# Social anxiety and emotion regulation flexibility:

# Considering emotion intensity and type as contextual factors

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**Abstract**

Background and Objectives: Individuals with social anxiety disorder have often been considered inflexible in their emotion regulation. The aim of this study was to investigate emotion regulation flexibility in socially anxious individuals in response to two contextual factors, namely different levels of emotion intensity and emotion type. Methods: A daily diary approach was employed, investigating emotion regulation (i.e., experiential avoidance, expressive suppression and cognitive reappraisal) in college students scoring high (*N* = 62; HSA) and low (*N* = 52; LSA) on social anxiety. Results: Results revealed that HSAs were found to use more experiential avoidance than LSAs, especially at higher levels of negative intensity. The use of this emotion regulation strategy appeared to be driven by guilt, nervousness, and sadness. There were no between-group differences concerning the other strategies in response to varying levels of emotional intensity. Conclusions: Together, the results provide evidence for inflexible emotion regulation in HSAs, reflected in an unwillingness to experience negative emotions.

Keywords: social phobia; emotion regulation; emotion regulation flexibility; experiential avoidance; expressive suppression

## Background and objectives

Individuals with social anxiety disorder (SAD) have been described as being inflexible in their emotion regulation in that they habitually engage emotion suppression and avoiding strategies (Goldin, Jazaieri, & Gross, 2014; Kashdan & Rottenberg, 2010). Experiential avoidance refers to the avoidance and control of unwanted internal experiences such as thoughts, feelings, memories, and bodily sensations (Hayes et al., 2004), and reflects an unwillingness to experience certain sensations or emotions as well as an attempt to escape from such private events (Hayes et al., 2004). Expressive suppression on the other hand concerns the *inhibition of ongoing emotion-expressive behavior* (Gross, 2014). Both strategies have been associated with a number of negative psychological and physiological outcomes (e.g., Gross, 2014; Hayes, Luoma, Bond, Masuda, & Lillis, 2006). In contrast, cognitive reappraisal (i.e., thinking differently about a situation in order to alter its emotional impact; Gross, 2014) has been associated with greater well-being (Gross & John, 2003). Socially anxious individuals and individuals with SAD have been found to use more experiential avoidance and expressive suppression both at the trait level and on a daily basis (e.g., Blalock, Kashdan, & Farmer, 2016; Goldin et al., 2014; Kashdan & Rottenberg, 2010; Kashdan & Steger, 2006; O'Toole, Jensen, Fentz, Zachariae, & Hougaard, 2014; Werner, Goldin, Ball, Heimberg, & Gross, 2011). These individuals may also use less reappraisal or feel less self-efficacious in the employment of this strategy (e.g., Goldin, Manber, Hakimi, Canli, & Gross, 2009; O'Toole et al., 2014; Werner et al., 2011).

A number of studies have used an experience sampling or daily diary approach in the study of the dynamics between emotion regulation and its consequences in social anxiety. For instance, in an experience sample study, Kashdan et al. (2014) found that momentary experiential avoidance was more strongly associated with anxiety during social interactions for individuals with

SAD than for healthy controls. Moreover, they found that greater experiential avoidance during a self-disclosure conversation temporally preceded social anxiety symptoms over the remainder of the conversation. The use of expressive suppression has also been linked with detrimental outcomes in socially anxious individuals. For instance, two studies have found that socially anxious individuals experience fewer positive emotions on days when they experience higher levels of social anxiety and use expressive suppression (Kashdan & Steger, 2006; O'Toole et al., 2014). With respect to causality between these variables, it has been found that when people high in social anxiety employ expressive suppression of positive emotions, they report fewer positive social events and less positive emotion on the subsequent day (Farmer & Kashdan, 2012). Thus, the use of expressive suppression and experiential avoidance may result in a variety of negative outcomes, including both increasing negative affect and decreasing positive affect.

Given findings as described above, expressive suppression and experiential avoidance have often been considered maladaptive and reappraisal strategies adaptive. This assumption that an emotion regulation strategy is either adaptive or maladaptive has been termed *the fallacy of uniform effect* (Bonanno & Burton, 2013) as both theoretical contributions and empirical evidence fail to support a uniform effect of individual emotion regulation strategies (Bonanno & Burton, 2013; Webb, Miles, & Sheeran, 2012). Instead, it has been proposed that the result of an emotion regulation strategy is not only a result of the strategy itself, but of *how* the strategy is employed, and that it can be adaptive to both engage (e.g., reappraisal) and disengage (e.g., distraction) from emotions, depending – in part - on the contextual demands (e.g., Aldao, Sheppes, & Gross, 2015; Bonanno, Papa, Lalande, Westphal, & Coifman, 2004; Bonanno & Burton, 2013). Indeed, healthy individuals show a *regulatory decision making pattern*; in low-intensity emotional situations healthy individuals were likely to employ *reappraisal*, whereas in high-intensity negative

emotional situations, they more often chose to employ the attention deployment strategy *distraction* (Sheppes, Scheibe, Suri, & Gross, 2014). Furthermore, Dixon-Gordon, Aldao, and De Los Reyes (2015) investigated the impact of two contextual factors, emotion intensity and emotion type, on spontaneous emotion regulation. They asked 562 undergraduate students to recall stressful situations and report their emotion regulation during these. Results showed that choice of emotion regulation strategies varied both according to emotion intensity and emotion type thereby underscoring the importance of taking contextual factors into account.

In this study of emotion regulation flexibility in social anxiety we focused on two contextual factors, namely emotion intensity and type, and the purpose of the present paper was to investigate if socially anxious individuals would show flexible emotion regulation across varying levels of emotion *intensity* and emotion *type*. We investigated this in a daily diary study of individuals high (HSA) and low (LSA) in social anxiety. We chose a diary study, since daily measurements are suited to capture more dynamic aspects of the variables of interest within the context of everyday activities (Connor et al., 2003).

Aim 1: We wanted to explore potential differences in emotion regulation flexibility in LSAs and HSAs. It was hypothesized that HSAs would differ from LSAs in their use of expressive suppression and experiential avoidance in response to varying levels of negative and positive emotions. Thus, an interaction effect between social anxiety and emotion intensity in the prediction of emotion regulation strategies was hypothesized.

Aim 2: We wanted to explore if there were between-group differences in choice of emotion regulation strategies depending on intensity levels of *specific* emotions, that is, if an interaction effect between social anxiety and individual emotion intensity levels predicted the use of emotion regulation.

## Methods

### Participants and procedures[1]

Participants were recruited from a pool of volunteer first-year college students from all faculties. A total of 131 individuals with a maximum score on the self-reported version of Liebowitz Social Anxiety Scale (LSAS; Fresco et al., 2001; Liebowitz, 1987) of 21 (lower quartile), and 130 individuals with a minimum LSAS score of 47 (upper quartile) were invited to participate. Of these, 164 participants completed at least one record (low social anxiety [LSA] = 75, high social anxiety [HSA] = 89). Participants were asked to fill out daily online questionnaires for 11 consecutive days. They were sent an e-mail every morning and a reminder e-mail every evening should they not have replied. All participants provided written consent prior to participation, and the local ethics committee, De Videnskabsetiske Komiteer for Region Midtjylland in Denmark, approved the study procedures.

### Measures

*Trait measures*

All internal consistency values given below were calculated based on this study's sample.

Trait social anxiety was assessed by the self-report version of the LSAS. The LSAS consists of 24 items concerning fear and avoidance of specific social situations, all rated on a 4-point Likert-scale. Fear is rated from ''none''to ''severe'', and avoidance is rated from ''never'' to ''usually''. (Cronbach's alpha ($\alpha$) = .97 for the full scale).

Three trait emotion regulation strategies were assessed. Cognitive reappraisal (6 items, α = .86) and expressive suppression (4 items, $\alpha$ = .74) were assessed by the Emotion Regulation

[1] Results from this study have previously been published (O'Toole, Jensen, Fentz, Zachariae, & Hougaard, 2014). There is no overlap between the past and present publication concerning main hypotheses and analyses.

Questionnaire (ERQ; Gross & John, 2003), with items being rated on a 7-point Likert-scale from ‘‘strongly disagree’’ to ‘‘strongly agree’’. Experiential avoidance was assessed by 7 items ($\alpha$ = .73), factorially derived (Bond and Bunce, 2003) from the Acceptance and Action Questionnaire (AAQ; Hayes et al., 2004). Items were rated on a 7-point Likert-scale.

*Daily measures*

All state measure items in the daily records were linguistically modified to cover daily (emotional) events. The internal consistency values given below were calculated from the first daily observation in this sample.

Participants were asked to rate daily positive and negative affect during the emotionally most intense situation they had encountered that particular day. Affect was measured by five positive (happiness, enthusiasm, amusement, curiosity, and pride, $\alpha$ = .75) and five negative (shame, nervousness, anger, sadness, guilt, $\alpha$ = .75) emotions rated on a 5-point Likert-scale (cf. Feldman Barrett et al., 2001; Kashdan & Steger, 2006).

Daily emotion regulation strategies were assessed by 4 items each, rated on a 7-point Likert-scale (cf. Kashdan & Steger, 2006; O’Toole et al., 2014). Daily expressive suppression ($\alpha$ = .80) was measured by the four items from the expressive suppression subscale, e.g., “I controlled my emotions by not expressing them”. Four items were chosen for daily cognitive reappraisal (e.g., “When I wanted to feel less negative emotion, I changed the way I was thinking about the situation”, $\alpha$ = .70 and daily experiential avoidance (e.g., “I tried to suppress thoughts and feelings that I didn’t like by just not thinking about them”, $\alpha$ = .79) based prior scale validation studies. Specifically, the four items with the highest factor loadings were chosen (see Bond & Bunce, 2003; Kashdan & Steger, 2006). Participants were asked to think about the emotionally most intense

situation and indicate their emotion regulation efforts during this situation. A total score was calculated for each of the individual strategies.

Daily social anxiety was assessed by seven items, rated on a 5-point Likert-scale from ‘‘strongly disagree’’ to ‘‘strongly agree’’ (cf. Kashdan & Steger, 2006; O’Toole et al., 2014). Participants rated how much social anxiety they had experienced during that particular day ($\alpha$ = .90).

The items making up the daily measures of emotion regulation and social anxiety have previously been validated against their trait measure (see Kashdan & Steger, 2006; O’Toole et al., 2014). O’Toole et al. (2014) tested the validity of the daily measures, the association between trait and daily measures were explored in multilevel models, where the trait version of the measure predicted the daily version of the measure. All trait measures (social anxiety: $r$ = .6, cognitive reappraisal: $r$ = .3, expressive suppression: $r$ = .6, experiential avoidance: $r$ = .7) significantly predicted all the corresponding daily measures ($p$s < .05).

**Analytic strategy**

All data were gathered via online questionnaires where answers were forced, leaving no missing data at the item level. The data were hierarchically arranged in two levels. Daily records (level 1) were nested within individuals (level 2). Multilevel linear models were based on all obtained daily records, holding 911 observations nested within the 114 individuals with at least three records. Thus, no participants were deleted from the analyses and provided information according to the number of completed records. All models included a random intercept and slope if it improved the model fit as evaluated by a chi-square test of the change in the *-2LL* fit statistics. The covariance structure for repeated effects (diagonal and AR1) was also evaluated by a chi-square test of the change in the *-2LL* fit statistics.

All hypotheses concerning emotion regulation flexibility were investigated in models where emotion intensity, the LSAS group variable (HSA vs. LSA), and their product served as independent variables predicting daily emotion regulation. Social anxiety was a dichotomous variable, coded as 0 (i.e., LSA) and 1 (i.e., HSA), where emotion intensity and emotion regulation variables were continuous. A significant interaction term indicated a moderating role of social anxiety, that is, a between-group difference in the association between emotion intensity and emotion regulation.

Separate models were run for positive and negative affect. Due to the multiple comparisons, trend-wise significant results are noted but not further explored. Cohen's *d* was derived from the *F*-test and calculated as $d = 2*\sqrt{(F/df)}$ (cf. Verbeke & Molenberghs, 2000). All analyses were conducted in IBM SPSS Statistics version 24.

Concerning missing data, the number of completed records was: 3: $N = 11$, 4: $N = 6$, 5: $N = 9$, 6: $N = 10$, 7: $N = 9$, 8: $N = 9$, 9; $N = 13$, 10: $N = 20$, 11: $N = 27$, corresponding to a mean completion of 73%. There was no missing data at the item level as questionnaires were completed online with no choice of leaving an item unanswered.

## Results

The mean age of the sample was 22.4 ($SD = 5.8$, range: 18-54) years, and 106 (64%) were women. The LSA and HSA groups differed statistically significantly with respect to gender, with more women in the HSA (73%) than the LSA (55%) group, $\chi^2(1, N = 114) = 6.0$, $p = .014$, and there was a borderline significant tendency for the LSA group to be older, $t(118.5) = 2.0$, $p = .051$ (mean difference: 1.9 years). Multilevel linear models were based on the 114 individuals that had recorded at least three observations, 52 with LSA and 62 with HSA, respectively.

HSAs used more experiential avoidance, $t(121.1) = 5.4$, $p < .001$, $d = 0.99$, and more expressive suppression, $t(119.5) = 5.3$, $p < .001$, $d = 0.96$, than LSAs, but the two groups did not

differ in their use of cognitive reappraisal, $t(127.3) = 0.2$, $p = .856$, $d = 0.03$. HSAs experienced more negative affect across the daily events, $t(104.9) = 4.7$, $p < .001$, $d = 0.91$, and less positive affect, $t(116.0) = -3.5$, $p = .001$, $d = -0.64$, than LSAs. Across groups, there was a negative association between positive emotion intensity and both experiential avoidance, $t(862.6) = -3.7$, $p < .001$, $d = -0.26$, and expressive suppression, $t(191.3) = -3.2$, $p=.001$, $d = -0.47$. A positive association was found between negative emotion intensity and both experiential avoidance, $t(126.9) = 8.9$, $p < .001$, $d = 1.56$, and expressive suppression, $t(114.2) = 3.9$, $p < .001$, $d = 0.73$. Cognitive reappraisal was positively associated with positive emotion intensity, $t(873.4) = 2.5$, $p = .012$, $d = 0.17$, but not associated with negative emotion intensity, $t(113.7) = 0.3$, $p = .745$, $d = 0.06$.

*Results related to aim 1: Between-group differences*

It was then investigated if social anxiety moderated the associations between emotion intensity and emotion regulation. There was an interaction effect predicting experiential avoidance, $t(852.5) = 3.3$, $p < .001$, $d = 0.25$. Overall, the association between negative emotion intensity and experiential avoidance was significant in both the HSAs, $t(85.5) = 8.9$, $p < .001$, $d = 1.93$, and LSAs, $t(54.0) = 3.5$, $p = .001$, $d = 0.95$, both of a large magnitude. However, the association was stronger in the HSAs, who used more experiential avoidance at both low, $t(97.5) = 3.8$, $p < .001$, $d = 0.76$, and more so at high, $t(96.7) = 4.1$, $p < .001$, $d = 0.88$, negative emotion intensities (i.e., below and above the median, see Figure 1). There was no such interaction effect predicting expressive suppression, $t(863.2) = -0.7$, $p = .472$, $d = -0.05$, or cognitive reappraisal, $t(849.3) = 0.6$, $p = .565$, $d = 0.04$.

No interaction with *positive* emotion intensity was found for experiential avoidance, $t(828.8) = -1.3$, $p = .168$, $d = 0.09$, expressive suppression, $t(848.6) = -1.9$, $p = .060$, $d = 0.13$, or cognitive reappraisal, $t(860.0) = 1.1$, $p = .257$, $d = 0.08$.

**********Figure 1 about here**********

*Results related to aim 2: Emotion type*

Since there was an interaction effect concerning the employment of experiential avoidance during negative affect, it was explored which types of emotions possibly drove this effect. An interaction effect was found between *guilt* intensity and group, $t(73.1) = 5.3$, $p = .024$, $d = 0.54$, as well as for *nervousness*, $t(128.2) = 2.1$, $p = .037$, $d = 0.37$, and for *sadness*, $t(112.6) = 2.0$, $p = .050$, $d = 0.37$, where the association between the intensity of the specific emotions and the use of experiential avoidance was stronger in HSAs. Concerning guilt, the association between guilt intensity and experiential avoidance was not significant in the LSA group, $t(29.8) = 1.7$, $p = .096$, $d$=0.62, but significant in the HSA group, $t(54.1) = 6.1$, $p$<.001, $d = 1.66$. As for nervousness, the association between intensity and experiential avoidance was significant in both groups, although stronger in the HSA group (LSA: $t(37.9) = 2.3$, $p = .025$, $d = 0.76$, HSA: $t(79.0) = 5.2$, $p < .001$, $d = 1.18$). The same was true for sadness (LSA: $t(39.5) = 2.9$, $p = .006$, $d = 0.92$, HSA: $t(67.1) = 6.8$, $p < .001$, $d = 1.68$). No interaction effects were found *anger*, $t(75.8) = 0.9$, $p = .396$, $d = 0.19$, or *shame*, $t(62.7) = 1.4$, $p = .141$, $d = 0.37$.

## Discussion

Overall, HSAs experienced more negative affect than LSAs. Furthermore – concerning aim 1 - HSAs differed from LSAs in that they used *more* experiential avoidance at increasing levels of negative emotion intensity. Thus, HSAs generally employed experiential avoidance more than the LSAs, and more so at higher levels of negative emotion intensity. This result may reflect a more

pronounced unwillingness to experience intense negative affect, with HSAs responding with more experiential avoidance in such case. This increased use of experiential avoidance may be problematic as previous findings have linked experiential avoidance to heightened measures of psychopathology and poor positive affect (e.g., Hayes et al., 2004, Kashdan, Barrios, Forsyth, & Steger, 2006). Specifically, it has previously been established that experiential avoidance precedes symptoms of social anxiety (Kashdan et al., 2014). Concerning positive affect, HSAs experienced less positive affect in this study as has been consistently demonstrated in the literature (e.g., Kashdan, 2007; Kashdan et al., 2011). However, when it comes to the variation in employment of emotion regulation strategies in response to different intensity levels of *positive* emotions, HSAs and LSAs did not differ.

Using significantly more experiential avoidance at higher emotional intensities may be indicative of a perception of intense negative emotions as more intolerable in the HSA group. It was therefore explored if HSAs used more experiential avoidance in response to certain negative emotions. In exploring emotion type – concerning aim 2 – it was revealed that the HSAs used more experiential avoidance than the LSAs at increasing intensity levels of both guilt sadness, and nervousness, whereas no such difference was found for shame and anger. Thus, socially anxious individuals may perceive guilt, sadness and nervousness as more intolerable than other negative emotions.

Avoiding certain emotions may be problematic in a number of ways. The affective sciences are converging in the assumption that emotions are functional in that they are generated in response to motivationally salient stimuli (Gross, 2014; Mennin & Farach, 2007; Scherer, 2000). As such, avoiding emotional experiences may prevent an individual from gaining access to the information held by emotions about the situation and possible courses of action (Kashdan, Barrett,

& McKnight, 2015; Mennin & Fresco, 2014). For the socially anxious individual, avoiding the experience of sadness, for instance, may prevent both the identification of the need that was activated in the generation of sadness (e.g., sadness about not connecting with other people), and blur the possible actions that the individual could take, if they had actually experienced the action tendencies generated by sadness.

Possible treatment implications following this work point to explicitly targeting experiential avoidance. A number of treatments do so (e.g., Acceptance and Commitment Therapy: Hayes, Pistorello, & Levin, 2012: Emotion Regulation Therapy: Mennin & Fresco, 2014), and some have already shown promising results in the treatment of SAD (e.g., Dalrymple & Herbert, 2007). Furthermore, the effect of cognitive behavioral therapy on symptoms of social anxiety has been found to be mediated by a decrease in experiential avoidance (O'Toole, Mennin, Hougaard, Zachariae, & Rosenberg, 2015), thereby underscoring the importance of working with this construct.

Future work on emotion regulation flexibility, specifically concerning the use of experiential avoidance, is clearly needed in order to better understand adaptive emotion regulation and how clinical populations may or may not differ from healthy individuals. In the present study, emotional intensity and type of emotion have been investigated as contextual factors, according to which the individual may adjust their use of different emotion regulation strategies. A host of other contextual variables may be explored. Bonanno and Burton (2013) have reviewed a number of factors that empirically have been found to determine a particular emotion regulation strategy's effect. For instance, the *controllability* and overall *level* of stress may decide if a strategy such as reappraisal is effective in the down-regulation of emotion. For instance, Troy, Wilhelm, Shallcross, and Mauss (2010) and Troy, Shallcross, and Mauss (2013) found that reappraisal was

associated with less depression among individuals who experienced high levels of uncontrollable stress, but with more depression among individuals who experienced controllable stress. Thus, in the case of social anxiety, one may be interested in exploring not only the emotion intensity level, but also the extent to which the individuals perceive the experienced affect as controllable. Such research would be important in order to decide appropriate alternatives to experiential avoidance. Another important consideration is that of goal-achievement. A framework has been outlined by Aldao et al. (2015) in which it has been proposed that the adaptiveness of emotion regulation should be evaluated against the person's short- and long-term goals. An individual with SAD may have a short-term, so-called disorder-relevant goal of feeling as little anxiety as possible, and may therefore be avoiding going on dates, which conflicts with a long-term goal of being in a romantic relationship. Thus, one possible future line of work consists of developing ways to capture these conflicts and evaluate emotion regulation adaptiveness according to the likelihood that the individual, in their emotion regulation efforts, is effective in solving such conflicts and pursuing personally meaningful goals.

The present study adds to the literature in investigating emotion regulation as it occurs in the everyday lives of the participants, without relying solely on trait questionnaires that are likely to be insensitive to the daily dynamics of emotion regulation. Furthermore, the diary approach is likely to be less vulnerable to recall bias as participants were asked to fill out questionnaires daily. Limitations of the present study include a lack of ability to infer causality since measures were obtained at the same point in time. Also, given the type of sample, results may not be generalized to clinical or older populations. The study is further limited by a relatively large number of participants not completing the planned number of daily records. It is possible that this could have been prevented if the online questionnaire had not forced participants to answer all items.

Furthermore, records obtained the same day and the day after not be of equal validity, and more than one daily observation could also have provided more nuanced information. Finally, multiple comparisons were conducted, which raises the issue of possible type-I error. Results should therefore be interpreted in light of the detected effect sizes.

## Conclusions

HSAs did vary their use of cognitive reappraisal and expressive suppression in response to negative emotion intensity in similar ways as individuals low in social anxiety. However, HSAs used experiential avoidance more at higher levels of negative emotional intensity compared with individuals low in social anxiety. This effect seems to particularly be driven by an unwillingness to experience intense levels of guilt, nervousness, and sadness. Together, the results provide evidence for inflexible emotion regulation in socially anxious individuals, reflected in an unwillingness to experience negative emotions.

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Figure 1

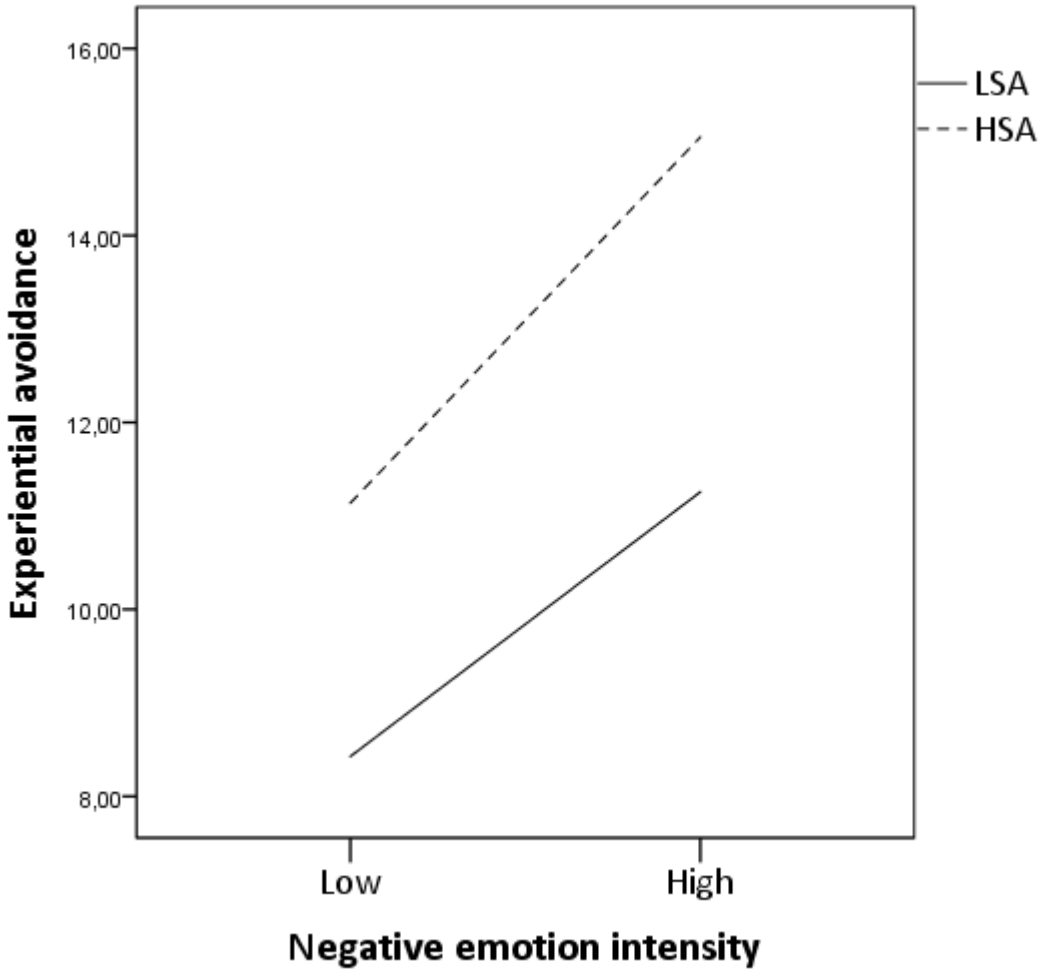


*Figure 1.* Differences between groups in experiential avoidance used at high and low levels of negative emotion intensity.

*Note.* LSA=Low social anxiety; HAS=High social anxiety.