Abstract

This study examines the degree to which parental social anxiety and parental personality, specifically Neuroticism and Extraversion, predict social anxiety in youth and if this association is mediated by child personality including Anxiety Sensitivity. Neuroticism, Extraversion and Anxiety Sensitivity are considered as temperamental traits and are highly predictive of anxiety disorders. Questionnaire data were collected from a community sample of 102 families in Cyprus. Cyprus presents a unique case for assessing family associations in young adults, since most college students still live with their family of origin. Questionnaires included the SPAI, ASI-16 and NEO-FFI. Results showed that parental social anxiety did not predict offspring anxiety. Maternal Neuroticism was the most significant parental predictor and its association with child social anxiety was fully mediated by child Neuroticism and Anxiety Sensitivity. The role of the family in the development of anxiety and implications for CBT treatment are discussed.

Maternal neuroticism predicts social anxiety in Cypriot youth: The mediating role of child personality and anxiety sensitivity

Introduction

Social anxiety disorder (SAD) refers to the worry and avoidance experienced in the context of social interactions by 7-13% of the general population in Western societies across their lifetime (Furmark et al. 1999). It has been described as falling on a continuum ranging from normal levels of anxiety, to shyness, and at the extreme end, to clinical levels of social anxiety disorder (Rapee & Spence, 2004; Fehm et al., 2008). Activities such as speaking in public, talking to a member of the opposite sex or to an authority figure, or even eating and writing in front of others may be actively avoided out of fear of embarrassment, which can lead to substantial costs in quality of life (Panayiotou & Karekla, 2012).

As is the case with psychopathology in general, personal predispositions interact with environmental risk factors (Chartier, Walker, & Stein, 2001; Kendler et al., 1992) such as family environment and parenting practices (Neal & Edelmann, 2003) to increase the risk of developing social anxiety, which has its peak onset in adolescence and early adulthood. Twin studies with humans suggest that genetic factors play a significant role in the development of social and other types of anxiety (Turner, Beidel, & Epstein, 1991). Elevated morbidity rates among close family members have been identified (Fyer, 2000), while children with SAD are more likely to have parents with the disorder (Lieb et al., 2000; Mancini et al., 1996). Instead of positing a "social anxiety gene," extant theory suggests that common genetic factors are shared between anxiety and emotional disorders. What is transmitted may in fact be a broad, stable temperamental tendency toward behavioral inhibition, fear, and

avoidance rather than a tendency toward the specific disorder *per se* (e.g. Turner, Beidel, & Epstein, 1991).

When it comes to environmental influences, the family environment and parental discipline practices appear to play a significant role. In terms of parenting style, parental control, overprotection, over-involvement and intrusiveness (e.g. Whaley, Pinto, & Sigman, 1999) have been shown to play a significant role in the development of social and other anxiety disorders through a psychological diathesis associated with a reduced sense of psychological autonomy and control (Rapee, 1997; Chorpita & Barlow, 1998). Parents may also provide low levels of family sociability, or bias the information processing of the offspring by providing them with negative information about social situations and presenting them as "difficult" or dangerous (Hadwin, Garner & Perez-Olivas, 2006) and may prevent their children from acquiring appropriate skills and comfort by limiting opportunities for social interaction (Alden & Taylor, 2004; LaFreniere, & Dumas, 1992). These effects may take place because parents have similar traits as their children, i.e. they may also be behaviorally inhibited, neurotic and avoidant and because most parents of socially anxious children suffer from the condition themselves or are generally highly anxious (Neal & Edelmann, 2003). Their over-protectiveness and own social avoidance may hinder extinction of initial shyness in their children through exposure. Recent developmental theories support a transactional model of influence between parents and children in the development of psychopathology (e.g. Fantis, Fantis & Panayiotou, 2013). For example, parents may limit opportunities for independence in response to their children's social fear, and in turn child fearfulness may alter parental behaviors (Burgess, Rubin, Cheah, & Nelson, 2001).

At the level of the individual, certain personality characteristics associated with avoidance and low sociability may be direct predictors of social anxiety. Personality and psychopathology are related in multiple ways, one of which is that they may share a common genetic predisposition (Watson & Clark, 1995), while pathological behaviors may be extreme manifestations of normal personality traits (Clark, Watson & Mineka, 1994). Prior research has indicated that socially anxious individuals are high in behavioral inhibition (Kagan, 1989) and harm avoidance (also shared by other anxiety and mood disorders; Caseras, Avila, & Torrubia, 2003), and low in novelty seeking (Cloninger, 1987). Socially anxious students are also high in Neuroticism, which however, does not distinguish them well from individuals with depression or other anxiety disorders. Very predictive are low levels of Extroversion (Trull & Sher, 1994), while Norton, Cox, Hewitt and McLeod (1997) additionally found that low Conscientiousness, as well, predicted a small proportion of the variance in SAD (e.g. Brown, & Naragon-Gainey, 2012). Big Five (Costa & McCrae, 1992) factors of personality, especially N and E, have been seen as temperamental tendencies (Watson & Clark, 1995), which are heritable and characterize broadly a person's typical behaviors.

Another personality trait that has been found to be particularly pathogenic for anxiety conditions is Anxiety Sensitivity (e.g. Schmidt, Zvolensky & Maner, 2006; Hayward, Killen, Kraemer, & Taylor, 2000). It is also considered temperamental, since it develops early (Taylor, 1999), is genetically influenced (Taylor et al., 2008) and shows significant associations with other predictors of anxiety that are documented to be temperamental such as behavioral inhibition, introversion and neuroticism (Viana & Gratz, 2012; Clark,Watson, & Mineka, 1994). It represents a fear of anxiety-related sensations, stemming from beliefs about their potential

negative consequences (Reiss, 1991; Cox et al., 1999). A person high in anxiety sensitivity (AS) not only fears the phobic object, 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 levels of this trait characterize people with most anxiety disorders (e.g. Schmidt, Buckner, & Keough, 2007; Zvolensky, Schmidt, Bernstein, & Keough, 2006; McNally, 2002; Plehn & Peterson, 2002; Muris, Schmidt, Marckelbach & Schouten, 2001), while recent evidence implicates it in SAD as well.

The present study examines first of all the association between three personality characteristics that have been described as temperamental and social anxiety. Next, it tests the interaction between parental social anxiety and relevant to SAD personality traits (i.e. Neuroticism and Extraversion) and child personality traits as predictors of social anxiety among youth. It rests on previous evidence that anxious parents are likely to have anxious children, but evaluates more specifically this association by asking the question if high SAD and/or low E and high N parents are more likely to have similarly anxious children, if their children are also high on these characteristics and AS. The prediction is that the association between parent characteristics and child SAD is not direct but instead mediated by child personality traits. Developmentally, this prediction follows the trajectory of SAD development: Children are born into an environment shaped by parent traits of high anxiety and low sociability (high parental N, low E), which in turn influence the personality of children (high N, high AS, low E). In adolescence and young adulthood, these traits at high levels emerge as symptoms of SAD, perhaps in interaction with traumatic social experiences and peer relationships. The study offers a novel contribution to the literature on risk factors in social anxiety, as it tests this model using multiple

informants (parents and their young adult children). The study is conducted with youth who are better able to report on their anxiety and personality than younger age groups and when SAD is typically already established. Because data were collected in a Mediterranean, European country, Cyprus, where distances are small and young adults tend to live with their parents while attending college, the study allows for a unique opportunity to study youth who are still under the influence of their home environment, with measurements of child and parent characteristics taken concurrently rather than through reliance on retrospective accounts.

Method

Participants

Participants were recruited from undergraduate university classes at a public university in Cyprus. Students were invited to participate in the study, along with their parents in exchange for extra credit. Inclusion criteria required that both parents consented to complete the questionnaires and that the participating student was 17-23 years old. All parents and youth gave written consented. The sample consisted of 306 individuals, 102 families, all Greek-Cypriot Caucasians. However, 294 questionnaires were complete and were finally used in analyses. Of the participating youth (mean age =19; SD = 2.1), 72 were female and 30 were male, reflecting the gender distribution of the particular university. Ninety-five percent of them had at least one sibling (range 1-5). The modal educational level of the parents was high school (but 28 mothers and 34 fathers had at least some college education). Place of residence of the families was reported as 64% city and 36% rural, while 83% of youth lived with their parents. The sample was representative of the population of Cyprus in terms of place of residence and child education (according to 2006 statistics; Cyprus Statistical Service, 2007)

and parent education (Cyprus Statistical Service, 1992- the earliest published-that is the closest relevant cohort to the parents).

Measures

    Greek NEO-FFI: The Greek NEO-FFI was used to measure parent and offspring personality. It is an adaptation of the original (Costa & McCrae, 1992) into the Greek language by Panayiotou, Kokkinos and Spanoudis (2004) who demonstrated good psychometric properties of the Greek measure. It contains 60 questions measuring the Big Five dimensions of personality, i.e. Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness. Subjects respond on a five-point scale. Only the N and E subscales were used in this study.

    SPAI Social Phobia and Anxiety Inventory (Turner et al., 1989): The SPAI was used to measure social anxiety in both parents and offspring. It is a well-known 45 item instrument, scored on a 7-point scale. Thirty two items comprise the Social Phobia subscale and 13 comprise the Agoraphobia subscale. The Social Phobia Difference score was used in analyses, which is derived by subtracting the Agoraphobia score from the Social Phobia score and is considered the best measure for predicting clinical levels of SAD. The instrument was was translated and adapted into Greek for purposes of this and other studies using front-and-back translation by bilingual psychologists and shows good psychometric properties in Greek (Panayiotou, Theodorou &Neophytou, manuscript in preparation).

    ASI- 16: The ASI-16 was used as a measure of anxiety sensitivity. It is an abbreviated version of the Anxiety Sensitivity Index, designed to measure fear of anxiety symptoms (Peterson & Reiss, 1992). The ASI-16 (Vujanovic, Arrindell, Bernstein, Norton, Zvolensky, 2007) is a 16-item self report scale (rated on a 5-point likert type scale) measuring the fear of anxiety-related sensations and concerns about

the negative consequences of anxiety symptoms (e.g. "It scares me when I am nervous"). It is considered the most widely used measure of the AS construct. This tool demonstrated good psychometric properties and high internal consistency among Greek-speaking Cypriots (Karekla, Kapsou, & Panayiotou, 2010) and English-speaking samples (Peterson & Heilbronner, 1987). The total ASI-16 score, which represents the higher order dimension of this construct, was used in the present investigation.

Procedure

Family members were administered the questionnaires by research assistants at the formers' homes with the assistant present, simultaneously, to avoid any chance of affecting each others' responses. Completed questionnaires were sealed in anonymous envelopes in the presence of the respondents who were fully debriefed.

Regarding the statistical analytic approach, first, on the whole sample a verification of was undertaken on the hypothesis that all predictor variables, N, E, and AS indeed predict level of social anxiety and that each variable contributes significant variance. To test the main study hypotheses, a series of mediation models according to Baron & Kenny (1986) were tested. Each of the child personality traits were entered separately as potential mediators, in the case of parent personality as a predictor and in the case of parent SAD as predictor. In each case it was first verified that parent personality (N and E) and parent SAD predict child SAD, next that child personality (one variable at a time) predicts child SAD, and then that parent personality (and SAD) predicts child personality. In the final step in each case it was tested that parent characteristics stopped being significant predictors of child SAD

once the child personality traits were entered in the model, to verify full mediation.[1]

Although the use of mediation with cross-sectional data has sometimes been criticized on the grounds that the temporal order of variables cannot be easily established (e.g. Maxwell & Cole, 2007), this approach has been used by the great majority of studies in the literature (e.g. see Maxwell & Cole, 2007). According to Kraemer et al., (2001), in order to test for mediation, the temporal order of variables needs to be defined, if not on the basis of a longitudinal study, at least on the basis of when they appear developmentally. In the current study, the theoretical conceptualization of the associations permits the necessary temporal ordering of variables: Parent personality pre-exists child personality and is therefore entered first as the predictor. Child temperamental characteristic are apparent very early in life and are believed to be inherent and biologically based (e.g. Essex et al., 2010), and are therefore entered as the mediators. SAD is known to occur typically in adolescence and early adulthood and is therefore entered last in the model as the dependent variable.

Results

Bi-variate Correlations

Table 1 shows the Pearson bi-variate correlations between the three personality factors of interest and social anxiety. All three variables are substantially related to social anxiety, with N and AS being positively and E negatively related to SAD. N was significantly and substantially related to AS but none of the cross associations between variables suggests multicolliniarity (all r<.08).

Prediction of Social Anxiety on entire sample

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[1] Because an alternative hypothesis would be that child personality characteristics act as *moderators* of the effects of parent characteristics (e.g. that high parental N is associated with child SAD only among high N children) moderation models were also tested. No child traits (N, E or AS) were found to be significant moderators of parent personality or SAD on child SAD.

Next, a hierarchical linear regression analysis was conducted to examine the predictive role of each of the personality traits examined on social anxiety, in the entire sample (N=294), since all participants had completed the same measures. All traits significantly predicted social phobia score: Anxiety sensitivity explained 7% of the variance, β=.27, t=4.81, p<.001; N explained an additional 13% of variance, β=.42, t=6.89, p<.001; E explained an additional 2% of variance β=-.13, t=2.37, p<.05. Hence, all three traits are relevant to the prediction of SAD.

Mediation of parental effects by child personality traits

First the mediation of parent personality effects on child SAD by child personality traits was examined. Child characteristics (proposed mediators, i.e. N, E and AS) were entered one at a time in the models. Following the steps suggested by Barron & Kenny (1986), it was first verified that parent personality traits (N & E) predict child SAD. Indeed the regression model was significant, F (4, 94)=2.49, p<.05, but only maternal N was found to be a significant predictor of child SAD. Next it was verified that child characteristics (each examined separately) predict child SAD. Indeed all child traits were significant predictors of SAD, F (1, 94)=6.09, p<.05; F (1, 100)=10.04, p<.01; F (1, 100)=46.73, p<.001 for AS, E and N respectively. It was finally verified that parent traits predict the proposed mediators, i.e. each child characteristics separately. In the cases of child N and child AS was significant, but parent characteristics did not significantly predict child E. Only mother N proved to be a significant predictor of child N (β=.26, p<.05) whereas both mother and father N were significant predictors of child AS (β=.31, p<.01; β=.21, p<.05 respectively). In the final step, to show mediation, mother N (the only significant parent characteristics found to predict child SAD) was entered in the first step of a hierarchical linear regression, followed by each child trait separately in step two. These 3 analyses

showed the following: For child AS as mediator, partial mediation was supported. In step 1 mother N was a significant predictor of child SAD (β= .28; p=.007), but its significant was reduced with child AS entered, (β= .21; p=.04). Child N was a full mediator of mother N effects on child SAD: In step 2 the effects of mother N were no longer significant (p=.39). Child E was also a partial mediator, with the effects of mother N reduced in step 2 (β= .20; p=.05). Using the Goodman (1960) test of the significance of the indirect effects of mother N on child SAD through the proposed mediators, it was verified that the indirect effects of mother N through child N and child AS were significant (both p$\leq$.05), whereas the indirect effect of mother N through child E was not. Similarly the indirect effect of father N through child AS was not significant.

When similarly testing the mediating role of the same child traits on the effects of parent SAD on child SAD the same steps were followed. Here, in the first regression, it was shown however, that parental SAD was not a significant predictor of child SAD, therefore the model was not tested further since the pre-requisites for mediation set by Baron and Kenny (1986) were not met.

Discussion

This study addressed the issue of the associations between social anxiety and personality characteristics within the family. The study was conducted in Cyprus, a Mediterranean country where it is customary for children to still live with their parents while attending college, which offers a unique opportunity to study family effects on the mental health of young adults. Because of the reliance on information from both youth and parents, most of who (83% of the sample) still lived together in the same home at the time of data collection, the study allowed for a concurrent

examination of how personality characteristics of the parents and youth interact to predict SAD in young adults.

Results from examination of the effects of personality on SAD in the whole sample, replicate previous findings that high Neuroticism and low Extroversion represent significant predictors of SAD (e.g. Vreeke & Muris, 2012; Miers, Blöte, De Rooij, Bokhorst, & Westenberg, 2013). Furthermore, AS also predicted significant variance in SAD, corroborating previous findinds of the pathogenic role of this trait in anxiety disorders (e.g. Schmidt, Zvolensky, Maner, 2006). According to some theories, broad personality factors like the Big Five, and especially N and E, and also AS may represent temperamental tendencies that are in part inherited (Brown, & Naragon-Gainey, 2012; Viana & Gratz, 2012). Social anxiety therefore may be a maladaptive expression of the combination of high Neuroticism and low Extroversion, but also shows associations with AS. This finding fits with the model of suggested by Watson & Clark, (1994), which posits that one potential route of how personality and psychopathology are related is that they are both expressions of the same underlying causes, in this case broad temperamental tendencies. AS was found to be highly correlated with N and its association with SAD was smaller than both N and E-therefore AS may be a proxy risk factor for SAD through its association with N (e.g. Kraemer, 2001), which seems to predict the most variance of the 3 factors tested, and which shares similar characteristics as AS (high negative affect, fearfulness).

Present findings do not support that parental SAD predicts child SAD directly, which is in some dissonance with previous evidence relating child and parent social anxiety, for example Bögels, van Oosten, Muris, & Smulders, (2001) who had found maternal SAD to predict social anxiety of the child. The reason for this discrepancy may have to do with the fact that youth in the present study were adults, who may

have been better able to report on their social anxiety specifically, differentiating it from general trait anxiety or other negative affect, or with the fact that in the previous study part of the sample included children with clinical levels of SAD in contrast to the latter community sample. Perhaps associations between parent and youth anxiety are stronger at more clinical levels of severity.

The current study documents, however, the significant role of maternal Neuroticism on youth SAD. Whether parents transmit their anxiety to their children through heredity or through learning cannot be deciphered on the basis of the present data, but it appears that the interaction of youth with their mothers makes them more likely to report high levels of SAD, when they have mothers high in negative affectivity and anxiety (i.e. high N). This effect is mostly indirect, however: It appears that maternal N predicts youth SAD, through first shaping child personality, and specifically high child N and AS. Perhaps, children with these traits carry a vulnerability toward anxiety disorders. This becomes expressed in the form of SAD as children develop and interact with their social environment, if other environmental influences occur, such as traumatic social experiences. Parental E did not seem to affect child SAD significantly, indicating that parent tendency toward introversion (and low sociability) did not have a substantial impact on their children's trajectory toward SAD. This may be considered to be in contrast with previous findings that low sociability in the home predicts child SAD. It is likely that parental introversion does not translate directly into low home sociability, and more direct measures of social contacts in the home are required to test for this association. Also, in the culture where this study was conducted, strong ties with extended families are the norm. Hence, even among highly introverted (or socially anxious) parents, levels of social interactions at home with grandparents, aunts, uncles and cousins are typically high,

perhaps not allowing for parental E to substantially affect the development of SAD in their children.

Findings of this study have ramifications for the clinical assessment and psychotherapy of social anxiety. Results highlight the fact that although social phobia is an acquired disorder, with frequent onset in adolescence, it is rooted in long-standing broad characteristics of the individual that may be temperamental in nature, need to be assessed and identified, and may be particularly difficult to change. Social phobia may also be based on similar tendencies and temperaments shared by the patient's family of origin, which implies that attitudes and core beliefs regarding anxiety, social failure and avoidance may have become greatly reinforced and may not have received much disconfirming evidence within the family context.

The resilience of SAD to treatment may in part be due to its association with such temperamental traits. During treatment, for example exposure therapy, both the therapist and patient will have to battle against the hard-wired tendency of the individual to avoid fear-provoking situations, experience intense negative affect and show a preference for aloneness, and associated beliefs and attitudes that support these behaviours (i.e. that anxiety is harmful and intolerable and should be avoided), all of which are traits that stem from the likely high N and low E of socially anxious individuals and which have likely been reinforced by the family context.

Given these characteristics of socially anxious individuals, it may be important for the therapist to utilize techniques targeted at helping the patient realize that therapy will be a difficult and fear provoking process. to accept this challenge and learn to better tolerate negative and unwanted affect, particularly anxiety. These considerations may explain the promise shown by some recent CBT treatments of anxiety disorders, including SAD, which emphasize the acceptance of negative

experiences and emotions and the commitment to goal/value oriented behaviour (e.g. Arch et al., 2012; Dalrymple & Herbert, 2007; Roemer & Orsillo, 2006; Block & Wulfert, 2000).

Limitations of the study include the non-random sample, which restricts the generalizability of results to college student populations and renders the findings preliminary. Also, the sample was drawn from the community and at one university and therefore results may not be fully generalizable to clinically anxious youth and to other settings. Demographic statistics, however, documented that the sample of families was representative of the general population in this country, while mean and ranges of SAD scores in the current sample are comparable to those reported in studies in other countries using both student and community samples (e.g. Beidel, Turner, Stanley, & Dancu, 1989; Habke, Hewitt, Norton, & Asmundson, 1997). Interpretation of results is also limited by the fact that parent/youth associations are examined among adults in a cross-sectional design. A longitudinal study would have permitted clearer assertions about the direction of causality and would have allowed one to look at how personality and pathology are shaped over time. The study provides preliminary evidence that personality both of the parents and the child are important in shaping social anxiety and future research needs to verify these results in larger and more representative samples and through longitudinal designs informed by a more specific evaluation of the family dynamics and behaviors that take place in the home of individuals with clinical or subclinical social anxiety.

Disclosure Statement

No financial interests or benefits arise from the direct applications of this research

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