ (see Table 1).