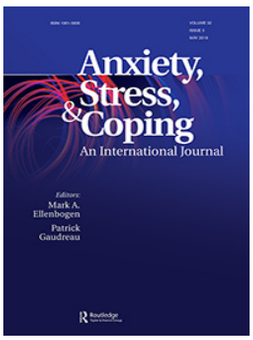

Routledge
Taylor & Francis Group

Anxiety, Stress, & Coping
An International Journal

ISSN: 1061-5806 (Print) 1477-2205 (Online) Journal homepage: https://www.tandfonline.com/loi/gasc20

Autonomy deficits as vulnerability for anxiety: evidence from two laboratory-based studies

L. E. Kunst, J. Maas, M. A. L. M. Van Assen, W. Van der Heijden & M. H. J. Bekker

To cite this article: L. E. Kunst, J. Maas, M. A. L. M. Van Assen, W. Van der Heijden & M. H. J. Bekker (2019) Autonomy deficits as vulnerability for anxiety: evidence from two laboratory-based studies, Anxiety, Stress, & Coping, 32:3, 244-258, DOI: 10.1080/10615806.2019.1580697

To link to this article: https://doi.org/10.1080/10615806.2019.1580697

ANXIETY, STRESS, & COPING
2019, VOL. 32, NO. 3, 244–258
https://doi.org/10.1080/10615806.2019.1580697

Routledge
Taylor & Francis Group

Autonomy deficits as vulnerability for anxiety: evidence from two laboratory-based studies

L. E. Kunst[a], J. Maas[a,b], M. A. L. M. Van Assen[c,d], W. Van der Heijden[a*] and M. H. J. Bekker[a]

[a]Department of Medical and Clinical Psychology, Tilburg University, Tilburg, Netherlands; [b]Center for Eating Disorders Helmond, Mental Health Center Region Oost-Brabant, Helmond, Netherlands; [c]Department of Methodology and Statistics, Tilburg University, Tilburg, Netherlands; [d]Department of Sociology, Utrecht University, Utrecht, Netherlands

ABSTRACT

Background: Autonomous individuals are characterized by self-governance; awareness of and capacity to realize one's wishes and needs, while being connected with and sensitive towards others. In line with earlier research showing consistent associations between autonomy-connectedness deficits and anxiety, we tested in two studies whether autonomy deficits predict anxious responses to acute stressors.

Methods: In Study 1, participants ($N = 177$) viewed an anxiety-inducing film fragment and reported anxiety before and after viewing the clip. In experimental Study 2, participants ($N = 100$) were randomly allocated to one of two conditions: giving a short presentation to an audience (impromptu speech task) or watching another person's presentation (control condition). Anxiety was measured at baseline, after a preparation period and directly after the presentation.

Results: In Study 1, individuals' anxiety in reaction to watching the movie was positively associated with the autonomy-connectedness component sensitivity to others. In Study 2, individuals' anxiety in reaction to preparing the presentation was negatively associated with the autonomy-connectedness component self-awareness.

Conclusions: Specific autonomy components may be related to experiencing anxiety in differing situations (i.e., related to others' distress or presenting one's personal views). Collectively these results indicate that autonomy-connectedness deficits may form a vulnerability factor for experiencing anxiety.

ARTICLE HISTORY
Received 23 May 2018
Revised 30 January 2019
Accepted 1 February 2019

KEYWORDS
Anxiety; stress; autonomy-connectedness; autonomy; self-awareness; sensitivity to others

Introduction

Autonomy is often defined as the ability to govern oneself (Hmel & Pincus, 2002) and is closely tied to mental wellbeing (Bekker, Croon, Van Balkom, & Vermee, 2008; Hmel & Pincus, 2002). Most operationalizations of autonomy include a social component (Beyers, Goossens, Vansant, & Moors, 2003). Beck, for instance, developed the concept of autonomy-sociotropy, in which sociotropy represents an excessive investment in social relationships (Beck, 1983; Clark & Beck, 1991). Sociotropy was found to be related to vulnerability for depression and anxiety (Alford & Gerrity, 1995; Grondin,

CONTACT L. E. Kunst l.e.kunst@uvt.nl
*Present address: Mentaal Beter, Tilburg, Netherlands

Supplemental data for this article can be accessed https://doi.org/10.1080/10615806.2019.1580697

Johnson, Husky, & Swendsen, 2011; Husky, Mazure, Maciejewski, & Swendsen, 2007; Iacoviello, Grant, Alloy, & Abramson, 2009).

Bekker (1993), however, argued that interpersonal dependence should not merely be viewed as a problematic component of autonomy. Rather, being able to engage in satisfactory interpersonal relationships is a prerequisite for healthy development of the self and for autonomous functioning (Masten & Tellegen, 2012). Autonomy is developed within a social context (Bowlby, 1969) and healthy autonomy also implicates that one is able to initiate and maintain meaningful relationships (Bekker, 1993). In order to emphasize this social nature of autonomy, Bekker and Van Assen (2006) introduced the concept autonomy-*connectedness*. This conceptualization of autonomy agrees with the definition of "autonomy" as self-governance and a strong sense of self, in contrast with personality constructs reflecting independence and detachment from others (Hmel & Pincus, 2002).

Autonomy-connectedness deficits have been implicated as a vulnerability factor for various forms of psychopathology (Bachrach, 2015; Bachrach, Bekker, & Croon, 2013; Bekker & Belt, 2006; Bekker & Croon, 2010; Bekker, Bachrach, & Croon, 2007; Rutten et al., 2016). The construct comprises three components: (i) self-awareness, which entails the awareness of, and ability to express one's needs and wishes in social interactions; (ii) sensitivity to others, being aware of, and sensitive towards others' opinions, wishes and needs, and the capacity and need for intimacy and separation, and (iii) capacity for managing new situations, the tendency to quickly feel at ease in novel situations and readily explore new, unfamiliar situations, not relying overly on familiar structures (i.e., flexibility). These components were determined on the basis of theoretical as well as psychometric grounds (Bekker, 1993), and appear to be distinct yet related factors, with intercorrelations typically medium to large in size (Bekker & Van Assen, 2006).

In patients with internalizing disorders (e.g., anxiety and depression) autonomy deficits are characterized by high levels of sensitivity to others, low self-awareness, and low capacity for managing new situations. These patterns are found consistently in undergraduate (Bekker & Belt, 2006; Bekker & Croon, 2010; Bekker & Van Assen, 2006), clinical (Bachrach et al., 2013; Bekker & Belt, 2006; Bekker & Croon, 2010), and representative community samples (Bekker & van Assen, 2017; Maas, Laceulle, & Bekker, 2018). This pattern suggests that individuals with anxiety and depressive symptoms have a tendency to focus overly on the wishes and needs of others, have difficulties expressing their needs and personal views, and tend to feel uneasy in new situations. Notably, these results are in line with the (positive) associations between sociotropy and anxiety and depression (Alford & Gerrity, 1995; Grondin et al., 2011; Husky et al., 2007; Iacoviello et al., 2009).

The deficits in self-awareness and sensitivity to others are closely related and may perpetuate each other: not knowing and expressing what one wants and needs can contribute to focusing more on others. Focusing too much on others can, in turn, hamper the development of a stronger sense of self. Concurrently, these problems may impair one's ability to cope with new situations on one's own. In line with attachment theory (Bowlby, 1969), the component capacity for managing new situations can be seen as a proxy of healthy autonomy, stemming from secure attachment experiences and an adequate balance between self-awareness and sensitivity to others. Deficits in autonomy-connectedness may particularly develop under adverse early life events, including trauma, neglect, and parentification (Bekker et al., 2008). For instance, retrospectively reported childhood trauma has been associated with higher sensitivity to others in adulthood (Maas, Laceulle, et al., 2018).

Although associations between autonomy and mental health have been established, it remains unclear exactly how autonomy relates to psychological problems. One hypothesis is that autonomy deficits render individuals vulnerable to experience psychological problems when facing stressful events. For instance, the stress-vulnerability (or stress-diathesis) hypothesis states that stressful life events can give rise to depressive and anxious symptoms, especially in individuals with autonomy deficits (Clark, Beck, & Brown, 1992). Cross-sectional studies examining the stress-vulnerability hypothesis indeed found that negative social events were related to dysphoria, and these relationships were most pronounced in sociotropic individuals (Clark et al., 1992; Hammen, Ellicott, & Gitlin, 1992; Liu & Alloy, 2010; Raghavan, Le, & Berenbaum, 2002).

Earlier studies on autonomy(-sociotropy) have mostly focused on depressive symptoms, but there are indications that autonomy may be highly relevant in the field of anxiety disorders. Notably, one of the few prospective studies on autonomy and mental health showed that autonomy deficits predicted later anxiety symptoms (Alford & Gerrity, 1995). Additionally, there has been an increasing interest in autonomy-connectedness enhancing treatment for anxiety disorders. As autonomy enhancing treatment (AET) is person-centered and not based on exposure exercises, it may have lower drop-out rates and broader effects than standard treatment cognitive behavioral therapy for anxiety disorders (Bekker, Van Helsdingen, Rutten, & Kouwenhoven, 2016; Maas, Van Balkom, et al., 2018; Netherlands Trial Registry, 2017). Investigating how autonomy-connectedness contributes to anxiety could extend the theoretical framework underlying this treatment approach and offer insight into its mechanisms.

Although several observational studies have investigated links between autonomy(-connectedness) and anxiety, few laboratory-based and experimental studies have been carried out. Yet, these types of research are essential to provide basic insight into one of the core assumptions of a stress-vulnerability hypothesis: do "less autonomous" individuals indeed exhibit more acute anxiety when faced with stressors? Laboratory-based studies, experimental research in particular, allow a direct examination of stress reactivity in autonomous and less autonomous individuals, in a highly controlled setting (i.e., controlling for possible confounding variables).

A laboratory-based study by Ewart, Jorgensen, and Kolodner (1998) investigated blood pressure responses to a general stress task (mirror image tracing) and a social stressor (Social Competence Interview) in 616 adolescent girls. Sociotropic cognitions had a medium positive association with blood pressure reactivity during the social task, but not during the general stress task. In another experimental study, Allen, de L. Horne, and Trinder (1996) investigated in 100 participants psychophysiological responses to two different stressors; imagined scenarios of social rejection and achievement failure (compared with the imagination of neutral scenarios). Consistent with previous non-experimental studies, sociotropy had large positive associations with dysphoric mood and small associations with facial electromyographic activity in response to both stressors. Importantly, these two studies used the older operationalization of autonomy by Beck (1983; Clark & Beck, 1991). No experimental studies yet exist that test how components of the novel concept autonomy-*connectedness* relate to stress reactivity.

Furthermore, it is currently unclear whether autonomy-connectedness represents a global vulnerability factor for experiencing anxiety, or whether specific autonomy-connectedness components predict anxiety in specific situations (e.g., more general stressors vs. social stressors). As previous studies on autonomy-connectedness found all components to predict anxiety in a variety of settings, it may be argued that all autonomy-connectedness components predict anxiety in response to general as well as social stressors. However, this remains to be explored.

To address these shortcomings, we carried out one laboratory-based study and one experimental study to investigate whether pre-existing autonomy-connectedness predicts elevated anxious responses to various stressors. In line with previous findings on autonomy-connectedness and anxiety, we expected that low self-awareness, low capacity for managing new situations, and high sensitivity to others predict elevated anxious responses.

In order to explore whether specific autonomy-connectedness components predict anxiety in different stressful situations, as in Ewart et al. (1998), we used two different stressors. Laboratory-based Study 1 included an anxiety-inducing film clip, a reliable and well-known method for inducing anxiety. The purpose of this study was to examine the changes in anxiety in response to a very "general" stressor in a controlled setting, in individuals with varying levels of autonomy-connectedness. Furthermore, in a different experimental Study 2, a social stressor (impromptu speech task in front of an audience) was used, including a control group. The purpose of this second study was to explore whether autonomy-connectedness components predict anxious responses to a social stressor, while controlling for other covariates.

In line with autonomy deficits characteristic for anxiety patients (low self-awareness, low capacity for managing new situations, high sensitivity to others), we formulated the following hypotheses:

H1: self-awareness is negatively associated with an increase in anxiety after seeing the film clip (Study 1) and in preparation of the presentation (Study 2).

H2: sensitivity to others is positively associated with an increase in anxiety after seeing the film clip (Study 1) and in preparation of the presentation (Study 2).

H3: capacity for managing new situations is negatively associated with an increase in anxiety after seeing the film clip (Study 1) and in preparation of the presentation (Study 2).

Study 1

Methods

Participants

Participants were 177 undergraduate students, 66.7% female, age $M = 20$ ($SD = 2.1$). All participants signed for informed consent and were rewarded with course credits for participation in research. Participants were recruited through an online research participation platform of the University. Both Study 1 and 2 were carried out at Tilburg University, and ethical approval was granted by the Tilburg Psychology Research Ethics Committee (#EC-2015.12).

Design and procedure

The study was a laboratory-based within-subject examination of anxiety reactivity in relation to autonomy-connectedness. Participants first completed questionnaires on demographic characteristics, autonomy-connectedness, and anxiety (trait and state; see Measures). Subsequently, they were instructed to watch a movie clip depicting the last scene of the movie "Blair Witch Project" (3:29 s). This movie clip was previously rated as eliciting the most fear, compared with 70 other film excerpts (Schaefer, Nils, Sanchez, & Philippot, 2010). The fragment was filmed from the point of view of a young woman, who is exploring a supposedly bewitched house with two friends. Throughout the clip, the woman loses the other two friends and she runs around in the house frantically, rapidly breathing at first and then crying and screaming. The fragment ends when the woman is apparently killed. After watching the film fragment, participants again completed state anxiety measures.

Measures

Autonomy-connectedness was assessed using the Autonomy-Connectedness Scale (ACS-30; Bekker & Van Assen, 2006). The ACS-30 contains three subscales: self-awareness (e.g., "If I am asked what I want, I mostly know the answer immediately"), sensitivity to others (e.g., "If I have things my own way against the will of others, I usually get very restless"), and capacity for managing new situations (e.g., "I easily come to grips with a new problem on my own"). All 30 items are measured on a 5-point Likert scale, ranging from 1 (disagree) to 5 (agree). The ACS-30 has good psychometric qualities, with Cronbach's α ranging from .80 to .85 (Bekker & Van Assen, 2006) or a bit lower (.74 to .78 in Bekker & van Assen, 2017). In this study, reliabilities were .83 for self-awareness, .84 for sensitivity to others and .81 for capacity for managing new situations.

Anxiety was measured using the Dutch version of the Spielberger State-Trait Anxiety Inventory (Hedberg, 1972; Ploeg, Defares, & Spielberger, 1980). The questionnaire contains two subscales; trait anxiety, a global measure of one's general level of stable anxiety, and state anxiety, an indication of one's current transient state of anxiety. Each scale consists of 20 4-point Likert scale items, with total scores ranging from 20 to 80. The questionnaire has been widely used and has been shown to distinguish well between trait and state anxiety (Barnes, Harp, & Jung, 2002). Reliability of both scales is good (Cronbach's α ranging from .87 to .92; Ploeg et al., 1980). In this study, Cronbach's α

for trait anxiety was .92. Reliability for state anxiety was .93 at T1 (baseline) and .95 at T2 (after participants watched the movie clip).

Additionally, participants completed 10 items on coping strategies used while viewing the movie, which are not used in the present paper.

Statistical analysis

First, means, standard deviations and Pearson correlation coefficients of variables under study were calculated and presented as descriptive statistics. All subsequent analyses were carried out using the mixed models procedure of SPSS, version 22, using two-tailed testing and an alpha of .05. All analyses incorporated unstructured covariance structures in order to control for dependency among observations due to repeated measures. The three autonomy-connectedness scales were centered in order to limit multicollinearity in the analyses that incorporated interactions with the variable time.

As a manipulation check, we verified that viewing the movie fragment led to an overall increase in anxiety in the entire sample, by testing the effects of time on state anxiety. Then we estimated three different models varying in complexity, which were compared using the likelihood ratio test with maximum likelihood estimation. The likelihood ratio test compares the fit of two nested models, with the −2 log likelihood (−2LL) statistic as a measure of fit; the test statistic follows a chi-square distribution with degrees of freedom equal to the difference in the number of parameters of both models.

First, we estimated the model with main effects of time and the three autonomy-connectedness components. Second, to test our hypotheses, we added the three interactions between time and each of the three autonomy-components to the model. If the second model improved fit (−2LL), each individual interaction effect was tested using the *t*-test to verify if an autonomy-connectedness component was associated with a change in anxiety after viewing the movie clip. Third, as a sensitivity analysis, we added control variables sex, age, and trait anxiety to the model. All effects of individual predictors were tested using the *t*-test.

Results and discussion

Means, standard deviations, and correlations between each of the variables under study are displayed in Table 1. As expected, self-awareness and capacity for managing new situations were negatively related to all state and trait anxiety measures, whereas sensitivity to others was positively related to all anxiety measures (Table 1). As a manipulation check, effects of time on state anxiety were examined. Time had a large effect on anxiety ($ß = 13.59$, $t = 13.77$, $df = 177$, $p < .001$, $d = 1.04$), with participants on average becoming more anxious after seeing the anxiety-inducing movie clip.

First, the main effects of time and the autonomy-connectedness components were all statistically significant and in the expected direction, χ^2 (4) = 202.38, $p < .001$ (see Table 2, Block 1); anxiety during the study was negatively associated with self-awareness, $ß = -0.27$ ($t = -2.29$, $df = 177$, $p = .023$, $d = -.17$, small effect) and capacity for managing new situations, $ß = -0.38$ ($t = -3.21$, $df = 177$, $p = .002$,

Table 1. Means, standard deviations and correlations of variables under study ($N = 177$).

			Correlations						
Measure	*M*	*SD*	1	2	3	4	5	6	7
1. Age	19.98	2.13	–						
2. Female sex	–	–	−.30**	–					
3. Self-awareness	25.81	4.58	.037	−.14	–				
4. Sensitivity to others	60.10	8.84	−.22**	.48**	−.31**	–			
5. Capacity for managing new situations	18.64	4.42	.12	−.11	.31**	−.17*	–		
6. Trait anxiety	40.11	9.47	−.10	.25**	−.37**	.48**	−.35**	–	
7. State anxiety before movie (T1)	35.8	9.07	−.12	.23**	−.36**	.37**	−.32**	.64**	–
8. State anxiety after movie (T2)	49.4	12.41	−.32**	.36**	−.17*	.49**	−.18*	.25**	.28**

Note: * $p < .05$; ** $p < .01$.

Table 2. Effects of autonomy-connectedness, sex, age and trait anxiety on state anxiety.

Block		*B* (*SE*)	*t*	*p*
1	Intercept	28.25 (5.15)	5.48	<.001
	Time	13.66 (.96)	14.30	<.001
	Self-awareness	−.30 (.13)	−2.41	.017
	Sensitivity to others	.054 (.072)	.75	.452
	Capacity for managing new situations	−.23 (.13)	−1.83	.069
	−2LL	2586.75		
	Δ *−2LL*	χ^2 (4) = 202.38, $p < .001$		
2	Time*self-awareness	.44 (.23)	1.93	.056
	Time*sensitivity to others	.39 (.11)	3.45	.001
	Time*capacity for managing new situations	.15 (.23)	.66	.509
	−2LL	2574.04		
	Δ *−2LL*	χ^2 (3) = 12.71, $p = .005$		
3	Sex	1.46 (1.104)	1.33	.187
	Age	−.42 (.22)	−1.91	.058
	Trait anxiety	.37 (.057)	6.50	<.001
	−2LL	2518.25		
	Δ *−2LL*	χ^2 (3) = 55.79, $p < .001$		

Note: The effects of predictors, their standard errors, and the results of their statistical tests values are of the final model, i.e., the model including the main effects, interaction effects and control variables; −2LL: The −2 log-likelihood of the model; Δ −2LL: the likelihood ratio test comparing the fit of the model including this block to the fit of the model without this block.

$d = .24$, small effect), and positively with sensitivity to others, $ß = 0.40$ ($t = 6.71$, $df = 177$, $p < .001$, $d = .50$, medium effect).

Second, the model with interactions of time and autonomy-connectedness improved the fit (Table 2, Block 2), indicating that at least one of the autonomy-connectedness components predicted change in anxiety after viewing the movie clip, χ^2 (3) = 12.71, $p = .005$. Regarding H1, self-awareness did not predict an increase in anxiety after viewing the movie clip, $ß = 0.43$ ($t = 1.89$, $df = 177$, $p = .061$, $d = .14$, close to small effect). With regard to H2, as expected sensitivity to others predicted an increase in anxiety while watching the movie, $ß = 0.39$ ($t = 3.43$, $df = 177$, $p = .001$, $d = .26$, larger than small effect). Regarding H3, capacity for managing new situations did not predict an increase in state anxiety, $ß = 0.14$ ($t = .64$, $df = 177$, $p = .525$, $d = .048$, close to zero effect).

Third, in the final model (sensitivity analysis) we controlled for sex, age and trait anxiety. The fit of the model again improved (Table 2, Block 3), indicating that at least one of the control variables explained additional variance in anxiety compared with the second model, χ^2 (3) = 55.79, $p < .001$. Looking at the individual covariates, trait anxiety, but not age and sex, predicted anxiety during the study (Table 2; Block 3). In this final model, the interaction between sensitivity to others and time remained significant (Table 2; Block 2), corroborating our main finding that sensitivity to others predicted an increase in anxiety while watching the movie, $ß = .39$ ($t = 3.45$, $df = 176$, $p = .001$, $d = .26$, larger than small effect).

Results of Study 1 suggest that the autonomy-connectedness component sensitivity to others may be predictive of self-reported increases in anxiety after confrontation with a general stressor. However, Study 1 did not include a control group, and it is unclear whether the predictive value of component sensitivity to others generalizes to other stressors. We therefore conducted a second study including a control group and using a different, social stressor.

Study 2

Methods

Participants

Participants were 114 undergraduate students, 72% female, age $M = 20.48$ ($SD = 3.40$). Due to missing data of 14 participants, analyses were carried out for 100 participants, 71% female, age $M = 20.20$ ($SD = 2.35$). All participants signed for informed consent and were rewarded with

course credits for participation in research. All procedures were performed in accordance with the ethical standards of the institutional research committee. Participants were recruited through an online research participation platform of the University and by approaching undergraduates face-to-face on campus.

Procedure

The study was an experimental between-subject examination of anxiety, using an impromptu speech paradigm based on Beidel, Turner, Jacob, and Cooley (1989). Participants were invited to two lab-sessions. In the first lab-session participants ($N = 114$) completed the ACS-30 and indicated their age and sex. Based on the ACS-30 scores of the first lab-session, participants were categorized as "high" or "low" autonomous individuals, using the sum of the self-awareness, sensitivity to others (inverted) and capacity for managing new situations items, and using a median split. In the second lab-session individuals were invited in pairs: one participant would be randomized to the experimental condition and the other to the control condition. To ensure an equal distribution of autonomy-connectedness scores across the experimental and control conditions, participants were matched on the autonomy-connectedness level. Thus, two individuals both "low" in autonomy-connectedness scores were invited together to the same lab-session, and two individuals "high" in autonomy-connectedness scores were invited to a lab-session together. Participants did not know each other personally and were not matched on other characteristics (e.g., sex).

Fourteen participants did not attend the second lab session and were therefore excluded from analysis. Of the 114, 100 participants (50 pairs) also completed the second lab-session in which the impromptu speech task was carried out. After completing a social anxiety measure (see Measures), both participants watched a 3-minute nature movie clip as an adaptation period prior to the experiment. Following the nature movie clip and a baseline state anxiety measure (T1), individuals were randomly allocated to the experimental and control condition. The participants in the experimental condition ($N = 50$) were asked to prepare and carry out a brief presentation in front of an audience; the participants in the control condition ($N = 50$) simultaneously served as an audience for the presentation, together with the experimenter and a confederate. Participants were first instructed that they would have to present their view on a topic that would later be chosen by the experimenter. Presenters were subsequently given three minutes to prepare their presentation, using a list that included all possible presentation topics (e.g., additional taxes on fast food; the effects of video games on violent behavior, see Appendix A). During the preparation period, the participant in the control condition waited. After three minutes of preparation time, anxiety measures were again completed in both conditions (T2). Note here that the increase in anxiety from T1 (before preparation) and T2 (after preparation) serves as the main outcome in this study (see Statistical analysis).

After T2 completion, the start of the presentation was announced. The experimenter set up a camera in front of the presenter and formed a three-person audience together with the participant in the control condition and the confederate. Presenters were informed that their video-taped presentation would later be evaluated critically by author MB. The experimenter then told the presenter which topic the participant had to talk about, and instructed the participant to talk about this topic for three minutes. The participant in the control condition was instructed to listen to the presentation. During the presentation, the experimenter and confederate intended to maintain neutral facial expressions and pretended to take notes. After three minutes the presentation was stopped and participants completed the final state anxiety measures (T3).

Measures

As in Study 1, the ACS-30 (Bekker & Van Assen, 2006) was used to measure autonomy-connectedness, with Cronbach's α of .77 for self-awareness, .80 for sensitivity to others, and .78 for capacity for managing new situations in this study. Also similar to Study 1, the state version of the Spielberger State-

Trait Anxiety Inventory was used to measure state anxiety (Hedberg, 1972; Ploeg et al., 1980). The Cronbach's α reliability values were .88, .95 and .91 for T1, T2 and T3 respectively.

Different to Study 1, Study 2 included a measure on trait *social* anxiety, because the impromptu speech task is a social stressor. A measure of social anxiety would likely have more predictive value in this study than a measure on general anxiety. To this end, the Social Anxiety Scale (SAS) was administered (Willems, Tuender-de Haan, & Defares, 1973). The SAS consists of 24 items that can be answered using a 5-point Likert scale. Its psychometric qualities are good, with reliabilities ranging from Cronbach's α .82 to .89 (Willems et al., 1973); in this study reliability was .89.

Statistical analysis

First, means, standard deviations and Pearson correlation coefficients of all variables under study were calculated and presented as descriptive statistics. All subsequent analyses were performed using the mixed models procedure of SPSS, version 22. All hypotheses were tested using two-tailed testing and an alpha of .05. The analyses included unstructured covariance structures to control for dependency among observations because of repeated measures.

As this study included three time points, two dummy variables were created to represent the effect over time (1) from T1 to T2, and (2) from T2 to T3. Our main focus concerned the difference in state anxiety between T1 and T2, because individual differences in stress reactivity were expected to be most pronounced in the preparatory period (Koolhaas et al., 2011): Anxious participants may experience a steep increase in anxiety from T1 to T2, and then remain equally anxious from T2 to T3.

As a manipulation check, we examined whether anxiety changed as a function of time, condition and their interaction, as the experimental design was intended to induce anxiety from T1 to T2 in the experimental condition only. The interaction term was tested using the *t*-test. Effect sizes for the difference in state anxiety change between conditions were calculated by computing two anxiety change variables (from T1 to T2 and T2 to T3), then testing group differences in these change variables using independent sample *t*-tests, and computing Cohen's *d* based on the *t*-values.

We then estimated a series of models with varying complexity, which were compared using the likelihood ratio test using maximum likelihood estimation. The −2 log likelihood (−2LL) and its associated chi-square statistic indicated model fit, and changes in −2LL (Δ−2LL) were also tested using the chi-square test. First, we estimated the model with main effects of time (two dummies), condition (one dummy), the interaction between time and condition (two dummies), and the three autonomy-connectedness components. Hence this model had nine parameters, including the intercept. Second, for each autonomy-connectedness component separately, we tested two models. The first model added interaction terms between the autonomy component and the time points (two parameters), and between the autonomy component and condition (one parameter). The second model added the three-way interactions between the time dummy's (T1 to T2 and T2 to T3), condition and the autonomy-connectedness component (two parameters). Our main hypotheses were tested with the *t*-test of the three-way interaction effect with the first time dummy (T1 to T2); this interaction reflects that the autonomy component is associated with the effect of the stressor, that is, to the difference in anxiety increase between experimental and control condition. We expected a negative association for self-awareness and capacity for managing new situations (H1 and H3; weaker effect on anxiety increase for higher self-awareness and capacity for managing new situations, respectively), and a positive association for sensitivity to others (H2; stronger effects on anxiety increase for higher sensitivity to others). For significant three-way interaction effects, simple effects of autonomy-connectedness components on anxiety increase from T1 to T2 were computed per condition.

Finally, as a sensitivity analysis, we added the control variables sex, age, and trait social anxiety to the model.

Table 3. Correlations of variables under study ($N = 100$).

	1	2	3	4	5	6	7	8
1. Age	–							
2. Female sex	−.03	–						
3. Self-awareness	.15	−.15	–					
4. Sensitivity to others	−.18	.32**	−.29**	–				
5. Capacity for managing new situations	.26**	−.07	.21*	−.30**	–			
6. Social anxiety	−.24*	.21*	−.58**	.44**	−.43**	–		
7. State anxiety before preparation (T1)	−.12	.15	−.47**	.23*	−.16	.38**	–	
8. State anxiety after preparation (T2)	−.09	.11	−.38**	.14	−.14	.39**	.49**	–
9. State anxiety after presentation (T3)	−.05	.12	−.31**	.15	−.13	.34**	.45**	.80**

Note: * $p < .05$; ** $p < .01$.

Results

Correlations between each of the autonomy-connectedness components and anxiety are displayed in Table 3. Self-awareness and capacity for managing new situations were negatively related to trait social anxiety, whereas sensitivity to others was positively related to social anxiety. Self-awareness was most consistently related to state anxiety measures (Table 3). Table 4 shows the means and distribution of variables across the experimental and control condition. As expected, only state anxiety at T2 and T3 differed between the experimental and control condition; the remaining study variables were equally distributed among conditions (Table 4).

The manipulation check indicated that participants in the experimental ("speech") condition reported a larger increase in anxiety during the preparatory phase (T1 to T2 * Condition; $ß = 9.16$, $t = 5.38$, $df = 100$, $p < .001$, $d = 1.07$, large effect) as well as a larger decrease in anxiety after the presentation (T2 to T3 * Condition; $ß = 3.26$, $t = 2.39$, $df = 100$, $p = .019$, $d = -.95$, large effect), compared with participants in the control condition.

First, we estimated the model with main effects of time, condition, the interaction between time and condition, and the three autonomy-connectedness components, χ^2 (8) = 100.20, $p < .001$ (see Table 5; Block 1). Self-awareness negatively predicted state anxiety during the experiment, $ß = -.53$ ($t = -4.26$, $df = 100$, $p < .001$). Sensitivity to others, $ß = -.067$ ($t = 1.056$, $df = 100$, $p = .293$) and capacity for managing new situations, $ß = -.066$ ($t = -.59$, $df = 100$, $p = .558$) did not predict anxiety during the experiment (Table 5, Block 1).

Block 2 of Table 6 displays the model in which the two-way interaction terms between time, condition and self-awareness were added. Block 3 of Table 6 additionally includes the three-way interaction between time, condition and self-awareness. Model fit increased in Block 2 (χ^2 (3) = 11.99, $p = .007$) as well as 3 (χ^2 (5) = 19.53, $p < .001$) compared with Block 1, indicating that at least one of the interaction terms predicted state anxiety. The significant three-way interaction in Block 3 indicated that change in

Table 4. Means and standard deviations for experimental and control condition ($N = 100$).

	Experimental		Control				
N	50		50			χ^2 (1)	*p*
Female sex, *N* (%)	36 (72%)		35 (70%)			.049	.826
	M	*SD*	*M*	*SD*	*t*[a]	*p*	*d*
Age	20.22	1.93	20.18	2.75	−.084	.933	−0.02
Self-awareness	27.06	4.017	27.22	4.096	.17	.863	0.03
Sensitivity to others	41.68	8.86	42.14	7.29	.28	.777	0.06
Capacity for managing new situations	18.54	4.51	17.84	4.50	−.78	.439	−0.16
Social anxiety	66.84	11.44	68.10	15.65	.46	.647	0.09
State anxiety before preparation (T1)	31.5	6.78	31.12	5.42	−.31	.758	−0.06
State anxiety after preparation (T2)	42.80	11.25	33.26	8.67	−4.75[b]	< .001	−0.95
State anxiety after presentation (T3)	34.52	7.62	30.88	6.36	−2.59	.011	−0.52

[a]Equal variances assumed, $df = 98$.
[b]Equal variances not assumed, $df = 92.025$.

Table 5. Effects of sensitivity to others (Block 2–3) and capacity for managing new situations (Block 4–5) on state anxiety.

	Block	*B* (*SE*)	*t*	*p*
1	Intercept	42.60 (6.21)	6.86	< .001
	Condition	.32 (1.073)	.30	.765
	T1 to T2	2.14 (1.20)	1.78	.079
	T1 to T2 * condition	9.16 (1.70)	5.38	< .001
	T2 to T3	−.24 (.96)	−.25	.804
	T2 to T3 * condition	3.26 (1.36)	2.39	.019
	Self-awareness	−.53 (.12)	−4.26	< .001
	Sensitivity to others	.067 (.063)	1.056	.293
	Capacity for managing new situations	−.066 (.11)	−.59	.558
	−2LL		1906.31	
	Δ *−2LL*		χ^2 (8) = 100.20, $p < .001$	
2	Sensitivity to others			
	Condition * sensitivity to others	.13 (.12)	1.064	.290
	T1 to T2 * sensitivity to others	−.0082 (.11)	−.077	.939
	T2 to T3 * sensitivity to others	−.049 (.085)	−.58	.562
	−2LL		1904.66	
	Δ *−2LL*		χ^2 (3) = 1.65, $p = .648$	
3	T1 to T2 * condition * sensitivity to others	.16 (.22)	.73	.465
	T2 to T3 * condition * sensitivity to others	.25 (.17)	1.46	.149
	−2LL		1902.41	
	Δ *−2LL*		χ^2 (5) = 3.90, $p = .564$	
4	Capacity for managing new situations			
	Condition * capacity for managing new situations	−.027 (.22)	−.13	.899
	T1 to T2 * capacity for managing new situations	−.19 (.19)	−1.0081	.316
	T2 to T3 * capacity for managing new situations	−.0073 (.15)	−.048	.962
	−2LL		1904.42	
	Δ *−2LL*		χ^2 (3) = 1.88, $p = .598$	
5	T1 to T2 * condition * capacity for managing new situations	−.31 (.38)	−.82	.413
	T2 to T3 * condition * capacity for managing new situations	−.15 (.31)	−.50	.621
	−2LL		1903.74	
	Δ *−2LL*		χ^2 (5) = 2.57, $p = .766$	

Note: −2LL: The −2 log-likelihood of the model; Δ −2LL: the likelihood ratio test comparing the fit of the model including this block to the fit of the model without this block.

anxiety from T1 to T2 differed as a function of condition as well as self-awareness (H1), ß = −1.04 (t = −2.56, df = 100, p = .012). Simple slope analyses revealed that self-awareness was negatively related to anxiety increase from T1 to T2 in the experimental (speech) condition, ß = −1.61 (t = −5.16, df = 102.74, $p < .001$), but not in the control condition, ß = −.37 (t = −1.21, df = 100.63, p = .228).

Block 2 of Table 5 displays the model in which the two-way interactions between condition, time, and sensitivity to others were added, χ^2 (3) = 1.65, p = .648. Block 3 also includes the three-way interaction between condition, time and sensitivity to others, χ^2 (5) = 3.90, p = .564. In neither model the interaction effects contributed to model fit; sensitivity to others (H2) was not associated with a difference in anxiety change from T1 to T2 between the experimental and control condition ß = .16 (t = .73, df = 100, p = .465; Table 5, Block 3). Similarly, Table 5 displays the model including two-way interactions between condition, time, and capacity for managing new situations, χ^2 (3) = 1.88, p = .598 (Block 4), and the three-way interaction between condition, time and capacity for managing new situations, χ^2 (5) = 2.57, p = .766 (Block 5). In neither model the interaction effects contributed to model fit; capacity for managing new situations (H3) was not associated with a difference in anxiety change from T1 to T2 between the experimental and control condition (ß = −.31, t = .82, df = 100, p = .413; Table 5, Block 5).

Finally, a sensitivity analysis concerning the analyses of self-awareness (Table 6) was performed, including trait social anxiety, sex and age as additional control variables. The model including these variables did not improve in fit, χ^2 (3) = 3.75, p = .290 compared with Block 3 in Table 6. Social anxiety, ß = .089 (t = 1.86, df = 100, p = .066), sex, ß = .78 (t = .72, df = 100, p = .473) and age ß = .0404 (t = .20, df = 100, p = .846) were not predictive of anxiety. The addition of these control variables did not change the results pertaining to self-awareness.

Table 6. Effects of self-awareness on state anxiety: final model.

Block		*B* (*SE*)	*t*	*p*
1	Intercept	44.12 (7.12)	6.20	<.001
	T1 to T2	−3.11 (7.82)	−.40	.692
	T2 to T3	−9.75 (6.47)	−1.51	.135
	Condition	5.78 (7.28)	.80	.429
	T1 to T2 * condition	37.33 (11.14)	3.35	.001
	T2 to T3 * condition	13.18 (9.21)	1.43	.156
	Self-awareness	−.56 (.19)	−2.998	.003
	Sensitivity to others	.059 (.063)	.94	.352
	Capacity for managing new situations	−.0708 (.11)	−.64	.526
	−2LL		1906.31	
	Δ *−2LL*		χ^2 (8) = 100.20, $p < .001$	
2	Condition * self-awareness	−.20 (.27)	−.76	.449
	T1 to T2 * self-awareness	.19 (.28)	.68	.499
	T2 to T3 * self-awareness	.35 (.24)	1.49	.140
	−2LL		1894.31	
	Δ *−2LL*		χ^2 (3) = 11.99, $p = .007$	
3	T1 to T2 * condition * self-awareness	−1.04 (.41)	−2.56	.012
	T2 to T3 * condition * self-awareness	−.36 (.34)	−1.086	.280
	−2LL		1886.78	
	Δ *−2LL*		χ^2 (5) = 19.53, $p < .001$	
Simple effects of self-awareness on anxiety increase from T1 to T2, by condition				
	Control	−.37 (.30)	−1.21	.228
	Experimental	−1.61 (.31)	−5.16	< .001
	Δ *Control vs. experimental*	1.24 (.43)	2.87	.005

Note: The values presented in the table represent the final model, including all main effects and interaction effects; −2LL: The −2log-likelihood of the model; Δ −2LL: the likelihood ratio test comparing the fit of the model including this block to the fit of the model without this block.

General discussion

The reported studies investigated whether autonomy-connectedness deficits may serve as a vulnerability factor for experiencing anxiety when confronted with two types of stressors: A general anxiety-inducing stressor (Study 1) and a social stressor (Study 2). More specifically, we expected individuals low in self-awareness and capacity for managing new situations and high in sensitivity to others to experience a greater increase in anxiety in response to both a general anxiety-inducing film fragment and a social stressor (impromptu speech task), compared with individuals high in self-awareness and capacity for managing new situations and individuals low in sensitivity to others. Confirming our expectations, the component sensitivity to others predicted elevated state anxiety in response to watching an anxiety-inducing film fragment in laboratory-based Study 1, and self-awareness predicted lower levels of state anxiety during an impromptu speech (presentation) task in experimental Study 2. These results are in line with the hypothesized stress-vulnerability hypothesis (Clark et al., 1992).

Our results further suggest that specific autonomy-connectedness components predict anxiety in specific situations, which is partly consistent with previous studies on autonomy-connectedness and anxiety (Bekker & Belt, 2006; Bekker & Croon, 2010; Bekker & Van Assen, 2006). Most previous studies focused on "anxiety" in general and showed consistent patterns of associations between the three autonomy-connectedness components and anxiety symptoms. Notably, the same patterns were found in Study 1 as well as Study 2 when looking at trait anxiety measures. However, when looking at anxious reactivity in specific stressful situations, autonomy-connectedness components do not seem to collectively constitute a global vulnerability factor to anxiety, but distinct vulnerabilities in specific anxiety-related situations. It should be noted that our results (specific rather than global) may also be explained by the relatively low statistical power of our studies (particularly Study 2) to detect small true effect sizes; that is, perhaps effects of other components do exist but are small.

Nevertheless, our findings do provide evidence of and insights into the effects of autonomy-connectedness on self-reported anxiety in stressful situations. More specifically, in Study 1, in which participants watched an anxiety-inducing movie fragment, we found that sensitivity to others, but not

the two other components, predicted elevated anxiety. Sensitivity to others was also more strongly related to anxiety (medium effect) than were the other two components. A post-hoc interpretation of this pattern is that individuals high in sensitivity to others may experience more anxiety in this task, as they may be more affected by others' anxiety, i.e., the negative emotions displayed by the people in the movie fragment. Applied to real-world situations, this may indicate that individuals high in sensitivity to others may be especially vulnerable to experiencing anxiety in situations in which others are perceived to be in distress. This interpretation is also in line with the observation that anxious individuals report being highly sensitive to the emotional state of others (e.g., Auyeung & Alden, 2016). Moreover, this corresponds with the tendency of anxiety patients to focus on potential hazards occurring to important others (e.g., in generalized anxiety disorder; American Psychiatric Association, 2013).

Unexpectedly, self-awareness and capacity for managing new situations did not predict anxious responses to watching the movie and seeing the movie characters in distress. Perhaps the extent to which a relation between anxiety and self-awareness and capacity for managing new situations becomes visible depends on whether participants have to carry out an active task (e.g., presentation, as in Study 2) rather than passively watching a movie. Further laboratory-based research could focus on disentangling the effects of perceived others' distress and passive versus active tasks on the relation between autonomy-connectedness and state anxiety.

In Study 2 participants underwent a social stressor, and results showed that individuals low in self-awareness thereafter reported elevated anxiety, when preparing their presentation. A post-hoc interpretation of this finding is that individuals who have difficulties identifying their needs and wishes may especially be vulnerable in situations in which they have to present their personal views and opinions. Healthy autonomy is theorized to include a "firm and affirmed" sense of self (Bekker et al., 2008). Problems in this regard may render an individual uncertain about the social acceptability of their personal views and opinions, which could induce a sense of being incapable and a fear of rejection. This vulnerability may become particularly visible in self-promoting and social situations.

The two other autonomy-connectedness components, sensitivity to others and capacity for managing new situations, were not associated with a differential increase in anxiety between experimental and control condition. One reason may be that the statistical power of detecting these hypothesized three-way interactions with 100 participants is limited, if the true effect size is small to medium. Alternatively, these components may affect anxiety in general, but not anxiety in this specific social situation. Considering the conceptual similarities between sensitivity to others and sociotropy, the finding regarding sensitivity to others appears inconsistent with research by Ewart et al. (1998), who found sociotropy to predict stress during a social competence interview. Perhaps the task used by Ewart et al. (1998) elicited more social threat than our impromptu speech task, as our audience included fellow students and a potentially supportive co-participant, or the difference between their and our findings is merely a statistical power issue (616 versus 100 participants in our Study 2).

Similarly, effects of capacity for managing new situations may be more visible in situations in which individuals have to undergo a stressful task without the presence of supportive others. A more stressful social task in which audience members are explicitly instructed to react coolly, such as the Trier Social Stress Test, might elicit more rejection sensitivity and thereby perhaps reveal some effects of sensitivity to others and capacity for managing new situations on anxiety.

In sum, autonomy-connectedness appears to predict anxiety following specific types of stressors, in line with the stress vulnerability hypothesis. Additionally, our findings are the first to suggest specificity in the predictive value of the autonomy components in specific situations, rather than a global vulnerability factor for a wide variety of stressors. Based on these conclusions, an interesting venue for future research may be to study autonomy-connectedness patterns in individuals with different anxiety disorders (e.g., social anxiety versus generalized anxiety disorder). Based on the present results, self-awareness may be more strongly related to anxiety in individuals with social anxiety, as socially anxious individuals display difficulties in expressing their personal views and

opinions (Caballo, Salazar, Irurtia, Arias, & Guillen, 2010; Mesa, Beidel, & Bunnell, 2014). Sensitivity to others may be more strongly related to anxiety in individuals with generalized anxiety disorder, as a characteristic of this disorders is excessive worrying, for instance about harm to others (American Psychiatric Association, 2013).

Several limitations of the current studies have to be noted. First, there are obvious limitations related to the utilized self-report measures, including social desirability (Holden & Troister, 2009). Self-reported anxiety also tends to correlate modestly with behavioral and physiological measures (e.g., Hoehn-Saric & McLeod, 2000; Stoyanova & Hope, 2012). Additional utilization of physiological measures in subsequent studies is recommended, as it could provide more insight into the relation between autonomy-connectedness and self-reported versus physiologically measured anxiety. Also, it is unclear to what extent our findings can be generalized to older populations, as our student samples were relatively young. Some autonomy-connectedness components correlated with age, suggesting that autonomy may still be developing in these young adults. Furthermore, our two studies, although laboratory-based and experimental (Study 2), do not inform us conclusively about the role of possible confounding variables in the relation between autonomy-connectedness and anxiety. Study 1 did not include a control group, leaving open the possibility that simply watching any video could have accounted for the results, although this seems unlikely given the validity of the anxiety manipulation (Schaefer et al., 2010). Study 2 did not include a measurement moment prior to viewing the nature clip, rendering assessment of its effects impossible. Also, one may argue that the effects of self-awareness on anxiety may be party accounted for by effects of self-esteem. Investigating the role of such factors is therefore warranted.

Within the scope of these limitations, several strengths and conclusions may be highlighted. These studies were the first laboratory-based (Study 1) and experimental (Study 2) studies on autonomy-connectedness and anxiety, and demonstrated individual differences in anxious responses related to the separate autonomy components. The results brought forward by the present paper therefore extend the existing knowledge on the relation between autonomy and anxiety, by demonstrating that specific autonomy components may render individuals vulnerable in specific situations, consistent with a stress-vulnerability model. Collectively, the results suggest the importance of a firm and affirmed sense of self and a regulated sensitivity towards the emotions and states of others for experiencing and managing anxiety and stress. Autonomy-connectedness may be a promising target for interventions for the treatment of anxiety (Bekker et al., 2018; Maas, Van Balkom, et al., 2018).

Data availability

The datasets generated and analyzed during the current study are available in the Data Archiving and Networked Services (DANS) Dataverse repository, https://hdl.handle.net/10411/SSPOLG.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by Tilburg University.

References

Alford, B. A., & Gerrity, D. M. (1995). The specificity of sociotropy-autonomy personality dimensions to depression vs anxiety. *Journal of Clinical Psychology*, *51*(2), 190–195. doi:10.1002/jclp.10199

Allen, N. B., de L. Horne, D. J., & Trinder, J. (1996). Sociotropy, autonomy, and dysphoric emotional responses to specific classes of stress: A psychophysiological evaluation. *Journal of Abnormal Psychology*, *105*(1), 25–33. doi:10.1037/0021-843X.105.1.25

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: APA. doi:10.1176/appi.books.9780890425596.dsm05

Auyeung, K. W., & Alden, L. E. (2016). Social anxiety and empathy for social pain. *Cognitive Therapy and Research*, *40*(1), 38–45. doi:10.1007/s10608-015-9718-0

Bachrach, N. (2015). *The role of sex, attachment, and autonomy-connectedness in personality pathology*. Rotterdam: Calbona. doi:10.1002/pmh.1309

Bachrach, N., Bekker, M. H. J., & Croon, M. A. (2013). Autonomy-connectedness and internalizing-externalizing personality psychopathology, among outpatients. *Journal of Clinical Psychology*, *69*(7), 718–726. doi:10.1002/jclp.21940

Barnes, L. L. B., Harp, D., & Jung, W. S. (2002). Reliability generalization of scores on the Spielberger state-trait anxiety inventory. *Educational and Psychological Measurement*, *62*(4), 603–618. doi:10.1177/0013164402062004005

Beck, A. T. (1983). Cognitive therapy of depression: New perspectives. In P. J. Clayton & J. E. Barrett (Eds.), *Treatment of depression: Old controversies and new approaches*. New York: Raven Press. doi:10.1016/0005-7967(84)90047-0

Beidel, D. C., Turner, S. M., Jacob, R. G., & Cooley, M. R. (1989). Assessment of social phobia: Reliability of an impromptu speech task. *Journal of Anxiety Disorders*, *3*(3), 149–158. doi:10.1016/0887-6185(89)90009-1

Bekker, M. H. J. (1993). The development of an autonomy scale based on recent insights into gender identity. *European Journal of Personality*, *7*, 177–194. doi:10.1002/per.2410070304

Bekker, M. H. J., Bachrach, N., & Croon, M. A. (2007). The relationships of antisocial behavior with attachment styles, autonomy-connectedness, and alexithymia. *Journal of Clinical Psychology*, *63*(6), 507–527. doi:10.1002/jclp.20363

Bekker, M. H. J., & Belt, U. (2006). The role of autonomy-connectedness in depression and anxiety. *Depression and Anxiety*, *23*(5), 274–280. doi:10.1002/da.20178

Bekker, M. H. J., & Croon, M. A. (2010). The roles of autonomy-connectedness and attachment styles in depression and anxiety. *Journal of Social and Personal Relationships*, *27*(7), 908–923. doi:10.1002/da.20178

Bekker, M. H. J., Croon, M. A., Van Balkom, E. G. A., & Vermee, J. B. G. (2008). Predicting individual differences in autonomy-connectedness: The role of body awareness, alexithymia, and assertiveness. *Journal of Clinical Psychology*, *64*(6), 747–765. doi:10.1002/jclp.20486

Bekker, M. H. J., Kouwenhoven, B., Roos, A., Soekar, S., Van Houten, J., & Vossen, J. (2018). *Autonomy-connectedness enhancing group intervention: Building the self and its steering capacity*: Manuscript submitted for publication.

Bekker, M. H. J., & Van Assen, M. A. L. M. (2006). A short form of the autonomy scale: Properties of the autonomy–connectedness scale (ACS–30). *Journal of Personality Assessment*, *86*, 51–60. doi:10.1207/s15327752jpa8601_07

Bekker, M. H. J., & van Assen, M. A. L. M. (2017). Autonomy-connectedness mediates sex differences in symptoms of psychopathology. *PloS One*, *12*(8), e0181626. doi:10.1371/journal.pone.0181626

Bekker, M. H. J., Van Helsdingen, M. A., Rutten, L., & Kouwenhoven, B. (2016). *Protocol voor autonomie-versterkende interventie* [Protocol for autonomy enhancing treatment]. Houten: Bohn Stafleu Van Loghum. doi:10.1007/978-90-368-1062-3_1

Beyers, W., Goossens, L., Vansant, I., & Moors, E. (2003). A structural model of autonomy in middle and late adolescence: Connectedness, separation, detachment, and agency. *Journal of Youth and Adolescence*, *32*(5), 351–365. doi:10.1023/A:1024922031510

Bowlby, J. (1969). *Attachment and loss*. New York: Basic Books.

Caballo, V. E., Salazar, I. C., Irurtia, M. J., Arias, B., & Guillen, J. L. (2010). Relationships between social anxiety and personality traits, styles, and disorders. *Behavioral Psychology-Psicologia Conductual*, *18*(2), 259–276.

Clark, D. A., & Beck, A. T. (1991). Personality factors in dysphoria: A psychometric refinement of beck's sociotropy-autonomy scale. *Journal of Psychopathology and Behavioral Assessment*, *13*(4), 369–388. doi:10.1007/BF00960448

Clark, D. A., Beck, A. T., & Brown, G. K. (1992). Sociotropy, autonomy, and life event perceptions in dysphoric and nondysphoric individuals. *Cognitive Therapy and Research*, *16*(6), 635–652. doi:10.1007/BF01175404

Ewart, C. K., Jorgensen, R. S., & Kolodner, K. B. (1998). Sociotropic cognition moderates blood pressure response to interpersonal stress in high-risk adolescent girls. *International Journal of Psychophysiology*, *28*(2), 131–142. doi:10.1016/S0167-8760(97)00091-3

Grondin, O., Johnson, E. I., Husky, M., & Swendsen, J. (2011). Sociotropy and autonomy vulnerabilities to depressed mood: A daily life comparison of Reunion Island and metropolitan France. *Journal of Cross-Cultural Psychology*, *42*(6), 928–943. doi:10.1177/0022022110383422

Hammen, C., Ellicott, A., & Gitlin, M. (1992). Stressors and sociotropy/autonomy: A longitudinal study of their relationship to the course of bipolar disorder. *Cognitive Therapy and Research*, *16*(4), 409–418. doi:10.1007/BF01183165

Hedberg, A. G. (1972). Review of state-trait anxiety inventory. *Professional Psychology*, *3*(4), 389–390. doi:10.1037/h0020743

Hmel, B. A., & Pincus, A. L. (2002). The meaning of autonomy: On and beyond the interpersonal circumplex. *Journal of Personality*, *70*(3), 277–310. doi:10.1111/1467-6494.05006

Hoehn-Saric, R., & McLeod, D. (2000). Anxiety and arousal: Physiological changes and their perception. *Journal of Affective Disorders*, *61*(3), 217–224. doi:10.1016/S0165-0327(00)00339-6

Holden, R. R., & Troister, T. (2009). Developments in the self-report assessment of personality and psychopathology in adults. *Canadian Psychology/Psychologie Canadienne*, *50*(3), 120–130. doi:10.1037/a0015959

Husky, M. M., Mazure, C. M., Maciejewski, P. K., & Swendsen, J. D. (2007). A daily life comparison of sociotropy-autonomy and hopelessness theories of depression. *Cognitive Therapy and Research*, *31*(5), 659–676. doi:10.1007/s10608-006-9025-x

Iacoviello, B. M., Grant, D. A., Alloy, L. B., & Abramson, L. Y. (2009). Cognitive personality characteristics impact the course of depression: A prospective test of sociotropy, autonomy and domain-specific life events. *Cognitive Therapy and Research*, *33*(2), 187–198. doi:10.1007/s10608-008-9197-7

Koolhaas, J. M., Bartolomucci, A., Buwalda, B., de Boer, S. F., Flugge, G., Korte, S. M., … Fuchs, E. (2011). Stress revisited: A critical evaluation of the stress concept. *Neuroscience and Biobehavioral Reviews*, *35*(5), 1291–1301. doi:10.1016/j.neubiorev.2011.02.003

Liu, R. T., & Alloy, L. B. (2010). Stress generation in depression: A systematic review of the empirical literature and recommendations for future study. *Clinical Psychology Review*, *30*(5), 582–593. doi:10.1016/j.cpr.2010.04.010

Maas, J., Laceulle, O., & Bekker, M. (2018). The role of autonomy-connectedness in the relation between childhood stressful life events, current posttraumatic symptoms, and internalizing psychopathology in adulthood. *Psychological Trauma: Theory, Research, Practice, and Policy*, *2018*, doi:10.1037/tra0000412

Maas, J., Van Balkom, A. J. L. M., Van Assen, M. A. L. M., Rutten, E. A. P., Janssen, D., Van Mastrigt, J. M., & Bekker, M. H. J. (2018). *Enhancing autonomy-connectedness in anxiety-disordered patients: A randomized controlled trial:* Manuscript submitted for publication.

Masten, A. S., & Tellegen, A. (2012). Resilience in developmental psychopathology: Contributions of the Project competence Longitudinal Study. *Development and Psychopathology*, *24*(2), 345–361. doi:10.1017/S095457941200003X

Mesa, F., Beidel, D. C., & Bunnell, B. E. (2014). An examination of psychopathology and daily impairment in adolescents with social anxiety disorder. *PloS One*, *9*(4), e93668. doi:10.1371/journal.pone.0093668

Netherlands Trial Registry. (2017). Amsterdam: Academic Medical Center (The Netherlands). 2017 March 6. Identifier NTR6473, *Treatment effects and cost-effectiveness of Autonomy-Enhancing Treatment*. Retrieved from http://www.trialregister.nl/trialreg/admin/rctview.asp?TC=6473.

Ploeg, H. M. v. d., Defares, P. B., & Spielberger, C. D. (1980). *Handleiding bij de Zelf-Beoordelings Vragenlijst, ZBV: Een Nederlandstalige bewerking van de Spielberger State-Trait Anxiety Inventory, STAI-DY* [Manual for the Self Assessment Questionnaire, SAQ: A Dutch adaptation of the Spielberger State-Trait Anxiety Inventory, STAI-DY]. Lisse: Swets & Zeitlinger.

Raghavan, C., Le, H. N., & Berenbaum, H. (2002). Predicting dysphoria and hostility using the diathesis-stress model of sociotropy and autonomy in a contextualized stress setting. *Cognitive Therapy and Research*, *26*(2), 231–244. doi:10.1023/A:1014525920767

Rutten, E. A. P., Bachrach, N., van Balkom, A., Braeken, J., Ouwens, M. A., & Bekker, M. H. J. (2016). Anxiety, depression and autonomy-connectedness: The mediating role of alexithymia and assertiveness. *Psychology and Psychotherapy: Theory, Research and Practice*, *89*(4), 385–401. doi:10.1111/papt.12083

Schaefer, A., Nils, F., Sanchez, X., & Philippot, P. (2010). Assessing the effectiveness of a large database of emotion-eliciting films: A new tool for emotion researchers. *Cognition & Emotion*, *24*(7), 1153–1172. doi:10.1080/02699930903274322

Stoyanova, M., & Hope, D. (2012). Gender, gender roles, and anxiety: Perceived confirmability of self report, behavioral avoidance, and physiological reactivity. *Journal of Anxiety Disorders*, *26*(1), 206–214. doi:10.1016/j.janxdis.2011.11.006

Willems, L. F. M., Tuender-de Haan, H. A., & Defares, P. B. (1973). Een schaal om sociale angst te meten [A scale for measuring social anxiety]. *Nederlands Tijdschrift voor de Psychologie*, *28*, 415–422.