Empirical Articles

Predictors of Loneliness in a Sample of College Men and Women in Cyprus: The Role of Anxiety and Social Skills

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Abstract

Aim: This investigation examined the association between social anxiety and loneliness, and the role of associated characteristics specifically self-esteem, social skills and anxiety sensitivity, among young adults in Cyprus, and potential gender differences in the prediction of perceived loneliness.

Method: Questionnaires on loneliness, social skills, anxiety sensitivity and self-esteem were administered to a college sample in Cyprus.

Results: Mediated regressions supported full mediation by social skills and self-esteem, but not by anxiety sensitivity in the association between social anxiety and loneliness. For men, loneliness was mostly predicted by anxiety sensitivity, but among women by poor social skills and lower self-esteem. For neither gender were these effects moderated by social anxiety level.

Conclusion: Social anxiety and loneliness are related but distinct constructs. Interventions focusing on social skill acquisition and practice, and anxiety tolerance for men may improve confidence and ultimately result in decreased loneliness among youth.

Keywords: social anxiety, loneliness, peer relationships, anxiety sensitivity, self-esteem, anxiety

Loneliness is a common experience across development. Peplau and Perlman (1982) defined loneliness as the aversive state experienced when there is a discrepancy between the relationships one wishes to have, and those that one perceives to have. It peaks in adolescence and young adulthood (Victor & Yang, 2012), perhaps due to the critical role of peer relationships during this developmental period. Loneliness is linked to poor mental health, depression and anxiety (Cacioppo, Hughes, Waite, Hawkley, & Thisted, 2006).

Lonely individuals tend to be characterized by certain traits. Low self-esteem increases the likelihood of loneliness, but poor social relations further undermine one's self-regard (Peplau & Perlman, 1982). Recent evidence suggests that the dominant path between these two variables is low self-esteem predicting loneliness both concurrently and later in life (Vanhalst, Goossens, Luyckx, Scholte, & Engels, 2013), while a meta-analytic study on predictors of adolescent loneliness (Mahon, Yarcheski, Yarcheski, Cannella, & Hanks, 2006) found that self-esteem predicts loneliness with a large effect size. Lonely people tend to see themselves as inferior, unattractive, unlovable, and socially incompetent (Jin & Park, 2013; Junttila, Vauras, Niemi, & Laakkonen, 2012), and perceive their social
acceptance to be low (Mahon et al., 2006), so they may avoid social interactions, missing out on opportunities to receive positive feedback. They also attribute their perceived social rejection to their own stable, undesirable characteristics and expect others to criticize them, which makes them display attention biases to social threat. Lonely individuals have also been described as inhibited, shy, socially ineffective (Cacioppo et al., 2006; Junttila et al., 2012) and introverted, characterized by social skill’s deficits. For example, Ozben (2013) found that poor social skills predicted loneliness in youth, while Schinka, van Dulmen, Mata, Bossarte, and Swahn (2013) suggested that good social skills predicted decreasing loneliness among adolescents.

Many characteristics of lonely individuals are shared by those who suffer from Social Anxiety Disorder and milder forms of social anxiety (SA). SA involves marked distress in social situations, exists on a continuum and is often associated with feeling lonely (e.g. Segrin & Kinney, 1995; Stednitz & Epkins, 2006). People with SA, like lonely individuals, are characterized by poor self-esteem (Cox, Fleet, & Stein, 2004; Geist & Borecki, 1982) and unsatisfactory social relations, they expect social scrutiny and rejection (Rapee & Heimberg, 1997) and blame their own incompetence for their unsatisfactory social relations. They are behaviorally inhibited, shy and introverted, and sometimes display poor social skills (Panayiotou, 2014; Panayiotou & Karekla, 2013) and attention bias to social threat (Mogg, Philippot, & Bradley, 2004). In spite of the apparent overlap between loneliness and SA, the functional association between them has received little research attention. The present study examines the degree to which SA predicts loneliness among youth in Cyprus, the role of associated traits like self-esteem, social skills and anxiety sensitivity, and the potentially moderating role of gender.

Turning to how gender is related to loneliness, women have been found to report more loneliness than men in some studies, but effects have been inconsistent (e.g. Uruk & Demir, 2003). However, as previously noted (e.g. Inderbitzen-Pisaruk, Clark, & Solano, 1992; Stednitz & Epkins, 2006), the strength and pattern of associations between SA and loneliness and the severity of these characteristics may be different between genders. For example, some studies find both loneliness and SA to be higher among girls, while it has also been found that SA predicts loneliness in adolescent females but not in males (Crick & Ladd, 1993; Inderbitzen-Pisaruk et al., 1992). For these reasons, the potential associations between SA and loneliness in the current study are examined separately for men and women as well across both genders.

Given the commonalities between SA and loneliness, some studies have attempted to decipher the direction of this association and some have found that social phobia is associated with an increased likelihood of experiencing loneliness (Beidel et al., 2007; Lasgaard, Goossens, Bramsen, Trillingsgaard, & Elklit, 2011; Vanhalst, Goossens, et al., 2013). Of the studies that have examined the mechanism linking the two constructs, some have found that specific social skills may play a role. Zhao, Kong, and Wang (2012), found that poor use of humor mediated the association between shyness (a developmental precursor of SA) and loneliness, while Jackson, Fritch, Nagasaka, and Gunderson (2002), suggested that poor social skills in shy people predicted low social support, which in turn predicted loneliness. Loneliness in the family predicts SA development (Stednitz & Epkins, 2006), while parents of SA youth tend to be more isolated than other parents (Bruch & Heimberg, 1994), which may foster perceptions in the child that social interactions are threatening and undesirable (Panayiotou, 2014), hindering social skills development, and increasing the likelihood of later loneliness. SA in children has been related to poor social skills and to poor self-perceived social relations (Ginsburg, La Greca, & Silverman, 1998), which may also lead to increased loneliness. However, further research is required to understand if and how SA predicts loneliness and the role of shared characteristics, such as poor social skills and low self-esteem.
Although the association between SA and loneliness is likely to be bi-directional, the strength of each path may vary depending on age: the isolation of the family has been documented to predict SA development (Stednitz & Epkins, 2006), but in late adolescence and young adulthood, when opportunities to socialize are ample due to the school or college context, showing socially anxious behaviours, temperamental behavioural inhibition and social withdrawal, may hinder one from taking advantage of such opportunities and increase peer rejection (Epkins & Heckler, 2011). According to Beidel et al. (2007), as peer relationships become increasingly important in adolescence, SA may hinder friendships and peer group involvement, since high SA adolescents, like adults, rely on avoidance of social interactions to mitigate their anxiety (Blöte, Miers, Heyne, & Westenberg, 2015; Inderbitzen, Walters, & Bukowski, 1997). For these reasons, in the current study, SA was set as the predictor and loneliness as the outcome, without negating the possibility that loneliness also predicts SA, in accordance with previous reports (Stednitz & Epkins, 2006).

As suggested above, socially anxious individuals may feel lonely because they do not have the skills required to initiate and maintain satisfying social relationships. However, the degree to which SA is related to poor social skills has been the issue of debate. Several studies have documented social skill deficits in SA (e.g. Miers, Blöte, de Rooij, Bokhorst, & Westenberg, 2013). Observers often characterized socially anxious youth as having poorer skills in read-aloud and social interaction tasks, compared to non-anxious peers, (e.g. Inderbitzen-Nolan, Anderson, & Johnson, 2007) and rate them as lower in social skills and higher in nervousness. However, other studies did not find observer-rated deficits (Cartwright-Hatton, Tschernitz, & Gomersall, 2005), but suggested that in comparison to both observers and controls, socially anxious people underestimated their own skills. Among children and adolescents, poor social skills are more consistently found in SA (Beidel, Turner, & Morris, 1999; Torrente, Piqueras, Orgilés, & Espada, 2014) and seem to impair relationships. One hypothesis, which has not yet been tested in the literature, is that SA predicts loneliness among youth, to the degree that someone is also characterized by poor social skills, which prohibit the initiation and maintenance of social interactions. Based on this hypothesis, social skills may moderate or mediate the association between SA and loneliness.

However, if it is self-perception of poor social skills and not actual skills that characterizes SA, then the moderator/mediator may be low self-esteem. Specifically, the low self-esteem of SA individuals may lead them to anticipate social rejection and failure and to avoid social relationships because they believe they have inadequate social skills. In support of a potentially moderating and/or mediating role of self-esteem between SA and loneliness, Zhao et al. (2012), reported that shy individuals made negative self-evaluations and showed lack of confidence in their social behaviours, which led to loneliness. In fact, both of the suggested models above have received empirical support: Solano and Koester (1989) found that both poor social skills and anxiety about one’s skills independently, were related to increased loneliness.

Another core trait of SA individuals, which may be implicated in their isolation, is anxiety sensitivity (Schmidt, Zvolensky, & Maner, 2006). It is considered temperamental, since it develops early and is genetically influenced (Taylor, Jang, Stewart, & Stein, 2008), and shows associations with other early predictors of anxiety such as behavioural inhibition, introversion and neuroticism (Viana & Gratz, 2012). Anxiety sensitivity (AS) represents a fear of anxiety-related sensations, stemming from beliefs about their potential negative consequences (Cox, Borger, Taylor, Fuentes, & Ross, 1999), and is therefore related to stress intolerance. A person high in AS, not only fears the phobic object (e.g. social criticism), but also the anxiety-related sensations arising in a fearful situation, because of beliefs that anxiety may have catastrophic consequences (Berman, Wheaton, McGrath, & Abramowitz, 2010). High AS characterizes people with most anxiety disorders including SA individuals, who are concerned that their
symptoms, such as trembling, blushing and sweating are publically visible (Panayiotou, 2014); this in turn may result in social avoidance. Therefore, a third model examined is that SA individuals are lonely because they avoid interacting with others due to their intolerance of anxiety symptoms (i.e. high AS).

**Current Study**

This study examines three questions: A) Whether SA is indeed related to loneliness in a sample of college adults in Cyprus, B) the predictive role of SA, social skills, self-esteem and anxiety sensitivity with regards to loneliness and whether these differentially predict loneliness for men and women, and C) whether a potential association between SA and loneliness is moderated or mediated by social skills, self-esteem or anxiety sensitivity. A college-age group was selected based on previous findings that have showed elevated levels of loneliness in young adulthood (Victor & Yang, 2012). Findings were anticipated to further our understanding of loneliness among young men and women, having implications for treatment. In line with previous evidence with adolescents (Vanhalst, Luyckx, Scholte, Engels, & Goossens, 2013; Woodhouse, Dykas, & Cassidy, 2012) which found that both self-esteem and shyness predicted increased loneliness, we expected low self-esteem and high SA to predict loneliness among college youth. However, we additionally tested the role of AS as a predictor, since it has not been examined previously in relation to loneliness, and because it plays a significant part in the social avoidance of socially anxious individuals (Panayiotou, Karekla, & Mete, 2014; Panayiotou, Karekla, & Panayiotou, 2014). Because participants were young, hypotheses were in accordance to Beidel et al. (1999) and others (e.g. Spence, Donovan, & Brechman-Toussaint, 1999; Ozben, 2013), who show that, among youth, SA is associated with social skill deficits. Thus, the main hypothesis examined was that SA would predict poor social skills, which in turn would be associated with loneliness. However, because of the cross-sectional nature of the study and in the absence of longitudinal data, we acknowledged that the exact nature of the association between SA, social skills (or self-esteem and AS) and loneliness is difficult to decipher; social skills, self-esteem and anxiety sensitivity may be moderators rather than mediators of this association, therefore both moderation and mediation models were tested.

**Method**

**Participants**

Participants were 206 full-time students (153 females, all Caucasian Greek Cypriot), aged 17-25, \( M = 21.35 \) years, \( SD = 1.74 \). They were recruited through psychology classes from three universities in Nicosia (one public, two private), in exchange for extra course credit. The study was described as one on emotional reactions in everyday life. Those individuals willing to participate in the study provided their list of email addresses so that the on-line link to the questionnaires could be sent to them. Thus, only consenting students received the questionnaires and took part in the study. The majority lived with their parents (73.3%).

**Instruments**

Descriptive statistics for each instrument are presented in Table 1. The over-arching latent variables, i.e. the total score of each scale, were used in each case to reduce the number of predictors. All measures were used in their Greek translation, conducted based on author/publisher permission and front and back-translation by bilingual psychologists.

The short version of Social and Emotional Loneliness Scale for Adults (SELSA-S; DiTommaso, Brannen, & Best, 2004) was used to assess loneliness. It consists of 15 questions, answered on a 7-point Likert-type scale (1 =
strongly disagree; 7 = strongly agree). The original standardization study (DiTommaso et al., 2004) demonstrated good scale reliability with Cronbach’s alpha ranging between .87 and .90.

Social anxiety was measured using the Abbreviated Social Phobia and Anxiety Inventory (SPAI-23; Roberson-Nay, Strong, Nay, Beidel, & Turner, 2007). Responses are measured on a scale ranging from 0 (never) to 4 (always). The test showed high internal consistency (between .80 and .95) in previous studies and high test-retest reliability.

Self-esteem was assessed using the Rosenberg self-esteem scale (Rosenberg, 1965), which includes 10 items, rated on 4-point scale, from "strongly agree" to "strongly disagree". In the original standardization study and international applications, good psychometric properties with Cronbach’s alpha around .90 were reported.

Social skills were evaluated with the Interpersonal Competence Questionnaire (ICQ; Buhrmester, Furman, Wittenberg, & Reis, 1988). The questionnaire is answered on a 5-point scale, (1 = I am poor at this, 5 = I am extremely good at this). In the standardization study, internal consistency for the five subscales of the ICQ ranged from .77 to .87. A composite score was derived by summing up the five subscales, to assess overall social skills.

The abbreviated version of the Anxiety Sensitivity Index (ASI-16; Vujanovic, Arrindell, Bernstein, Norton, & Zvolensky, 2007) was used to measure the fear of anxiety-related sensations, using a 5-point scale. This tool demonstrated high internal consistency among Greek-speaking Cypriots and English-speaking samples with alphas of .89 and .88, respectively.

Procedure

All aspects of the study received approval by the National Bioethics Committee in Cyprus. A package of questionnaires was administered on-line, using LimeService platform, to the list of students who consented to take part during the classroom announcement of the study. On the first page, participants were informed about the study, their right to withdraw at any time, confidentiality and the anonymous nature of data processing. On this page, they gave consent again in order to proceed with the questionnaire, and for their extra credit to be assigned.

Statistical Analyses

Statistical Package for the Social Sciences (SPSS) version 20.0 was used for analyses. Pearson correlations assessed associations between variables. Linear regression analyses (on the whole sample and separately for each gender) were conducted, with self-esteem, social skills, and anxiety sensitivity entered together in one step, to examine the predictive value of the examined characteristics on loneliness. Based on the hypothesis that SA is predictive of loneliness but its role is moderated or mediated by the individual difference factors examined, a series of mediation models were tested using PROCESS (Hayes, 2012), a versatile modelling tool for mediation and moderation. An alternative mediation path was examined, based on previous findings, to test the predictive role of self-esteem, AS and social skills on social anxiety.

Results

Correlations Between Variables

Table 1 presents descriptive statistics and correlations between variables. Results show that multicollinearity is not a concern, as all correlations are less than .80 (Katz, 2011). Loneliness was negatively related to social skills.
and positively to SA and low self-esteem. Social skills were negatively related to SA and low self-esteem. SA was positively related to AS and low self-esteem.

Table 1

<table>
<thead>
<tr>
<th>Factor</th>
<th>Cronbach’s α</th>
<th>M (SD)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASI-16</td>
<td>.90</td>
<td>17.92 (10.88)</td>
<td></td>
<td>.43**</td>
<td>-.10</td>
<td>.09</td>
<td>.20**</td>
</tr>
<tr>
<td>SPAI-SP</td>
<td>.94</td>
<td>22.35 (11.45)</td>
<td></td>
<td></td>
<td>-.46**</td>
<td>.16*</td>
<td>.35**</td>
</tr>
<tr>
<td>ICQ-total</td>
<td>.93</td>
<td>137.16 (22.10)</td>
<td></td>
<td></td>
<td></td>
<td>-.22**</td>
<td>-.36**</td>
</tr>
<tr>
<td>SELSA-comp</td>
<td>.83</td>
<td>43.65 (16.05)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.36**</td>
</tr>
<tr>
<td>RSES-total</td>
<td>.86</td>
<td>27.68 (2.68)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Note. High score indicates low level of self-esteem.

*p < .05. **p < .01.

Prediction of Loneliness in Young Men and Women

A linear regression was conducted to examine the predictive value of the examined characteristics on loneliness. First the analysis was conducted with the whole sample; second, two separate regressions examined the effects separately for each gender. For the whole sample, the model was significant, $R^2 = .14$, $F(4, 233) = 9.08, p < .001$, with low self-esteem being the only significant predictor of loneliness $\beta = .31, t(233) = 4.54, p < .001$. For women the model was also significant $R^2 = .20$, $F(4, 151) = 8.91, p < .001$. In the case of women, both low self-esteem and poor social skills significantly predicted loneliness, $\beta = .36, t(151) = 4.35, p < .001$, and $\beta = -.17, t(151) = -1.94, p = .05$ respectively. For men, a much higher percent of variance was explained ($R^2 = .29$), $F(4, 52) = 4.83, p < .01$, but in this case only anxiety sensitivity was a significant predictor of loneliness, $\beta = .38, t(52) = 2.81, p < .01$.

Based on these findings, two additional, post hoc hierarchical regression models were computed, one for each gender. For men, anxiety sensitivity was entered as the only predictor in Step 1, while in Step 2 the interaction between AS and SA (both centred) were entered to examine if the predictive role of anxiety sensitivity is moderated by level of SA. AS remained the only significant predictor in both steps, suggesting that the effects of this variable are not moderated by SA. A similar approach was followed for women. In this case, self-esteem and social skills were entered in Step 1, while in Step 2 the interactions of self-esteem*social anxiety, and social skills*social anxiety were entered as predictors (all centred) to examine if the effect of each of these variables is moderated by SA. For women too, the effects of self-esteem and social skills on loneliness remained significant in both steps, but neither was moderated by SA, as the interaction terms were non-significant.

Examination of Alternative Mediators Between SA and Loneliness

Based on the prediction that SA is predictive of loneliness but its role is moderated or mediated by the individual difference factors examined (self-esteem, social skills, AS) a series of mediation models were tested using PROCESS (Hayes, 2012), a versatile modelling tool for mediation and moderation. This bootstrapping approach is considered advantageous over previous methods because of increased reliability of findings (Hayes, 2012). The analyses were based on 5000 bootstrapped samples using bias-corrected 95% confidence intervals.
The model examining social skills as mediator between SA and loneliness is presented in Figure 1. The indirect effect of SA on loneliness through social skills suggests complete mediation, $\beta = .009$, BCa 95% CI [.0002, .0175] and represents a small to medium effect size, $\kappa^2 = .078$, BCa 95% CI [.0094, .1583].

![Diagram](https://via.placeholder.com/150)

Figure 1. The mediating effect of social skills in the relationship between social phobia and loneliness.

Note. $c_1$ = total effect; $c_1^*$ = direct effect; $ab_1$ = indirect effect; Bca = bias corrected and accelerated-bootstrap conf. intervals.

The model examining self-esteem as mediator also suggested complete mediation (Figure 2). There was a significant indirect effect of SA mediated by self-esteem, $\beta = .014$, BCa 95% CI [.008, .023], which indicates a medium effect size, $\kappa^2 = .14$, BCa 95% CI [.074, .224]. The model testing AS as mediator showed that mediation by this variable was not significant with only the direct effect of SA on loneliness being significant.

![Diagram](https://via.placeholder.com/150)

Figure 2. The mediating effect of self-esteem in the relationship between social phobia and loneliness.

Note. $c_1$ = total effect, $c_1^*$ = direct effect, $ab_1$ = indirect effect, Bca = bias corrected and accelerated-bootstrap conf. intervals.
Testing the Strength of Alternative Paths

To ensure that the ordering of variables in the proposed models was optimal, alternative models were tested starting with the possibility that SA mediates the relationship between social skills and loneliness. Results did not support the model as the effect of social skills remained significant, $R^2 = .05$, $\beta = -.17$, $t(204) = -2.20$, $p < .05$, even when SA was entered as a (non-significant) predictor. SA was also not a significant mediator between self-esteem and loneliness, with self-esteem remaining significant, $R^2 = .15$, $\beta = .36$, $t(204) = 5.05$, $p < .001$) and SA not significantly predicting loneliness. In the case of SA mediating between AS and loneliness, the model was significant, with the effect of AS on loneliness ($R^2 = .02$, $\beta = .14$, $t(204) = 2.05$, $p < .05$), becoming non-significant when SA was entered in the regression.

Prediction of Social Anxiety by Self-Esteem, Anxiety Sensitivity and Social Skills

In light of these findings, another linear regression was conducted, to examine the predictive role of self-esteem, AS and social skills on social anxiety. The model was significant and explained a large proportion of variance in SA, $R^2 = .39$, $F(3, 204) = 40.95$, $p < .001$, with all three predictors being significant, (for anxiety sensitivity, $\beta = .30$, $t(204) = 4.24$, $p < .001$, for social skills, $\beta = -.39$, $t(204) = -6.56$, $p < .001$ and for self-esteem $\beta = .18$, $t(204) = 2.96$, $p < .01$).

Discussion

This investigation examined the predictive role of individual differences that have been identified previously as characteristic of lonely people, in explaining loneliness among youth in Cyprus. The potential explanatory role of SA, which shares many commonalities with loneliness, was of primary interest. Although ample evidence indicates the socially anxious individuals are often lonely (Beidel et al., 2007; Stednitz & Epkins, 2006), and that lonely people share common characteristics with those high in SA, the exact nature of this association has rarely been examined. Furthermore, the current investigation examined potential gender differences in what predicts loneliness, because the literature establishes that both the levels and predictors of SA and loneliness vary by gender. The study contributes a series of novel findings that expand our understanding of loneliness and provide indications for potential interventions.

First, although loneliness and SA were significantly correlated, the strength of the association was lower ($r = .16$) than expected on the basis of their many shared characteristics, and of the findings of other authors in clinical adolescent samples (e.g. Gallagher, Prinstein, Simon, & Spirito, 2014). In fact, SA was not a significant direct predictor of loneliness for either men or women, suggesting that while the two constructs share similarities they are distinct, while their relationship is indirect. This effect is similar to what was found in a community sample of adolescents by Cavanaugh and Buehler (2016), who showed that although loneliness predicted SA, the reverse association was non-significant, and Lasgaard et al. (2011) whose reported correlations between loneliness and SA that were only slightly higher to those reported here. Thus, the strength of the association between loneliness and SA may be greater in clinical groups, who show more severe and disabling levels of SA, which impairs the quality of their social life. At moderate to low levels, SA may not be a strong and direct predictor of loneliness among youth, who may initiate and form adequate relationships, in spite of their relative discomfort. It should be noted that since the community studies that found smaller correlations among youth were conducted in school settings (high-school or college), the context may have facilitated opportunities for peer relations, irrespective of
SA level, decreasing the size of the correlation. Additionally, the very close knit, extended family ties and frequent family contact in the cultural context of Cyprus may shelter college youth (most of whom still lived with their parents) from experiencing severe levels of loneliness, even when having symptoms of SA.

Second, to the degree that SA predicts loneliness indirectly, findings suggest that a specific behavioural deficit, poor social skills, represents a strong, full mediator between SA and loneliness, extending the findings of Zhao et al. (2012), who reached a similar conclusion with shy individuals, for the use of humour as a specific social skill. It appears that the fact that high SA youth tend to have poor social skills (as indicated by the correlation and regression analyses suggesting that poor social skills significantly predict both SA and loneliness) may hinder them from establishing and holding social relationships. Also, the fact that high SA individuals have low self-esteem, appears to be an additional path toward loneliness. In both cases, the alternative models, proposing that SA is the mediator between social skills and self-esteem, respectively, were not supported. Findings suggest that among high SA individuals, whether they actually have poor social skills or simply believe themselves to be inadequate, the outcome may be increased loneliness, perhaps due to inappropriate social behaviour or avoidance of social interactions.

Third, AS was not a significant mediator between SA and loneliness in the total sample. However, when testing alternative models, AS was indeed a significant predictor of loneliness, which seemed to be significantly mediated by SA. Thus, it may be that a more accurate ordering of these two variables is of anxiety sensitivity preceding SA in development, which may in fact be the case, as this trait is believed to be temperamental (Taylor, Jang, Stewart, & Stein, 2008), similar to behavioural inhibition, while SA develops later in adolescence and youth. Thus, youth who are fearful about the harmful consequences of anxiety are likely to become lonely to the degree that they develop SA symptoms (perhaps as a consequence of family and peer experiences), an interpretation which needs to be substantiated through longitudinal research.

The potential significance of AS in predicting loneliness is supported by another finding, that this trait was actually the strongest predictor of loneliness among men. It appears that although poor social skills and low self-esteem may hinder female social relationships, the physical experience of stress and the concern about the negative consequences of this experience is more directly related to why males avoid social contact. It is possible that due to social stereotypes of males appearing strong and confident (e.g. Panayiotou & Papageorgiou, 2007), believing that one has significant and apparent symptoms of anxiety may be a strong deterrent for males to interact with others. For women, being anxious and emotional may be more socially acceptable and less detrimental to social life. To the contrary, lacking specific social skills or perceiving oneself as incompetent, may keep females from engaging in interactions, leading to feelings of loneliness. Noting these gender differences have implications for differential treatment foci for men and women. Unexpectedly, in this sample loneliness was significantly predicted by SA among males but not among females, opposite to what was found in some previous studies, notably based on adolescents (Crick & Ladd, 1993; Inderbitzen-Pisaruk et al., 1992). It is possible, as noted above, that adult males are more sensitive to the fearful/somatic symptoms of SA and so in this gender SA is more predictive of loneliness due to male’s sensitivity to anxiety symptoms. To the contrary, young women may be more sensitive to the self-evaluative, self-deprecating aspects of SA, and therefore self-esteem and poor (perceived) social skills carry most of the variance in explaining loneliness than their self-perceived SA symptoms. However, the small sample size of males in this study makes these interpretations tentative: research with larger samples should examine the specific symptoms that each gender finds more distressing, a topic beyond the scope of this study.
Findings have implication for interventions for both SA and loneliness. Cognitive behavioural protocols for social phobia stress the development and practice of social skills (e.g. Hofmann & Otto, 2008). Findings suggest that assessing social skill deficits (at least among youth) and building or refreshing social skills in the context of therapy or school-based programs, is important in combating loneliness. Unfortunately this study cannot decipher if high SA individuals do not possess adequate social skills, or simply believe that they do not, as independent verification of their skills, rather than self-report would be required for such a conclusion. Whichever the case, through building and practicing social skills, the individual can compensate for deficits and acquire confidence to put existing skills into use. Over-practicing social competences and repeatedly testing negative predictions, can increase self-esteem and reduce avoidance of socialization. For men in particular, noting a propensity toward concern about anxiety symptoms may direct interventions somewhat differently: developing realistic perceptions and tolerance (e.g. through behavioural experiments) of the degree of one’s anxiety symptoms and their visibility to others, may encourage men to socialize more confidently.

Findings need to be evaluated in terms of strengths and limitations. Strengths include the use of a young adult sample, where both SA and loneliness peak and the more reliable PROCESS approach to mediation. Limitations include the small sample size, especially of men, which precluded analyses at the level of sub-factors of the examined constructs. Also, the self-report nature of variables can raise concerns of shared method variance, in that SA may have created bias in seeing oneself as socially unskilled and lonely. Replications should include observers and clinicians to verify the difficulties reported, and also use samples with clinical levels of SA, as associations between variables may differ based on SA severity. Also, although only consenting college students were sent the on-line link to the questionnaires we cannot preclude completely the possibility that some questionnaires were completed by someone other than the targeted participant. The cross-sectional design is also a concern for mediational analyses (Maxwell & Cole, 2007), however all possible steps were taken to combat this problem by testing multiple alternative models. Longitudinal studies can more clearly establish the developmental order of these characteristics and the exact nature of their association.

In conclusion, the current research provides evidence that social skills and self-esteem mediate the association between social anxiety and loneliness in youth and that predictors of loneliness may be somewhat different for males and females. Interventions focusing on social skill acquisition and practice, especially for young women, and on anxiety tolerance, especially for young men, may be promising for decreasing of loneliness among youth.

**Notes**

i) Descriptive statistics for this study were examined in relation to other research using the same instruments with non-clinical samples. Although the SELSA subscale scores were not used in the present study, both these and the total score were comparable with the standardization by DiTommaso et al. (2004). For SPAI-23, scores were somewhat lower than the original USA standardization (Roberson-Nay et al., 2007), but comparable to previous college and high-school student samples in Cyprus (Panayiotou, Neofytou, & Theodorou, 2014). For ASI-16, scores were somewhat higher than the standardization sample in the USA (Vujanovic et al., 2007), but comparable to student and random community samples in Cyprus, (Panayiotou, Karekla, & Panayiotou, 2014). For self-esteem, means were comparable to those from a community sample in Cyprus, in a study unrelated to social anxiety (Panayiotou & Papageorgiou, 2007) and a Greek student sample also unrelated to anxiety (Galanou, Galanakis, Alexopoulos, & Darviri, 2014).

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