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Assessing Social Anxiety: The Inventory of Interpersonal Situations (IIS)

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Summary: The purpose of this study was to develop a self-report questionnaire for the assessment of social anxiety in adults. The Inventory of Interpersonal Situations (IIS) consists of 35 items formulated as responses to specific social situations. The IIS is based on an interactive concept of social anxiety and provides scores for both a Discomfort and a Frequency scale. The reliability and validity of the IIS were investigated in several adult psychiatric and nonpsychiatric samples. The scales for Discomfort and Frequency showed stability over time. Cronbach's α's revealed a sufficiently high internal consistency on both scales, while the conceptual structure was shown to be rather invariant across socially anxious and nonsocially anxious groups. The IIS scales were able to discriminate between socially anxious and nonsocially anxious samples, and showed significant relationships with independent measures of social anxiety. The IIS scales demonstrated high predictive validity for overt behavior in social situations.

The terms social anxiety and nonassertiveness have generally been used as common-sense constructs, with social anxiety referring mainly to the subjective distress experienced in social situations, and nonassertiveness referring to overt behavioral aspects of social behavior. In the behavioral scientific literature, a variety of synonyms has been used for social anxiety and (non)assertiveness, such as shyness, social inhibition, interpersonal anxiety, communication apprehension, embarrassment, social inadequacy, interpersonal effectiveness, social competence, reticence and self-consciousness (Van Dam-Baggen & Kraaimaat, 1989). The lack of a comprehensive theory of social anxiety is reflected in the rather idiosyncratic and descriptive definitions presented in the field. The broad range of conceptions of social anxiety can be seen in the literature with respect to the prevalence of social anxiety and nonassertiveness. For instance, in psychiatry and psychopathology handbooks, social anxiety and its synonyms are scarcely mentioned; only social phobia is considered and recognized as a phenomenon in and of itself (e. g., DSM-III and subsequent editions: APA, 1980, 1987, 1994). As far as other behavior is concerned, such as shyness and social withdrawal, they have been conceived of only as secondary phenomena to other disorders or syndromes. The advantage of a dimensional approach to the concept over psychiatric classification such as found with DSM is that it leads to a more differentiated picture, demonstrating that social anxiety can be considered an accompanying phenomenon in several behavioral disorders (e. g., depression, schizophrenia, or stuttering), but also as a rather isolated problematic behavior by itself. There are also indications that recidivism and rehospitalization of clinical psychiatric patients is related to high social anxiety and deficient social skills (Zigler & Glick, 1986).

The lack of a comprehensive theory of social anxiety contrasts with its clinical importance (Van Dam-Baggen & Kraaimaat, 1989). Three hypotheses have been postulated, each serving as the basis for commonly used treatment methods: inhibition by anxiety, the absence of or

insufficiency in social skills, and debilitating cognitions. These hypotheses are not mutually exclusive and reflect, analogous with other anxieties (Lang, 1971), the three aspects of social anxiety: emotional, behavioral, and cognitive. A complicating issue in the assessment of social anxiety is that there are multiple indicators within each aspect. For instance, heart rate, skin conductance, and blood pressure transformed to autonomic reactivity scores have been used as physiological indicators of the emotional aspect (e. g., Beidel, Turner, & Dancu, 1985; Turner, Beidel, & Larkin, 1986; Bruch, Gorsky, Collins, & Berger, 1989). Molecular measures such as response latency (e. g., Pitcher & Meikle, 1980; Romano & Bellack, 1980, Trower, 1980; Asendorpf, 1988), midlevel measures such as gestures (Monti, Boice, Fingeret, Zwick, Kolko, Munroe, & Grunbergen, 1984), and molar measures such as global ratings of overall assertiveness (e. g., St. Lawrence, 1982; Nelson, Hayes, Felton, & Jarrett, 1985) have been used as indicators of the overt behavioral aspect. Finally, subjective distress (e. g., Schwartz & Gottmann, 1976), cognitive self-statements (e. g., Clark & Arkowitz, 1975; Alden & Cappe, 1981; Glass, Merluzzi, Biever, & Larsen, 1981) and selective information-processing propensities (Hope, Rapee, Heimberg, & Dombeck, 1990; Cloitre, Heimberg, Holt, & Liebowitz, 1992) have been used as indicators of the cognitive aspect.

Research has shown that high socially anxious persons differ from low socially anxious persons in social situations in their (1) psychophysiological reactions (e. g., Turner et al., 1986; Bruch et al., 1989), (2) overt behavioral reactions (Bruch, 1981; McFall, Winnett, Bordewick, & Bornstein, 1982; Van Dam-Baggen & Kraaimaat, 1987b) and (3) cognitive reactions (Heimberg, Chiauzzi, Becker, & Madrazo-Peterson, 1983; LaVome Robinson & Calhoun, 1984; Van Dam-Baggen & Kraaimaat, 1987b). In the clinical assessment of social anxiety and nonassertiveness in adults and adolescents, the operationalization of the apprehension aspect has focused mainly on the *degree* of discomfort experienced in interpersonal situations, while the operationalization of the behavioral aspect (nonassertiveness) has focused mainly on the reported *frequency* of behavior in interpersonal situations. Discomfort has been measured by questionnaires such as the Social Avoidance and Distress Scale (Watson & Friend, 1969), the Fear of Negative Evaluation Scale (Watson & Friend, 1969; Leary, 1983), The Social Anxiety Scale (Willems, Tuender-de Haan, & Defares, 1973), the Social Anxiety Inventory (Richardson & Tasto, 1976), the Social Phobia and Anxiety Inventory (Turner, Beidel, Dancu, & Stanley, 1989) and the Assertion Inventory (Gambrill & Richey, 1975). Reported frequency has been measured by questionnaires such as the Wolpe-Lazarus Assertiveness Schedule (Wolpe & Lazarus, 1966; Hersen, Bellack, Turner, Williams, Harper, & Watts, 1979), the Rathus Assertiveness Schedule (Rathus, 1973) and the Assertion Inventory (Gambrill & Richey, 1975). With the exception of the Assertion Inventory, different inventories have to be used to measure the emotional as well as the behavioral aspect of social anxiety. In addition, another disadvantage of the aforementioned questionnaires is that the so-called negative domain of social responses, i. e., situations in which a response of assertively standing up for oneself is needed, is overrepresented in the item set, while the so-called positive domain of assertiveness, namely, situations that are directly or indirectly aimed at the exchange of positive emotions with other persons, is underrepresented.

In clinical practice, the emotional aspect has obtained a rather dominant position in the measurement of social anxiety. The main reason for this is that apprehension (or the subjective distress in social situations) is often reported as a debilitating aspect of social functioning. Because of their convenience and efficiency, questionnaires are the most frequently used instruments in the assessment of social anxiety. Traditionally, self-report inventories were constructed to measure a trait or a disposition. Mischel (1968, 1973, 1990) vehemently criticized this type of questionnaire for failing to *predict* specific behavior in specific situations. Although this debate was already surpassed by the view in which social anxiety was considered a complex response with three aspects, two lessons had yet to be learned, namely: (1) self-report measures should take into account situational specificity; and (2) the items should describe behavior (concrete social responses) that must be as situation-specific as possible. At the same time, the inventory should be as brief as possible (Angleiter, John, & Löhr, 1986). Designing and developing a comprehensive instrument able to measure social anxiety means that (1) the items should represent a broad range of assertive behavior in social situations, namely, from both the positive and negative domains of assertiveness (situation facets, e. g., Stouthard, Hoogstraten, & Mellenbergh, 1995) and (2) two reaction facets (e. g., Stouthard et al., 1995) of the construct need to be measured, namely, the discomfort (emotional aspect) in social situations and the frequency of the social response (behavioral aspect).

The aim of the present paper was to develop and investigate the psychometric characteristics of the Inventory of Interpersonal Situations (IIS) as a comprehensive instrument to assess the emotional as well as the behavioral aspect of social anxiety on positive and negative domains of assertiveness in clinical and nonclinical populations. Several studies were successively carried out, and are reported below.

Study 1: Development of the IIS

The purpose of Study 1 was to develop a short, focused, and content-valid Inventory of Interpersonal Situations (IIS) to be used for clinical and research purposes. The items had to reflect the interactive conception of social anxiety, while the questionnaire had to comprise scales for discomfort and frequency. The following criteria were established: (1) to be applicable across various populations and (2) to predict specific behavior in social situations.

Method

Item Pool Generation and Initial Item Selection

The original item pool of the Inventory of Interpersonal Situations (IIS) consisted of 765 items drawn from the Dutch and English written inventories on social anxiety and/or assertiveness available since 1975 (see Van Dam-Baggen & Kraaimaat, 1987a) as well as from own clinical practice. Duplicate items were removed from this item pool, as were all items which did not meet general criteria for scale construction. The item criteria were its relevance to the concept of social anxiety, unambiguous content, descriptive of behavior, formulation as an active behavior, length of 20 words or less, devoid of double negatives, and formulation in simple unambiguous language. The remaining 66 items were classified by experienced behavior therapists according to their content (situation facet) and appeared to sufficiently represent the two main domains of positive and negative assertiveness (e. g., Pitcher & Meikle, 1980). More specific classification showed an approximately equal representation of the 16 *a-priori*-distinguished social responses used in our social skills training with psychiatric patients (Van Dam-Baggen & Kraaimaat, 1986). The randomized items with instructions were again judged by clinical psychologists and linguists on the basis of readability, ambiguity, complexity, and comprehensibility. Finally, the inventory was completed by psychiatric patients with low educational levels to test the comprehensibility of the instructions and the items.

The reaction facet was elaborated in the construction of two *a priori* scales: (1) the magnitude of discomfort experienced while performing the social responses described in the items of the Discomfort scale, and (2) the reported frequency of performing these social responses in the Frequency scale. Each scale has both a separate instruction and administration form. In the Discomfort scale, the items are scored on a 5-point Likert scale ranging from 1 = no discomfort to 5 = very much discomfort. In the Frequency scale the same items are scored on a 5-point Likert scale ranging from 1 = I never do, to 5 = I always do. The sequence of the items is the same on both scales.

Item Reduction Phase

The provisional 66-item version was added to the pretreatment assessment of a Social Skills Training (SST: Van Dam-Baggen & Kraaimaat, 1986) in a Dutch psychiatric unit and completed by patients who had been consecutively referred by clinicians and psychiatrists. These patients had to fulfill the criteria formulated for participation in the SST, namely, age between 18 and 65, and social anxiety and/or social skill deficits reported during the behavioral assessment interview and on self-report inventories, such as the SAS (Willems et al., 1973) for the emotional aspect and the WLAS (Wolpe et al., 1966) for the behavioral aspect. Patients with various kinds of social inadequacy, such as social anxiety, avoidance of social situations, and having deficits and excesses in social responses, were admitted to the SST. The nature and intensity of other complaints were not determining factors with respect to the admittance to the SST. This resulted in a target sample of 124 socially anxious psychiatric patients, 59 men and 65 women, with a mean age of 32 years and all of Caucasian ethnicity. The psychiatric diagnoses ranged from severely neurotic to borderline psychotic syndromes; patients with acute psychosis and organic disturbances were excluded. In addition, the provisional version was administered to a control sample of 131 normal adult Dutch volunteers, employees of several offices, 87 men and 44 women, with a mean age of 32.7 years and all of Caucasian ethnicity. In both samples the IIS was individually administered by a research assistant. For the patients, the IIS was included as part of the pretreatment assessment of the SST. The samples did not differ in age (*t*-test: $p = .60$) or educational level (χ^2: $p = .12$).

Results and Discussion

t-tests were used to examine the discriminative validity of the items either on Discomfort or on Frequency. Using a criterion of $p < .05$, it appeared that all the items of the Discomfort scale discriminated the groups; with the Frequency scale, the 13 items that did not were removed.

In order to remove ambiguous items, principal components analyses (varimax rotation and Kaiser normalization) were performed on the remaining 53 items of both the Discomfort and Frequency scale with the data of the socially anxious patients. Based on the factor analysis of Frequency, those items that loaded high on two or more factors were removed by using a criterion of > .40, as were those that loaded too low on a factor by using a

criterion of < .50. Next, the same was done on the basis of the factor analysis of Discomfort. Finally, 35 definite items remained, which were again randomized. The instructions and format of the two scales remained unchanged. The minimum score of each scale is 35 and the maximum is 175 (Van Dam-Baggen & Kraaimaat, 1987a, 1990a, 1990b). The instructions and the 35 items are given in the Appendix.

Study 2: Temporal Stability

The purpose of Study 2 was to investigate the temporal stability of the IIS Discomfort and Frequency scales. The stability was investigated with a test-retest interval of 6 weeks in a nonclinical sample.

Method

Subjects

Subjects were 53 members of a choir, 20 men and 33 women, with a mean age of 43.1 years (SD = 16; range 17 to 73) and all of Caucasian ethnicity. The subjects were volunteers recruited to participate in the study and were different from those of the item-reduction phase.

Procedure

The IIS was individually administered to the subjects by a research assistant and completed twice over a time interval of 6 weeks. At the initial test, the participants were not informed about the retest. No treatment intervention was administered between test and retest.

Results and Discussion

The means (standard deviations) for test and retest for Discomfort were, respectively, M = 19.2 (SD = 5.4) and M = 18.9 (SD = 5.7) and for Frequency, respectively, M = 17.0 (SD = 4.4) and M = 17.3 (SD = 4.9). The product-moment correlations between test and retest were r = .84 and r = .86 for the Discomfort and Frequency scales, respectively, which can be seen as relatively high reliability over time.

Study 3: Internal Consistency

The purpose of Study 3 was to investigate the homogeneity of the Discomfort and Frequency scales. This was done by computing Cronbach's α's and also correlations comparing each item with the total score of the remaining items for both the Discomfort and Frequency scales.

Method

Subjects

The internal consistency was investigated in two samples:

- *Socially anxious inpatients and outpatients* (N = 217) from two Dutch psychiatric units, 79 men and 138 women with a mean age of 32 years (SD = 9.2; range 16 to 60) and of Caucasian ethnicity. These patients were participants of a Social Skills Training (SST: Van Dam-Baggen, 1984; Van Dam-Baggen & Kraaimaat, 1986), who were consecutively referred by clinicians (psychiatrists and clinical psychologists) and had to meet the criteria for the SST. The psychiatric diagnoses ranged from severely neurotic to borderline psychotic syndromes; patients with acute psychosis and organic disturbances were excluded. Fifty percent of the sample were educated below high school. The patients who participated in this study were different from those of the item-reduction phase.
- *Normal adults* (N = 276), 130 men and 146 women with a mean age of 38.6 years (SD = 13.4; range 16 to 74), employees of an office, participants in adult educational services or athletes, all Dutch volunteers of Caucasian ethnicity, were recruited to participate in the study. The distribution of the educational levels was nearly symmetrical. The normal subjects of this study were different from those of the previous studies.

Procedure

The IIS was individually administered to the subjects by a research assistant and was included as part of the SST pretreatment assessment for the patients.

Results and Discussion

The Cronbach's α's for the Discomfort scale were .96 and .93 for the socially anxious patients and the normal subjects, respectively, and for the Frequency scale .92 and .91, respectively (see Table 1). These are high for research purposes and group comparison and sufficiently high for applied settings (Nunnally & Bernstein, 1994). In addition, it was shown that almost all 35 separate items were related with the rest-total score with the socially anxious patients and also with the normal subjects for the Discomfort and the Frequency scales. The item-

Table 1. Means, standard deviations and Cronbach's α's for the IIS scales in 3 samples.

		Discomfort			Frequency		
	N	*M*	SD	α	*M*	SD	α
1. Soc. anxious patients	217	101.3	27.0	.96	93.7	17.4	.92
2. Psychiatric patients	363	91.7	28.8	.95	96.6	20.0	.92
3. Normal subjects	276	66.8	27.0	.93	113.0	16.3	.91

remainder correlations of the Discomfort scale range from .37 to .76 for the patients and from .30 to .67 for the normal persons, while for the Frequency scale they range from .21 (item 3) to .70 for the patients and from .30 to .57 for the normal persons. These results support that the empirically derived IIS-items contribute to the constructs measured with the Discomfort and Frequency scales.

Study 4: Item and Factorial Invariance

The purpose of Study 4 was (1) to assess the invariance of the rank order of item means by empirically investigating the agreement in rank ordering of two samples differing with respect to social anxiety, and (2) to assess the invariance of the factorial structure by testing the consistency of the *a priori* clustering of items (situation facet) across the two samples (Van Dam-Baggen, Kraaimaat & Kiers, 1991; 1992).

Method

Subjects

This study was performed with two samples representing the extremes of a social anxiety continuum. The samples of Study 3 were also used here: 217 socially anxious psychiatric patients and 276 normal adult persons.

Results and Discussion

Item Invariance: Rank Ordering of the Items

The agreement of the rank ordering of the items between the socially anxious patients and the normal subjects with respect to discomfort as well as frequency was investigated by computing the Spearman correlation between the group mean item ratings of both samples. Significant associations between groups of $r = .93$ and $r = .93$, respectively, were revealed for Discomfort and Frequency. This means that, although the socially anxious psychiatric patients and normal subjects differed in their level of reported social anxiety and social responses (see Table 1), they did agree in their rank ordering of the social responses that produced in them more or less social anxiety or of those items that were performed more or less frequently.

Factorial Invariance: Stability of Item Clustering

The consistency of the clustering of items of the two samples was investigated with the Simultaneous Components Analysis (SCA: Millsap & Meredith, 1988; Kiers & Ten Berge, 1989; Ten Berge & Kiers, 1990) for reported discomfort as well as response frequency. SCA computes components as weighted sum scores of the variables as is the case in the Principal Components Analysis (PCA), but uses exactly the same weights for this computation with the purpose of exactly measuring the same constructs in the samples. The component weights should contribute to an optimal representation of the variables by the components.

SCA of the Discomfort scale showed a rather clear structure of five components after oblique rotation, explaining 61.6% and 55.7% of the variance for the socially anxious patients and the normal subjects, respectively. With separate PCAs, the explained variances would have been only scarcely higher, that is, 62.1 and 56.1%, respectively. The five components represent the following domains of social behavior: Expressing criticism and opinion, Giving compliments, Initiating contacts, Positive self-statements and Doing and refusing requests.

SCA of the Frequency scale showed, also after oblique rotation, a rather clear structure of eight components explaining 60.5% and 58.2% of the variance for the patients and the normal subjects, respectively. With separate PCAs, the explained variances would have been only scarcely higher, namely, 61.2% and 58.9%, respectively. The eight components represent the following domains of social behavior: Giving criticism, Expressing opinion, Giving compliments, Initiating contacts, Positive self-statements, Stand up for yourself, Doing a request and Refusing a request.

Therefore, it appears that with similarly defined components in both samples, almost the same variance can be explained as with PCA, while these "simultaneous"

components also play an important role in the description of the variables in both samples.

In order to investigate whether the components "behave" in the same way in both samples – in other words, whether they almost have the same loadings – we compared the loadings of each component with Tuckers phi coefficient. This coefficient measures the agreement between the loadings on two components. The Tuckers phi coefficients were .99, .94, .98, .97, and .98, respectively, for the components of Discomfort, and .98, .98, .97, .98, .98, .97, .97, and .88, respectively, for the components of Frequency. This means that both samples show a similar structure or clustering for discomfort as well as for frequency.

Inspection of the content of the components revealed that the clusters sufficiently represent the classes of social responses on the basis of which items were generated in the development phase. This supports the content validity of the IIS as well as the use of situational facet approach in generating items for the inventory.

Study 5: Discriminative Validity

The purpose of Study 5 was to investigate the discriminative or known groups validity of the IIS by comparing a sample representing the criterion social anxiety with samples not representing this criterion. As the aim of the IIS was to measure social anxiety in psychiatric patients across various diagnostic categories, the sample of selected socially anxious psychiatric patients served as criterion sample. The IIS scales needed to discriminate the socially anxious psychiatric patient sample from both the general sample of psychiatric patients and the normal subjects. Moreover, the IIS scales needed to discriminate the general sample of psychiatric patients from the normal individuals because a relationship between social anxiety and psychiatric syndromes was found in several studies (Bryant, Trower, Yardley, Urbieta, & Letemendia, 1976; Curran, Miller, Zwick, Monti, & Stout, 1980; Zigler & Glick, 1986).

Method

Subjects

In this study the following samples were involved:
- *the 217 socially anxious psychiatric patients* of Study 3 as criterion sample,
- *the 276 normal adults* of Study 3 as noncriterion sample and
- *a general sample of 363 psychiatric patients* as noncriterion sample; 152 men and 211 women with a mean age of 35.5 years (SD = 10.7; range 17 to 69) and of Caucasian ethnicity; about 57% of the sample were educated below high-school level. This sample consisted of patients participating in a study comparing the effectiveness of in-ward versus day-hospital treatment. Only patients who were not able to complete the questionnaires because of acute psychoses were excluded from the sample. This sample did not overlap with the sample of socially anxious psychiatric patients.

Procedure

The psychiatric patients completed the IIS as part of the pretest assessment for admittance to the in-ward or day-hospital. The assessment was conducted by a research assistant.

Results and Discussion

Table 1 gives the means and standard deviations of the Discomfort and Frequency scales for the three samples. The three groups were compared with one-way analyses of variance, while Student, Newman, and Keuls tests were used to detect differences between pairs. It appeared that the three groups differed significantly on the Discomfort scale (F (2, 853) = 131.3; $p < .001$) and the Frequency scale (F (2, 853) = 88.0; $p < .001$). Student, Newman, and Keuls tests ($p < .01$) revealed that the socially anxious patients differed significantly from the normal subjects on both the Discomfort and the Frequency scale. The socially anxious patients also differed significantly from the psychiatric patients on Discomfort, but not on Frequency. In addition, the sample of psychiatric patients differed significantly from the normal subjects on both IIS scales, which again strengthens the construct validity of the IIS. From these findings it may be concluded that both the IIS scales show a good discriminative or known groups validity. With respect to the separate items, the results were similar: All Discomfort items discriminate socially anxious and normal subjects, while all except three Frequency items (3, 4 and 28) also did so.

Study 6: Convergent and Discriminant Validity

The purpose of Study 6 was to investigate the nomological network of the IIS scales by assessing convergent and discriminant validity. The relation of the IIS scales

with other social anxiety measures was investigated in order to assess convergent validity. Relationships were predicted on the basis of the assumption that different measurements of the same construct would be related. It was predicted that the IIS Discomfort scale would correlate moderately to very positively with the social inadequacy scale of the Symptom Check List-90 (SCL-90: Derogatis, 1977; Arrindell & Ettema, 1981) and with the Social Anxiety Scale (SAS: Willems, Tuender-de Haan, & Defares, 1973), while the IIS Frequency scale would correlate moderately to very negatively with these scales. In order to assess deeply the convergent validity, the relationships between the IIS scales and several other subscales of the SCL-90 were investigated, namely, hostility, paranoid ideation and agoraphobia. It could be assumed that social anxiety constitutes hostility and paranoid ideation, while from the literature it is known that agoraphobia is often accompanied by social anxiety (e. g., Barlow, 1993). It was predicted that the IIS scales would show moderate relationships with these measures (Cohen, 1988).

Discriminant validity was assessed by investigating the relationships between the IIS scales and nonsocial anxiety measures along with the demographic variables. Relationships were predicted on the basis of the assumption that measurements of different constructs would not be related. It was predicted that the IIS scales would show low relationships with the Internal-External Locus of Control Scale (I-E scale: Rotter, 1966; Andriessen, 1972). Because in the literature hardly any relationships have been reported between social anxiety and demographical variables, it was predicted that the IIS scales would show no relationships with sex, age, and educational level.

Method

Subjects

Subjects were the 217 socially anxious psychiatric patients of Study 3.

Procedure

In addition to the IIS, the first consecutive 110 patients completed several other questionnaires as part of the pretreatment assessment of the SST. The assessment was conducted by a research assistant.

Measures

The following measures were used in this study:

- *The Symptom Check List* (SCL-90: Derogatis, 1977; Dutch version: Arrindell & Ettema, 1981) was used as an index of psychoneuroticism. In the Dutch version of the SCL-90, a social inadequacy subscale was derived as well as subscales for hostility, paranoid ideation, and agoraphobia (Arrindell & Ettema, 1981). The validity and reliability of the SCL-90 has been examined with efficacious results for several Dutch adult populations, including psychiatric ones (Arrindell & Ettema, 1981).
- *The Social Anxiety Scale* (SAS: Willems, Tuender-de Haan & Defares, 1973) was used as an index of negative self-evaluation in social situations. The validity of the SAS has been demonstrated in adult and adolescent populations (Willems, Tuender-de Haan, & Defares, 1973).
- *The Internal-External Locus of Control Scale* (I-E: Rotter, 1966; Dutch version: Andriessen, 1972) was used as an index of self-regulation. The validity of the I-E scale has been sufficiently proven for experimental as well as practical purposes (Andriessen, 1972).

Results and Discussion

Convergent Validity

In line with our prediction, the present study revealed (see Table 2) that the Discomfort scale was highly positively associated, and the Frequency scale was highly negatively associated, with both social anxiety measures (SAS and SCL-90 social inadequacy); this supports the validity of the IIS scales. The present study revealed that the correlations with the other subscales of the SCL-90 are significant at a moderate level lower than those with the social anxiety measures (see Table 2). This means that the IIS scales are slightly related with somatic complaints, agoraphobia, hostility, and paranoid ideation, reflecting the overlap between anxiety and social anxiety and also supporting the convergent validity of the IIS scales.

Table 2. Product-moment correlations of the IIS scales with demographic variables and social and nonsocial anxiety measures.

	Discomfort *r*	Frequency *r*
Convergent validity		
SAS[1]	.76**	–.59**
SCL-90 soc. inadequacy[1]	.67**	–.44**
SCL-90 paranoid ideation[1]	.49**	–.28**
SCL-90 hostility[1]	.36**	–.20
SCL-90 agoraphobia[1]	.38**	–.27**
Discriminant validity		
Sex[†2]	–.15*	–.02
Age[2]	–.05	.04
Educational level[2]	.00	.09
I-E scale[1]	.23*	–.24*

* $p < .05$, ** $p < .01$ (one-tailed), [†]Spearman correlations
[1]Only the subjects who endorsed all inventories: $N = 109$; [2]Whole sample: $N = 217$

Discriminant Validity

This study (see Table 2) showed that the correlations of the IIS scales with the I-E scale were low, which means that the IIS scales apparently measure other concepts than the I-E scale. In addition, it was revealed that the Discomfort scale was not significantly related with age and educational level; a low but significant correlation was found with the Discomfort scale with respect to sex. No significant correlations were found with sex, age, and educational level with the Frequency scale, which means that this scale is independent of these characteristics. These findings support the discriminant validity of the IIS scales.

Study 7: Predictive Validity

The purpose of Study 7 was to assess the degree to which scale scores of the IIS could predict social anxiety related to overt behavior in a naturalistic social situation. The subjects were exposed to a social situation in a naturalistic role-play procedure. The question of the predictive validity is important because the predictive value of self-report inventories for overt behavior was often found to be rather low (Mischel, 1968, 1973, 1990). In the first stage of the development of the IIS we tried to solve this problem by formulating the items of the IIS as social responses to specific situations. Therefore, we expected the IIS scales to have a relatively high predictive value.

A moderate to high correlation between the IIS scales and overt behavior in social situations was required for the predictive validity. More specifically, it was expected that the Discomfort scale would show negative correlations with overt behavior (with the exception of response latency), while the Frequency scale would show positive correlations with the behavioral aspects (with the exception of response latency).

Method

For more extensive information about the selection of the subjects, the procedure and the measures, see Van Dam-Baggen and Kraaimaat (1987b).

Subjects

Forty-seven inpatients and outpatients from a Dutch psychiatric hospital, 25 men and 22 women, with a mean age of 35.1 (SD = 10.9; range 20 to 56) and of Caucasian ethnicity, were recruited to participate voluntarily in an experimental study on aspects of social anxiety. The psychiatric diagnoses ranged from severely neurotic to borderline psychotic syndromes; patients with acute psychoses and organic disturbances were excluded from the experiment. The patient sample of this study is different from those used in the prior studies.

Procedure

The IIS was administered to the subjects by a research assistant two weeks before the experiment. During the experiment the participants were exposed to a naturalistic role-play social situation with a confederate. The subjects were instructed to initiate a conversation with an unfamiliar person in a waiting room and the confederate was instructed to reinforce the subject's efforts without taking any initiatives. The role-playing came to an end in two minutes. During the situation the subject's overt behavioral reactions to the situation were recorded.

Measures

Overt behavior was continuously recorded during the experimental sessions by means of a video recorder. Independent judges, unfamiliar with the experimental design, scored and rated the following types of behavior from the video and audio tapes:

- *The duration of speech:* the total time of speech in minutes during the first five responses;
- *The response latency:* the mean time (in seconds) between the end of the confederate's response and the beginning of the participant's response;
- *The number of clauses:* the total number of verbal responses per minute;
- *The duration of gaze:* the total time of gaze during the first five reactions of the participant;
- *The adjustment of gaze:* the adjustment of the variation in gaze to the interaction (7-point Likert scale);
- *Volume of vocalization:* the tuning of speech volume to the interaction (7-point Likert scale);
- *Intonation:* the adjustment of variation in intonation (7-point Likert scale) and
- *The content of the verbal response:* this was rated with the help of the written text and a 7-point Likert scale with respect to kind and variation of the responses in initiating the conversation.

Previous research revealed sufficient validity for these measures in discriminating high from low socially anxious patients (Van Dam-Baggen & Kraaimaat, 1987b).

As a check on reliability, 25% of the video tapes were randomly rescored and rerated by independent judges unfamiliar with the design. The interrater reliability scores (product-moment correlations) were speech duration $r = .99$, response latency $r = .95$, number of verbal responses $r = .98$, duration of gaze $r = 0.99$, adjustment

of gaze $r = .78$, volume of vocalization $r = .79$, and intonation $r = .66$. With an interval of two weeks the content was rated twice by a clinical psychologist/behavior therapist who was very experienced in the treatment of social anxiety. The intrarater reliability (product-moment correlation) was $r = .94$ (Van Dam-Baggen & Kraaimaat, 1990).

Results and Discussion

First, a check was done on the social anxiety level of the patient sample. It was found that the mean scores of Discomfort ($M = 93.6$, SD = 28.3) and Frequency ($M = 97.3$, SD = 19.5) corresponded more or less with the mean of a reference group of heterogeneously diagnosed psychiatric patients (Van Dam-Baggen & Kraaimaat, 1987a) (cf. Table 1). Table 3 presents the correlations of the predictive variables and the IIS scales. One-tailed tests were used to test these predictions; the Bonferroni correction was used to control for test-wise error in the analyses.

Table 3. PM-correlations and multiple correlations of overt behavior and IIS scales.

	Discomfort		Frequency	
	r	R^2	*r*	R^2
Overt behavior				
Duration of speech	–.19		.31	
Response latency	.23		–.43*	
Number of clauses	–.30		.42*	
Duration of gaze	–.51*		.45*	
Adjustment of gaze	–.42*		.46*	
Volume of vocalization	–.40*		.44*	
Intonation	–.18		.37*	
Content	–.32		.41*	
Set of overt behaviors		.62†		.58†

*$p < .006$ (after Bonferroni correction; one-tailed), †$p < .01$ (one-tailed)

Eight predictions were made for each IIS scale. Three out of eight correlations were found to be significant for the Discomfort scale, while seven out of eight were significant for the Frequency scale. This is also reflected in the multiple regression coefficients, which were high and significant for the set of overt behaviors. Thus, in general, the Discomfort as well as the Frequency scale were found to predict overt behavior in a social situation.

From these results, it can be concluded that the predictive validity of the IIS Discomfort and Frequency scales is moderate to high with respect to the group of overt social behaviors.

Study 8: Sensitivity to Change

The purpose of Study 8 was to determine the degree to which the IIS was sensitive to treatment-related changes in social anxiety. The IIS was administered to the subjects of a validated Social Skills Training (SST) at pretreatment and posttreatment. In previous research, the effectiveness of the SST had already been established with other outcome measures than the IIS (Van Dam-Baggen, 1984; Van Dam-Baggen & Kraaimaat, 1986). This SST has the format of a broad spectrum treatment program, directed at emotional, cognitive, and behavioral aspects of social behavior, and aimed at the reduction of social anxiety and the enhancement of social skills as well as the enhancement of self-regulative behaviors.

Method

Subjects

This study on the sensitivity of the IIS was performed with three nonrandomized samples of socially anxious psychiatric patients:

– *Socially anxious psychiatric patients* ($N = 136$) who completed the SST in an outpatient setting, 85 women and 51 men with a mean age of 30.7 (SD = 9.5) and of Caucasian ethnicity;
– *Socially anxious psychiatric patients* ($N = 102$) who completed the SST in an inpatient setting, 67 women and 35 men with a mean age of 30.4 (SD = 9.4) and of Caucasian ethnicity;
– *Socially anxious psychiatric patients* ($N = 28$) who fulfilled the criteria for SST. Only general psychiatric treatments (e. g., medication, sociotherapy, occupational therapy) were given to these patients, but not the SST. This sample of patients formed the Treatment Control Condition (TCC) and consisted of 20 women and 8 men with a mean age of 36.6 (SD = 9.3) and of Caucasian ethnicity.

The exclusion criteria used with these patient samples were similar to those in the aforementioned studies. The patient samples of this study were different from the patient samples used in the prior validity studies. Furthermore, it should be noted that it was impossible to study sensitivity to change in untreated patient samples because of the ethical constraints in withholding treatment from psychiatric patients.

Procedure

The IIS was completed as part of the pretreatment and posttreatment assessment of an SST in the case of the treated samples, while pretests and posttests were com-

pleted with a time interval lasting as long as the SST in the control condition. The assessments were conducted by a research assistant.

Results and Discussion

In Table 4, means and standard deviations are given of pretests and posttests for the Discomfort and Frequency scales, as well as *t*-values of the comparison of pretests and posttests and their effect sizes (Cohen, 1988). Pretests and posttests of the two SST conditions were found to be significantly different for both scales of the IIS. The pretests and posttests of the control condition also differed significantly. These results indicate that the scales of the IIS are sufficiently sensitive to detect changes caused by a specific therapy aimed at both social anxiety and deficits in social skills as well as by general psychiatric therapies. The effect sizes of the SSTs are rather large, which strongly suggests that the IIS accurately detects changes in the domain of social anxiety. As could be expected, the effect sizes of the control condition are smaller because the social anxiety level in this condition is only indirectly influenced by the general psychiatric treatments. It should be noted that these effects are about the same as those of both common factors and placebo effects (Lambert, Shapiro, & Bergin, 1986). However, it could also be hypothesized that the rather small effect size on the Discomfort scale should be attributed to a bottom effect caused by the rather low level of the pretest.

Table 4. Means and standard deviations of pretests and posttests, *t*-values and effect sizes of the three samples.

			Pretest		Posttest			
Group	*N*	Scale	*M*	*SD*	*M*	*SD*	*t*	*ES*
SST-a[1]	136	Disc.	105.2	28.6	78.2	24.2	11.7**	1.02
		Freq.	92.2	17.5	109.9	19.8	–10.6**	.95
SST-b[1]	102	Disc.	103.1	25.2	79.0	21.8	9.5**	1.00
		Freq.	95.0	13.2	110.1	18.2	–8.3**	.89
TCC[2]	28	Disc.	92.3	28.7	82.5	24.8	2.2*	.37
		Freq.	91.2	19.4	100.1	18.4	–3.9**	.47

*$p < .05$, **$p < .01$ (two-tailed)
[1]SST = Social Skills Training; [2]TCC = Treatment Control Condition

General Discussion

This paper has focused on the development and validation of a self-report instrument for the assessment of social anxiety, the Inventory of Interpersonal Situations (IIS). The questionnaire consists of 35 items formulated as responses to specific social situations. It is based on an interactive concept of social anxiety and provides scales for discomfort (emotional aspect) and for frequency (behavioral aspect). Because the assessment of the psychometric characteristics of an instrument is an ongoing process requiring multiple efforts over time, a set of 8 studies was presented to test the validity and reliability of the IIS.

Social anxiety as measured by the IIS scales Discomfort and Frequency showed good internal consistency across multiple clinical and nonclinical groups. In addition, it was revealed that the internal structure was rather invariant across socially anxious and nonsocially anxious groups. Although these groups differed in their level of reported social anxiety, they agreed in their rank ordering of the social responses that gave them relatively more or less anxiety as well as in their clustering of social responses.

The results of the discriminative validity study indicate that the IIS scales significantly distinguish between psychiatric patients who were referred to a social anxiety intervention group and normal persons. It should be noted that the Discomfort scale had a particularly high discriminative value. The Frequency scale tended to discriminate the socially anxious patients from the general sample of psychiatric patients, but it did discriminate both patient groups from the normal persons. One explanation for this finding might be that reported social anxiety functioned more as a criterion for assignment to treatment than did reported frequency. Another explanation could be found in the different mechanisms which were at the basis of low frequency scores such as behavioral inhibition due to social anxiety and lack of social skills.

The purpose of the design of the IIS scales was to develop an instrument with high predictive qualities for specific behaviors in specific situations. The finding that both scales predict overt behaviors in a conversational situation demonstrated that early shortcomings of self-report inventories can be adequately met. In our opinion, the formulation of the items in a concrete and situation-specific manner may have substantially contributed to this relatively high predictive value. From predictive as well as discriminative validity results it can be concluded that the Discomfort and Frequency scales indeed tap crucial dimensions of social anxiety.

Social anxiety as measured by the IIS scales proved to be relatively independent of sex, age, and educational level, which is congruent with the literature. The significant, but very small, correlation of the Discomfort scale with sex could be due to differences in specific domains of social anxiety between men and women, as is sometimes reported in the literature (e. g., Wilson & Gallois, 1993); this needs further exploration with respect to the IIS.

For the use of the IIS in clinical practice the individual's scores could be compared with those of reference

groups, as there are socially anxious psychiatric patients, heterogeneous psychiatric patients, and normal persons (Van Dam-Baggen & Kraaimaat, 1990b). This comparison could serve as the basis for the selection for treatment. It is of interest to note that the following product-moment correlations were obtained for the relationship between the Discomfort and the Frequency scale: $r = -.62$ for the socially anxious psychiatric patients, $r = -.49$ for the heterogeneous psychiatric patients, and $r = -.43$ for the normal persons. However, a treatment preference for social anxiety cannot be inferred from the scores of the IIS scales; rather it is dependent on the mechanisms underlying the patient's experienced discomfort and performance of social behavior (Van Dam-Baggen, Kraaimaat, & Crouzen, 1993).

The study on the item and factorial invariance of the IIS revealed relative stable rank ordering as well as clustering of social responses on Discomfort and Frequency across two samples. This means that the relative anxiety-eliciting capacity of responses in social situations is rather stable. In addition, the clusters of social responses inferred for Discomfort and Frequency highly agree across the two samples. It was also revealed that the components are similar to the factorial dimensions found in other studies with different samples (cf. Van Dam-Baggen, Kraaimaat, & Kiers, 1991, 1992).

The results of this set of studies support the validity and reliability of the IIS Discomfort and Frequency scales. The IIS scales should be very useful for differentiating socially anxious psychiatric patients, heterogeneous psychiatric patients, and normal subjects. Furthermore, the IIS scales have a high predictive value for overt aspects of social behavior, which is important for use in clinical practice. In addition, the IIS scales can be used clinically to help delineate specific aspects of social anxiety in a specific individual. This can be done by perusing the situational and response facets assessed by the scales. Finally, the IIS scales should prove to be a useful instrument to measure treatment outcome. In future research the significance of the IIS should be investigated for cross-cultural studies in social anxiety. In addition to the Dutch version, the IIS is currently available in both British and American English, French, German, and Turkish translations. Copies of the IIS for research purposes are available from the first author.

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Appendix: Inventory of Interpersonal Situations (IIS)

Instructions for Part 1: Discomfort

This inventory consists of a number of interpersonal situations. Please indicate the degree of *discomfort* you would experience in each of these situations. Use the following answer key:

1. none
2. a little
3. a fair amount
4. much
5. very much

For example:

If you feel a *fair* amount of discomfort when you join a conversation of a small group of people, then circle number 3 as follows:

1. Joining a conversation of a small group of people
   1 2 ③ 4 5

Please complete the following questionnaire. Take your time when you work from one situation to the next. There are no right or wrong answers; it is rather your opinion that matters.

Instructions for Part 2: Frequency of Occurrence

In this part you will find the same 35 interpersonal situations as described in Part 1. This time you are to indicate *how often* you behave as described in the situations. Use the following answers:

1. never
2. seldom
3. sometimes
4. often
5. always

For example:

If you *never* join a conversation of a small group of people, then circle number 1 as follows:

1. Joining a conversation of a small group of people
   ① 2 3 4 5

One by one complete the list of interpersonal situations, taking your time. Again, there are no right or wrong answers; it only matters what you think. Take your time to complete Part 2.

Items of the IIS

1. Joining a conversation of a small group of people
2. Telling a friend that he/she is doing something that bothers you
3. Resisting pressure to accept an offer (for example, at the door, in the street)
4. Accepting a compliment for something you did
5. Asking a friend to help you with something
6. Requesting the return of something you have lent to someone
7. Turning down a request to lend someone money
8. Refusing a request from an authority figure (e. g., employer, superior, teacher)
9. Telling someone that you are pleased with what he/she did for you
10. Asking someone to stop bothering you in a public place (theater, subway)
11. Maintaining eye contact during a conversation
12. Asking for information (at a window or booth)
13. Initiating a conversation with an attractive male/female
14. Expressing an opinion that differs from that of the person with whom you are talking
15. Initiating a conversation with a stranger
16. Expressing an opinion that differs from that of those around you
17. Complimenting someone for a job well done
18. Returning a defective item (for example, in a store or restaurant)
19. Asking for a further explanation about something you did not understand
20. Expressing your opinion in a conversation with a group of unfamiliar people
21. Telling someone that he/she offended you
22. Refusing a request from a person you like
23. Expressing your appreciation for a present
24. Telling someone that he/she is good looking
25. Discussing why someone seems to avoid you
26. Telling someone that you like it that he or she appreciates you
27. Agreeing with a compliment about your looks
28. Telling someone that you are pleased with something you did
29. Initiating a conversation with a stranger
30. Expressing your opinion of life
31. Telling someone you no longer want to see him/her
32. Insisting that someone contributes his/her share
33. Telling someone that the way he/she is talking disturbs you
34. Expressing your opinion to an authority figure (e. g., employer, superior, teacher)
35. Asking a friend to go out with you

Please check if you marked all situations