SOCIAL ANXIETY, DEPRESSION AND CLOSE RELATIONSHIP: INTRA AND INTER-PERSONAL PERCEPTIONS OF SOCIAL-RANK AND AFFILIATION

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The present study investigated the associations between social anxiety (SA) and depression on the one hand, and intra- and interpersonal perceptions within a friendship relationship on the other. Evolutionary theories suggest that SA is associated with impairment in the social-rank system. Recent studies suggest that depression is associated with impairment in the affiliation system. We examined whether these impairments are manifested in the positivity and accuracy of (a) self-perception; (b) meta-perception (beliefs about how the other perceives the self); and (c) other-perception (evaluations of the friend). Pairs of same-sex friends (n = 50) completed rankings pertaining to these perceptions on general, social-rank, and affiliation traits. Higher levels of SA were associated with lower self-perception positivity, lower meta-perception positivity, and lower accuracy in the social-rank domain. Moreover, higher levels of SA were associated with perceiving the friend as higher on social-rank, regardless of the friend’s self-rated traits. Higher levels of depression were associated with lower affiliation and social-rank
self-perception positivity, and with lower accuracy in the domain of affiliation. Our findings broaden current conceptualizations of SA and depression and highlight the importance of understanding these disorders through the lens of interpersonal relationships.

Keywords: social anxiety, depression, social-rank, affiliation, accuracy

Social anxiety disorder (SAD) is a marked and persistent fear of one or more social or performance situations in which the person is exposed to possible scrutiny by others (American Psychiatric Association, 2013). It is the fourth most common psychiatric disorder, with a lifetime prevalence rate of 12% (Ruscio et al., 2008). Even in its subclinical manifestations, social anxiety (SA) is associated with intra- and interpersonal costs (Fehm, Beesdo, Jacobi, & Fiedler, 2008). SA is a significant risk factor for depression (American Psychiatric Association, 2013). Depression refers to a wide range of mental health problems characterized by the absence of a positive affect (a loss of interest and enjoyment in ordinary things and experiences), or persistent low mood (American Psychiatric Association, 2013). SA and depression¹ share important similarities (e.g., Dozois & Frewen, 2006) and frequently co-occur (Ruscio et al., 2008). Despite SA’s inherently interpersonal nature and depression’s established role in eroding close relationships (Coyne & Whiffen, 1995; Hammen, 2006), only scant research has focused on the examination of concurrent roles of SA and depression in intimate contexts such as friendships (Rodebaugh, Lim, Shumaker, Levinson, & Thompson, 2015). Moreover, existing research is limited by reliance on self-report measures.

SOCIAL-RANK AND AFFILIATION IN SA AND DEPRESSION

Interpersonal and evolutionary theories converge in suggesting the Big Two personality framework—a vertical axis related to

¹. Throughout this article, we use the terms SA and depression to denote continuous variables (i.e., individual differences in SA symptoms/depressive affect) rather than a clinical category such as SAD or major depressive disorder (American Psychiatric Association, 2013). Taxometric analyses suggest that SA and depression are best conceptualized as a continuous construct (e.g., McNeil, 2001; Ruscio & Ruscio, 2000).
social-rank (i.e., power, authority, domination, hierarchy) and a horizontal axis related to affiliation (i.e., warmth, love, friendship) (e.g., Abele & Wojciszke, 2007; Alden, Wiggins, & Pincus, 1990; Gilbert & Trower, 2001). Recent studies suggest that whereas SA is associated with impairment in the social-rank domain, depression is associated with impairment in the affiliation domain (e.g., Aderka, Weisman, Shahar, & Gilboa-Schechtman, 2009).

Trower and Gilbert’s (1989) evolutionary model suggests that whereas all individuals utilize both the social-rank and the affiliation systems, individuals with elevated SA tend to over-utilize the social-rank system (Trower & Gilbert, 1989). This evolutionary model was supported by multiple studies (e.g., Berger, Keshet, & Gilboa-Schechtman, 2017), which point out that SA is characterized by dysregulation of the social-rank domain. Individuals with elevated SA rate submissive behaviors as self-descriptive (Rodebaugh, Bielak, Vidovic, & Moscovitch, 2016). They also tend to engage in negative social comparisons in which the self is viewed as inferior (Antony, Rowa, Liss, Swallow, & Swinson, 2005). In fact, negative social comparisons were highly related to SA symptoms, above and beyond the influence of affiliation and attachment (Aderka et al., 2009). Although SA is associated with troubled interpersonal functioning (e.g., Bar-Kalifa, Hen-Weissberg, & Rafaeli, 2015), it may not be associated with damaged self-perception in the affiliation domain (Berger et al., 2017; Dijk, van Emmerik, & Grasman, 2018). Indeed, the narratives of high and low SA individuals did not differ in their self-attributions of affiliation (Stopa & Bryant, 2004). Thus, research suggests that the social-rank impairment in SAD is greater than the affiliation impairment in SAD (Gilboa-Schechtman et al., 2017). Interestingly, depressed individuals evaluate themselves as low on affiliation, cooperativeness, and warmth traits (Rosenström et al., 2014; Takahashi et al., 2013). Moreover, although negative social-rank self-perceptions improved following remission from depression, affiliation self-perceptions remained stable (Dozois, 2007). Combined, these findings suggest that whereas depression is uniquely associated with affiliation impairment, SA is uniquely associated with social-rank impairment. The aim of the
The present study is to examine this hypothesis within the context of a close and intimate relationship—friendship.

INTERPERSONAL PERCEPTIONS AND ACCURACY IN SA AND DEPRESSION

Interpersonal perceptions include beliefs about the self (self-perception or self-evaluations); beliefs about how others perceive the self (meta-perception; Carlson, Wright, & Imam, 2017; Kenny & Depaulo, 1993); and beliefs about others (other-perception). Self-, meta-, and other-perception guide people’s behavior and inform decisions about how to behave and who to befriend (e.g., Pfeifer et al., 2009). Given the pivotal role of interpersonal perception in close relationships, an important issue concerns its accuracy. Accuracy is indexed as the profile correlation between an individual’s self- or meta-perception for core personality traits (i.e., the Big Two) and the actual impression he or she makes on another person (Carlson, 2016). There is a growing consensus in close-relationship literature that self- and meta-perceptions positivity and accuracy are independent (Schlegel, Boone, & Hall, 2017).

Self-Perception in SA and Depression. Cognitive models of SA and depression posit that negative self-perceptions are a core feature of these disorders and play a central role in their etiology and maintenance (Clark & Wells, 1995; Dozois, 2007; Rapee & Heimberg, 1997). The associations between negative self-perception and SA as well as the association between negative self-perception and depression were found to be robust (e.g., Dozois & Frewen, 2006; Stopa, Brown, Luke, & Hirsch, 2010) and has been consistently documented (e.g., Orth, Robins, & Roberts, 2008). Individuals suffering from depressive symptoms or from elevated levels of SA endorse negative beliefs about the self, often report negative self-statements and report lower levels of self-esteem (Clarke, Rohde, Lewinsohn, Hops, & Seeley, 1999; Tanner, Stopa, & De Houwer, 2006). The association between depression, anxiety and negative self-perception is bidirectional (Sowislo & Orth, 2013). In sum, both SA symptoms and depres-
sive symptoms appear to be associated with decreased positivity of self-perceptions.

**Meta-Perception in SA and Depression.** Meta-perception is central to SA because beliefs about others’ perceptions are at the heart of social fears (Shahar & Gilboa-Shechtman, 2007). Individuals with elevated SA have been repeatedly found to be more apprehensive with how others view them and are likely to think that unfamiliar others perceive them negatively (e.g., Christensen, Stein, & Means-Christensen, 2003). In addition, depressive symptoms were associated with expecting significant others and unfamiliar others to negatively perceive the self (Moritz & Roberts, 2017; Strunk & Adler, 2009). In conclusion, research suggests that both SA symptoms and depressive symptoms are linked to negative meta-perceptions. Again, so far, this link was not explored in the context of friendship relationships.

**Others’ Perceptions in SA and Depression.** Studies about SA and other-perceptions revealed mixed findings. Several studies suggest the other people’s perceptions of SA individuals seem to be colored by a global negative halo (Alden & Taylor, 2010): SA individuals are seen by peers as less dominant (Oakman, Gifford, & Chlebowsky, 2003), and less intelligent (Paulhus & Morgan, 1997). In contrast, other studies have found that others do not have general negative impressions of individual with elevated SA and that SA symptoms were not associated with being less liked by others (e.g., Aiken, Human, Alden, & Biesanz, 2014; Christensen et al., 2003). A recent study has found that SA is associated with being perceived as less dominant but not as less warm (Dijk et al., 2018). Research suggests that depressed individual may elicit more negative interactions from others (Coyne, 1976). Depressed patients were perceived by significant others as more hostile and submissive than patients with other principle disorders (Grosse Holtforth, Altenstein, Ansell, Schneider, & Caspar, 2012).

**Accuracy in SA and Depression.** Depressive symptoms were associated with lower accuracy in decoding nonverbal cues (Ambady & Gray, 2002). In heterosexual romantic relationships, women’s depressive symptoms were associated with lower levels of accuracy in inferring partners’ thoughts and feelings (Gadassi, Mor,
Only a few studies examined interpersonal accuracy and SA and they focused on how the way one’s SA symptoms relate to the accuracy of others’ views of them. In one recent study (Aiken et al., 2014), new acquaintances were less accurate in perceiving personality traits of high- vs. low-SA individuals. These results might imply that both SA symptoms and depressive symptoms are negatively associated with interpersonal accuracy. However, the examination concurrent assessment of SA, depression, and accuracy has so far not been undertaken.

THE PRESENT RESEARCH

The overall aim of the current study was to examine interpersonal perceptions and accuracy and their relationship to SA and depression. The current research aims to replicate previous findings regarding general (nondomain specific) traits and expand existing knowledge by focusing on perceptions pertaining to social-rank and affiliation domains. Specifically, we seek to understand whether the social-rank impairment in SA (Berger et al., 2017) and the affiliation impairment in depression (Aderka et al., 2009) are manifested in the positivity of interpersonal perceptions (self-perception, meta-perception, and other-perceptions) and in their accuracy within a friendship context. We aim to examine these perceptions (a) based on an a-priori theoretical perspective (i.e., cognitive-evolutionary-interpersonal theory); (b) as viewed from two perspectives—self-report and friend-report; (c) while concurrently assessing SA and depression symptoms.

To this end, we invited 50 pairs of same-sex friends to our study. Participants rated themselves (self-perception) on general, affiliation, and social-rank traits. They also rated how they believe they were perceived by their friends (meta-perception) on these traits. Finally, they were rated by their friends on the same qualities (other-perception).

Three hypotheses were tested. First, based on cognitive theories which emphasize the role of negative self-perception in both SA and depression (e.g., Dozois & Frewen, 2006; Rapee & Heimberg, 1997) and consistent with previous studies (e.g., Gilboa-Schechtman, Friedman, Helpman, & Kananov, 2013), we postu-
lated that both SA symptoms and depressive symptoms are related to lower self-perception (H1a) and meta-perception (H1b) on general traits (e.g., pertaining to a variety of domains such as intelligence, morality, creativity, and appearance). However, because studies have found mixed results about other-perception (e.g., Alden & Taylor, 2010; Kashdan & Savostyanova, 2011), no specific hypothesis was made regarding general other-perception. In addition, we predicted that SA symptoms and depressive symptoms are negatively related to accuracy (H1c) in the general domain (negative general perception in SA and depression hypothesis).

Second, consistent with the evolutionary hypothesis (e.g., Trower & Gilbert, 1989) and with previous studies (e.g., Weisman, Aderka, Marom, Hermesh, & Gilboa-Schechtman, 2011) we postulated that SA symptoms are associated with lower social-rank self-perception (H2a), meta-perception (H2b) and other-perception (H2c). In addition, we predicted that SA symptoms are negatively related to accuracy (H2d) in the domain of social-rank. We expect that the effect of SA would be independent of the effect of depression (social-rank impairment in SA hypothesis).

Third, consistent with the findings regarding the role of affiliation system in depression (e.g., Aderka et al., 2009), we postulated that depressive symptoms are associated with lower affiliation self-perception (H3a), meta-perception (H3b), and other-perception (H3c). Moreover, we predicted that depressive symptoms are negatively related to accuracy (H3d) in the domain of affiliation. We expect that the effect of depression would be independent of the effect of SA (affiliation impairment in depression hypothesis).

**METHOD**

**Participants**

Participants were 50 pairs (25 male-male pairs and 25 female-female pairs) of undergraduate students who took part in the study in exchange for payment or academic credit. Participants were recruited via advertisements on billboards at the Bar-Ilan University campus and on electronic forums. Our sample was
young (age: $M = 23.7$, $SD = 3.5$) and educated ($13.3$, $SD = 1.2$). Mean friendship duration was 27.8 months ($SD = 31.4$, range = 3–204).

**Measures**

*The Liebowitz Social Anxiety Scale - Self-Report version (LSAS-SR).* The LSAS-SR (Liebowitz, 1987) is comprised of 24 items that assess levels of anxiety and avoidance in social or performance situations using a 0–3 scale. The Hebrew version of the LSAS-SR has been shown to have high internal consistency, strong convergent and discriminant validity, and high test–retest reliability (Levin, Marom, Gur, Wechter, & Hermesh, 2002). A reliability coefficient of .94 was obtained in our sample.

*The Beck Depression Inventory (BDI-II).* A 21-item measure of the severity of depression symptoms in the preceding 2 weeks. The BDI-II (Beck, Robert, & Gregory, 1996) is a frequently used measure that is generally reported to have good construct validity (Dozois, Dobson, & Ahnberg, 1998). We used the Hebrew version of the BDI-II (Shalev et al., 1998). A reliability coefficient of .91 was obtained in our sample.

*Self-Perception Scale.* This is a new 36-item self-report measure that assesses self-perceptions on three dimensions—general, social-rank, and affiliation. The same scale was used in the three assessments described below.

Participants were requested to indicate, “To what extent you think this attribute applies to you.” They rated 12 general traits (6 positive and 6 negative) as well as 12 social-rank word and 12 affiliation words (6 high and 6 low) on a visual analogue scale ranging from 0 (not at all like me) to 100 (very much like me). The positive general words were beautiful, optimistic, smart, brilliant, creative, and moral and the negative general words were ugly, pessimistic, stupid, deceiving, corrupt, and boring. High social-rank words were strong, authoritative, assertive, influential, prominent, and decisive and the low social-rank words were weak, passive, cowardly, hesitant, ridiculous, and deferential. The high affiliation words were considerate, pleasant, generous, empathic, humane, and caring, and the low affiliation words were cold, distant, wicked, egoistical, hurtful, and
mean (these words represent English translations of the original Hebrew terms). The words were used in Gilboa-Schechtman et al., (2017) and were selected based on that study. Reliability coefficients of .85, .90, and .89 were obtained for the general, social-rank, and affiliation scales, respectively.

Meta-Perception Scale. Participants were requested to write the name of the friend with whom they came to the study. They were then asked, “How do you think ____ (the friend’s name) rated you on this attribute?” The traits were identical to the ones used for self-perception. Reliability coefficients of .84, .87, and .90 were obtained for the general, social-rank, and affiliation scales, respectively.

Other-Perception Scale. Participants were requested to indicate, “to what extent do you think this attribute applies to ______ (the friend’s name)?” Again, the traits were identical to the ones used for self-perception. Reliability coefficients of .85, .88, and .90 were obtained for the general, social-rank, and affiliation scales, respectively.

Procedure

Participants signed informed consent forms prior to completing the study, and filled out the self-report questionnaires through a secure research software service (Qualtrics). First, participants filled in information about gender, age, ethnicity, and education. Next, they were asked to provide information regarding the nature of strengths of the friendship: the length of acquaintance-ship with the friend, frequency of meeting, subjective relationship strength, and levels of familiarity and meta-familiarity (belief about to what degree they believe that the friend is familiar with the self). Next, they filled out the rest of the questionnaires, which were presented in a random order. The duration of the study was approximately 30 minutes. The participants were de-briefed and compensated with 50 NIS (the equivalent of $13 U.S.) each. All procedures had received full ethics clearance through an institutional ethics committee.
Analytic Strategy

Our data are hierarchically nested (individuals within pairs). Therefore, our analyses follow the recommendations of the Actor-Partner Interdependence Model (APIM; Kenny et al., 2006) for handling non-independence. APIM is a dyadic data analytic approach that simultaneously estimates actor effects (the effects of the actors’ independent variable scores; e.g., their own SA symptoms) on their own dependent variable score (e.g., their own self-perception), as well as partner effects (the effects of their partners’ variable scores; e.g., partners’ SA symptoms) on the actor’s dependent variable score (e.g., the actors’ meta-perception; Kenny et al., 2006). To obtain standardized effects, each variable was standardized prior to the analysis using its mean and standard deviation calculated across all participants, as recommended by Kenny et al. (2006). Hierarchical linear modelling was conducted using the MIXED model routine in SPSS with restricted likelihood estimation to estimate the coefficients (Campbell & Kashy, 2002). Because previous studies have found gender differences in accuracy (e.g., Neal, Neal, & Cappella, 2016), gender was included as a variable in the model.

Accuracy Computation

Several indexes can be derived to describe the links between self-, meta-, and other-perception. Meta-insight is defined as the association between self-perception and meta-perception, self-other agreement is the association between self-perception and other-perception and meta-accuracy is the association between meta-perception and other-perception (Carlson, Vazire, & Furr, 2011). Meta-insight, self-other agreement and meta-accuracy are distinct phenomena (Carlson et al., 2011). We followed the procedure used by Murray, Holmes, Bellavia, Griffin, and Dolderman (2002) to compute the person-centered indices. We use a fictional pair—Jason and David—to illustrate the computational procedure. Our first index reflects meta-insight. To what degree are Jason’s belief about how he is viewed by David consistent with Jason’s own self-perception? To obtain the meta-insight index for Jason, we computed the inter-item correlation between how
Jason believed he appeared to David (Jason’s meta-perception) and Jason’s ratings of himself (Jason’s self-perception; note that both ratings were made by Jason). Our second index reflects self-other agreement. To what degree is Jason’s self-perception consistent with the way David viewed him? To obtain the self-other agreement index for Jason, we computed the inter-item correlation between Jason’s self-rating on a particular attribute (Jason’s self-perception) and David’s actual ratings of Jason (other-perception) on the same attribute. Our third index reflects meta-accuracy. To what degree do Jason’s beliefs about how he was viewed reflect David’s actual views? To obtain a meta-accuracy index, we calculated the inter correlation between how Jason felt he appeared to David (Jason’s meta-perception) on a particular attribute and David’s actual ratings of Jason (other-perception) on the same particular attribute. We calculated the accuracy indexes for general, affiliation and social-rank perceptions. Correlations can range from −1.0 to 1.0, and higher correlations indicate greater accuracy.

RESULTS

When examining the correlations between study variables, we found no association between SA symptoms and depressive symptoms on the one hand and relationship strength, duration, familiarity, or meta-familiarity on the other hand (all $p > 0.2$). Moreover, we found that SA symptoms within a pair were uncorrelated ($p > 0.6$). The correlation matrix is provided in the supplemental materials (by request from the author).

NEGATIVE GENERAL PERCEPTION IN SA AND DEPRESSION HYPOTHESIS

Table 1 presents the APIM results with actor’s SA, partner’s SA, actor’s depression, and partner’s depression predicting general perceptions and accuracy. Gender was included as a variable in the model.
As expected, actor’s SA symptoms were negatively associated with general self-perception (H1a). The association between depressive symptoms and general self-perception was only approaching significance, although in the expected negative direction. In addition, no association was found between SA, depression, and general meta-perception (H1b) or general other-perception. With respect to accuracy, in support of our hypothesis (H1c), actor’s depressive symptoms were negatively associated with meta-insight (correlation between self- and meta-perception) in the general domain. However, contrary to our expectation, no association was found between depressive symptoms and meta-accuracy or between SA symptoms and accuracy in the general domain.

In sum, in support of our hypothesis, higher levels of SA were associated with lower levels of general self-perception and higher levels of depression were associated with poorer general meta-insight.

SOCIAL-RANK IMPAIRMENT IN SA HYPOTHESIS

Table 2 presents the APIM results with actor’s SA, partner’s SA, actor’s depression, and partner’s depression predicting social-rank domain perceptions and accuracy. Gender was included as a variable in the model.

As expected, actor’s SA symptoms were negatively associated with social-rank self-perception (H2a) and meta-perception...
We hypothesized that higher levels of SA would be associated with being perceived as less dominant (H2c). In contrast, SA was not found to be associated with being perceived as less dominant. Interestingly, SA symptoms were associated with perceiving the other as more dominant, regardless of the other’s self-rated traits. With respect to accuracy (H2d), actor’s SA symptoms were negatively associated with meta-insight (correlation between self- and meta-perception) and self-other agreement (correlation between self- and other-perception). The association between SA and meta-accuracy (correlation between meta- and other-perception) was only approaching significance, although in the expected negative direction. These effects were found independent of the effect of depression. With respect to depressive symptoms effect, higher levels of depression were associated with lower levels of social-rank self-perception.

In support of our hypothesis, these results suggest that higher levels of SA were associated with lower levels of social-rank self-perception and social-rank meta-perception. Higher levels of SA were also associated with perceiving the other as more dominant. Moreover, higher levels of SA were associated with lower levels of accuracy in the social-rank domain. In addition, higher levels of depression were associated with lower levels of social-rank self-perception.

### TABLE 2. HLM Standardized Coefficients Predicting Social-Rank Perceptions and Accuracy from Actor’s SA, Partner’s SA, Actor’s Depression, and Partner’s Depression

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Self-Perception</th>
<th>Meta-insight</th>
<th>Self-other agreement</th>
<th>Meta-accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>−.01(0.09)</td>
<td>.00(0.10)</td>
<td>−.00(0.10)</td>
<td>−.00(0.10)</td>
</tr>
<tr>
<td>Actor’s SA</td>
<td>−.42(0.09)***</td>
<td>−.24(0.11)*</td>
<td>.23(0.11)*</td>
<td>−.22(0.11)*</td>
</tr>
<tr>
<td>Partner’s SA</td>
<td>.03(0.09)</td>
<td>.08(0.11)</td>
<td>−.06(0.11)</td>
<td>.01(0.11)</td>
</tr>
<tr>
<td>Actor’s DEP</td>
<td>−.23(0.09)*</td>
<td>−.09(0.11)</td>
<td>−.00(0.11)</td>
<td>−.13(0.11)</td>
</tr>
<tr>
<td>Partner’s DEP</td>
<td>.08(0.09)</td>
<td>.10(0.11)</td>
<td>0.05(0.11)</td>
<td>−.07(0.11)</td>
</tr>
</tbody>
</table>

Notes. Gender was included as a variable in the model. SA = Social Anxiety symptoms; DEP = Depressive symptoms. *p < .05; **p < .01; ***p < .001; +p < .10.
Table 3 presents the APIM results with actor’s SA, partner’s SA, actor’s depression, and partner’s depression predicting affiliation domain perceptions and Accuracy. Gender was included as a variable in the model.

As expected, actor’s depressive symptoms were negatively associated with affiliation self-perception (H3a). The association between depression and affiliation meta-perception was only approaching significance, although in the expected negative direction (H3b). Contrary to our hypothesis (H3c), depressive symptoms were not associated with affiliation other-perception. With respect to accuracy (H3d), actor’s depressive symptoms were negatively associated with meta-insight (correlation between self- and meta-perception). With respect to SA, surprisingly, actor’s SA symptoms were positively associated with affiliation other-perception. This result suggests that in the current sample, higher levels of SA were associated with being perceived as more friendly and warm.

Partially supporting our hypothesis, these results suggest that higher levels of depression were associated with lower levels of affiliation self-perception and lower levels of accuracy in the affiliation domain.
DISCUSSION

Differentiating between two theoretically important domains of interpersonal functioning—social-rank and affiliation, we examined the relations between SA symptoms and depressive symptoms on the one hand, and the positivity and accuracy of self-perceptions, meta-perceptions, and other-perceptions on the other hand. Our findings suggest that even within close relationships, depression and SA are differentially related to the social-rank and affiliation domains: whereas SA was found to be associated mostly with impairment in the social-rank domain, depression was found to be associated with impairment in both the affiliation and social-rank domain.

SA AND SOCIAL-RANK

Our results replicate previous findings suggesting that individuals with elevated SA perceive themselves more negatively than do individuals low in SA on personality traits related to social-rank (e.g., Aderka et al., 2009; Gilboa-Schechtman et al., 2017). We expand existing knowledge by focusing on interpersonal perceptions as well as the accuracy between these perceptions. Specifically, we found that higher levels of SA are associated with lower positivity of social-rank meta-perception and lower accuracy in the social-rank domain. Importantly, the results were found independent of the effect of depressive symptoms. In addition, SA symptoms were not associated with meta-perception positivity and accuracy in general traits and in affiliation domain. These results dovetail with evolutionary accounts highlighting the centrality of the social-rank system in SA (e.g., Gilboa-Schechtman, Shachar, & Sahar, 2014; Trower & Gilbert, 1989; Weeks, Heimberg, & Heuer, 2011).

With respect to other’s perception, SA symptoms were not associated with low positivity of friend’s social-rank. Our findings suggest that the role of the actor (the rater) is greater than the role of the partner (the rated): higher levels of SA are associated with perceiving the other as more dominant, regardless the other’s SA levels. It implies that in the social-rank domain, individuals
with elevated SA not only devalue themselves, but also inflate the value of interaction partners. This suggestion is consistent with studies which found that SAD individuals rated dominant protagonists more extremely on the social-rank dimension, compared to non-anxious individuals (Haker, Aderka, Marom, Hermesh, & Gilboa-Schechtman, 2014). It is also possible that partners of SA individuals actually behave in a more dominant way. Indeed, friends of individuals with SAD reported that they were more dominant in the relationship in comparison to friends of non-clinical participants (Rodebaugh et al., 2014). Moreover, Creed and Funder (1998) found that during interactions between unacquainted people, partners of SA individuals were rated by objective observers as attempting to dominate the interaction and displaying irritability. Taken together, these findings suggest that SA individuals may evoke a dominant reaction from both unfamiliar and close others.

DEPRESSION, AFFILIATION, AND SOCIAL-RANK

We found that depressive symptoms are associated with reduced positivity of affiliation and social-rank self-perceptions. Depressive symptoms were also associated with poorer accuracy, but only in the affiliation domain. Our results are consistent with the data of Takahashi et al. (2013), who found that treatment-resistant depressed patients reported lower levels of affiliation traits compared to remitted depressives and healthy controls. Similarly, Dozois argued that role of affiliation in depression is greater than the role of social-rank (Dozois, 2007). Recent studies suggest that depressed individuals tend to exhibit less affiliation but also less dominant interpersonal goals and self-efficacy (Locke, Sayegh, Weber, & Turecki, 2016). Taken together, this pattern of findings suggests that depressive symptoms are consistently associated with reduced positivity of self-perceptions in affiliation domain, and to a lesser degree with reduced positivity in self-perceptions in the social-rank domain.
Our results elaborate and refine cognitive, evolutionary, and interpersonal theories. In support of cognitive theories, our results suggest that negative cognitive biases in SA and depression are not limited to self-perception, and are manifested also in meta-perception and in other-perceptions. Our results regarding the negative cognitive biases as well as the inaccuracy in depression are in line with the cognitive model of depression and contrary to the depressive realism hypothesis (Alloy & Abramson, 1979). Moreover, these negative cognitive biases are exhibited in specific domains—SA is associated with negative biases in the social-rank domain and depression is associated with negative biases in both the social-rank and affiliation domains. These results are consistent with evolutionary theories (e.g., Trower & Gilbert, 1989), highlighting the centrality of the social-rank domain in SA. Moreover, we found that friends of SA and depressed individuals did not perceive them as inferior or as less warm. The latter finding raises the question why the positive perception of the friends of SA and depressed individuals is not reflected in better self- or meta-perception. The latter finding raises the question why the positive perceptions of close others are not reflected in better self- or meta-perception and why SA or depressed individuals view themselves negatively even when their friends perceive them positively. Other elements of the relationship, not explored in the current study (e.g., social support, quality of the relationship) may explain this insulation. Finally, our results may be seen as supporting a we-disease perspective (e.g., Bodenmann & Randall, 2013) according to which mental health and relationship functioning are often intertwined, and therefore SA and depression can be better understood and treated from an interpersonal perspective (e.g., Joiner, Coyne, & Blalock, 1999).

Although the positivity of self-perceptions, meta-perceptions, other-perceptions, and accuracy have been investigated separately, the present research is the first to assess all these indices in a single study and to explore both the actor and partner effects using analytic methods developed specifically for analyzing dy-
ads (APIM; Kenny et al., 2006). Moreover, whereas most studies on SA and depression were conducted based on an intrapersonal perspective (for an exception, see Rodebaugh et al., 2015), our study considers how depression and SA are embedded in the interpersonal context and used both self- and friend-report.

Our findings support the clinical literature suggesting that a dyadic approach is valuable for treating depression and SA (Bodenmann & Randall, 2013; Carr, 2009). For instance, the information regarding others’ views of the self could be used within a cognitive-behavioral framework to help disconfirm some negative core beliefs of individuals with SAD and depression. Indeed, cognitive–behavioral group therapy has been shown to reduce self-perception biases by providing real feedback from peers (Hope, Heimberg, & Bruch, 1995). Moreover, interpersonal CBT produced significant increases in frequency of social approach behaviors and relationship satisfaction, in addition to SAD symptoms reductions comparable to other group CBT regimens (Alden & Taylor, 2011). Our findings also suggest that the effectiveness of interventions for SA may be enhanced by specifically targeting interpersonal perceptions in the social-rank domain. Therapy may focus on reducing a range of submissive behaviors in close, as well as peer, relationships, learning how to cope with interpersonal conflicts and focus on more cooperative forms of interactions (Trower & Gilbert, 1989). In addition, because meta-perceptions provide an implicit map that people use to navigate their social worlds (Carlson & Oltmanns, 2015), treatment may also focus on enhancing social-rank perceptions by cognitive training procedures that aim to strengthen the implicit link between self-perception and high social-rank (Clerkin & Teachman, 2010; Schnabel & Asendorpf, 2015).

Limitations and Future Directions

The present study has several limitations. First, the cross-sectional design precludes final conclusions regarding the direction of the relationships. Second, our sample was limited to same-sex friendships, so it is unclear whether the effects of SA in same-sex
friendships would extend to cross-sex friendships. More generally, future studies may explore SA and depression effects across various types of relationships (unfamiliar others, family, romantic partners, therapists) in order to understand the unique aspect of each relationship. Third, due to the relatively modest size of the sample, our study explored only the main effects of SA and depression, controlling for gender as a covariate. Future research could investigate interaction effects of gender, actor’s SA symptoms, and partner’s SA symptoms (e.g., Boucher, Jacobson, & Cummings, 2015) and address whether gender interaction or similarity in levels of SA and depression between friends influence interpersonal perceptions and accuracy. Fourth, our study compared ratings regarding social-rank and affiliation that were made by the same person. The similarity of the ratings may be due to participant’s failing to consider each of the constructs separately. Finally, our sample was young and educated. A replication of the present research with a more representative analogue sample and a clinical sample would augment the current model.

CONCLUSION

Drawing on cognitive, interpersonal, and evolutionary theories, we found that SA and depression are differentially associated with positivity and accuracy in self-, meta-, and other-perceptions in the domain of social-rank and affiliation. Our results expand cognitive theories suggesting that negative evaluation biases in SA and depression are manifested even within close relationships. Evolutionary theories additionally refine this understanding suggesting that individuals with elevated SA are thin-skinned with respect to matters of social-rank, whereas depression appears to be associated with biases in affiliation (and to a lesser degree social-rank) domain. Finally, our study highlights the importance of understanding and treating these disorders through the lens of dyadic relationships.
REFERENCES


