

Title:

The relationship between communication attitude, anxiety, and depression in stutterers and non-stutterers.

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Abstract:

Examined self-perceptions of general state and trait anxiety, depression, and communication attitude in matched groups of 52 stutterers and 52 nonstutterers (aged 16–68 yrs). Measures included the Beck Depression Inventory and the State-Trait Anxiety Inventory. Anxiety and depression were not related to self-ratings of stuttering severity. Communication attitude was negative and became increasingly negative as self-ratings of stuttering became more severe. Stutterers grouped by severity rating differed in the strength of the relation between measures of communication attitude, anxiety, and depression. Findings suggest that the anxiety of stutterers is restricted to their attitude toward communication situations and is a rational response to negative communication experiences. (PsycINFO Database Record (c) 2009 APA, all rights reserved)

Subjects:

*Anxiety; *Attitudes; *Interpersonal Communication; *Major Depression; *Stuttering; Self Perception

THE RELATIONSHIP BETWEEN COMMUNICATION ATTITUDE, ANXIETY, AND DEPRESSION IN STUTTERERS AND NONSTUTTERERS

People who stutter are frequently viewed as more anxious than nonstutterers and as being depressed. Further, a strong and pervasive stereotype is held by nonstutterers that people who stutter are guarded, nervous, and tense. This study examined self-perceptions of general state and trait anxiety, depression, and communication attitude in matched groups of stutterers and nonstutterers. Results refute the assertion that people who stutter are more anxious or depressed than those who do not. Anxiety and depression are not related to self-ratings of stuttering severity. Communication attitude is negative for this group of people who stutter and becomes increasingly negative as self-ratings of stuttering become more severe. People who stutter, grouped by severity rating, differed in the strength of the relation between measures of communication attitude, anxiety, and depression. Findings suggest that the anxiety of people who stutter is restricted to their attitude towards communication situations and that it is a rational response to negative communication experiences.

[KEY WORDS: stuttering, dysfluency, anxiety, communication attitude, depression](#)

Anxiety plays a central role in many theories of stuttering (Bloodstein, 1987). Anxiety is included in theories of the etiology of the stuttering disorder, is related causally to the moment of

stuttering, and is often described as a reaction to stuttering behaviors that can maintain these behaviors.

Johnson's (1942) diagenetic theory proposes that children begin to stutter as a reaction to parental anxiety, pressure, and criticism directed toward normal childhood nonfluencies. Parental concern about the child's speech increases the child's anxiety about speech. As a consequence, the child's speech becomes dysfluent.

Classical conditioning theories propose that a person who stutters learns to associate speech with negative emotional states such as anxiety, fear, and stress (Brutten & Shoemaker, 1967; Mysak, 1960; Van Riper, 1937). Anticipation of specific situations or speech difficulties evoke or intensify anxiety, resulting in speech disintegration (Brutten & Shoemaker, 1967; Sheehan, 1970). Negative emotions become classically conditioned so that anxiety and/or fear become eliciting stimuli for fluency failure (Brutten & Shoemaker, 1967; Sheehan, 1970). In other words, learned anxiety or fear has a causal effect on dysfluency.

Sheehan (1953) suggested that stuttering episodes are the result of an approach-avoidance conflict. That is, stuttering occurs when the drive to speak conflicts with the drive to hold back from speaking. This theory was later expanded to encompass a double approach-avoidance conflict (Sheehan, 1975). One conflict is between the drives to approach versus avoid speaking; the second conflict is between the drives to approach versus avoid being silent (Andrews et al., 1983; Miller, 1944). Sheehan (1975) speculated that the underlying cause of the drive to avoid speaking was learned speech anxiety or subconscious personality factors.

The anticipatory-struggle hypothesis (Bloodstein, 1972) suggests that a child develops the belief that speech is difficult while struggling with normal childhood disfluencies. When the child anticipates speech difficulty, he or she reacts to that anticipated difficulty by tensing the speech musculature and fragmenting sounds, words, or phrases. Thus, stuttering episodes are the result of the child's reaction to anxiety.

Recently, Zimmermann, Smith, and Hanley (1981) and Weber and Smith (1990) proposed that anxiety may interfere with central nervous system processes underlying production of fluent speech. Sources of interference may be concern about poor performance, ability level, embarrassment, self-doubt, worry, fear of certain words or situations, depression, or generalized anxiety. These factors are believed to exert a disruptive effect on the "tuning of sensory-motor pathways and triggering inputs" to the speech musculature (Zimmermann et al., 1981, p. 25).

Although there is no evidence supporting the causal role of anxiety in the development or occurrence of stuttering (Andrews et al., 1983; Bloodstein, 1987; Peters & Hulstijn, 1984), anxiety contributes significantly to stuttering behaviors. Circumlocutions, word substitutions, sound prolongations, and part-word repetitions have a long association with the fear of stuttering and with what stutterers do when they try not to stutter (Bloodstein, 1987). While these behaviors are frequently learned as avoidance or escape mechanisms to alleviate speech dysfluency, they become part of the stuttering episode (Sheehan, 1970). Thus, stuttering is characterized by behaviors learned to avoid speech dysfluencies and/or anxiety related to years of negative communication experiences and speaking fears.

Anxiety and People Who Stutter

People who stutter are frequently viewed as being more anxious than nonstutterers (Craig, 1990) and as being depressed (Costa, 1983; Costa, Antoniac, Berghianu & Marinescu, 1986; Khavin, 1985). Woods and Williams (1976) and Kalinowski, Lerman, and Watt (1987) report that nonstutterers hold a stuttering stereotype in which those who stutter are viewed as being guarded, nervous, self-conscious, tense, sensitive, hesitant, introverted, and insecure.

Investigations of the relationship between anxiety and stuttering typically examine isolated physiologic manifestations of arousal and various aspects of stuttering. Baumgartner and Brutton (1983) examined the effect of stuttering expectancy on heart rate in three people who stuttered. They found no relationship between heart measures and expectancy to stutter for two of the three. However, increased heart rate prior to dysfluencies occurred for the third stuttering subject. Kraaimaat, Janssen, and Brutton (1988) compared pretreatment galvanic skin response and heart rate to success in speech treatment. Results showed a correlation between increased skin conductance levels prior to and during a reading task and the stuttering person's failure to decrease repetitions and prolongations following speech treatment.

Craig (1990) investigated the relationship between state and trait anxiety and stuttering treatment. State anxiety refers to anxiety as a transitory emotional phenomenon (e.g., "I feel calm right now"). Trait anxiety refers to individual differences in anxiety-proneness as a relatively stable personality characteristic (e.g., "I am generally calm, cool, and collected"). Craig found that stutterers' trait and state anxiety scores prior to treatment were significantly higher than normal, but that stuttering subjects' trait anxiety scores following intensive treatment were within normal limits. Craig did not measure posttreatment state anxiety.

People who stutter are also viewed as possessing negative speech attitudes (Guitar, 1976; Watson, 1988) and anticipatory apprehension or a cognitive expectancy to stutter (Barbara, 1965; Fransella, 1972; Johnson, 1942; Sheehan, 1970; Wicksner, 1969). These negative feelings and stuttering expectations are positively correlated with speech dysfluency (Barbara, 1965; Baumgartner & Brutton, 1983; Brutton & Shoemaker, 1967; Craig, 1990; Fransella, 1972; Johnson, 1942; Murray, Empson, & Weaver, 1987; Sheehan, 1970; Wicksner, 1969). Negative speech attitudes are also related to failure in speech treatment. For example, Andrews and Cutler (1974) administered the Erickson Communication Attitude Scale to 25 stuttering subjects prior to and following speech treatment. They found that a score of nine or lower, indicating a relatively positive communication attitude, was predictive of success in maintaining fluent speech. A score greater than nine predicted failure to maintain learned speech controls.

Anxiety and Depression

Clinical, empirical, and theoretical studies of psychopathology show that anxiety and depression are closely related (Gurney, Roth, & Garside, 1970; Klerman, 1977; Leckman, Weissman, Merikangas, Pauls, & Prusoff, 1983) and frequently difficult to differentiate (Garvey, Cook, & Noyes, 1989; Greenberg & Beck, 1989). The relation between anxiety and depression is based, in part, on the fact that negative cognition (e.g., disapproving thoughts about oneself, one's personal world, and the future) plays a significant role in both (Beck & Emery, 1985;

Spielberger, 1972). Thoughts of depressed individuals contain negative themes of incompetence, failure, personal worthlessness, and pessimism. Thoughts of anxious individuals contain negative themes of uncertainty, unpredictability, threat, and danger (Epstein, 1972; Spielberger, 1972).

Negative attitudes toward speech, anxiety, and depression in some people who stutter may be related to feelings of uncertainty and unpredictability about speech dysfluencies, to failure in achieving fluent speech, or to personality factors not related to stuttering or communication. Research, to date, in stuttering and anxiety appears to focus on single aspects of anxiety such as physiological change associated with stuttering expectancy, state and trait anxiety related to treatment success, or negative attitude and speech dysfluency. The relationship between personality factors such as anxiety, depression, and communication fear has not been investigated systematically in the same group of stuttering individuals or in nonstutterers.

The goal of the present study is to examine the relationship between state anxiety, trait anxiety, depression, and communication attitude in a group of people who stutter and another group of people who do not stutter. The hypotheses under test are that (a) stuttering subjects will show significantly higher scores on measures of state and trait anxiety, depression, and communication attitude than will nonstutterers, and (b) there is a significant relation between stuttering subjects' self-ratings of severity and their scores on state and trait anxiety, depression, and communication attitude. We expect that people who stutter severely will exhibit greater state and trait anxiety, greater depression, and poorer communication attitude than will those who stutter mildly or moderately. We also expect that severely stuttering subjects will show stronger relations among measures of anxiety, depression, and communication attitude than will mildly or moderately stuttering subjects.

Method Subjects

Fifty-two stuttering subjects (mean age: 41 years; range: 16-68 years) and 52 nonstuttering subjects (mean age: 41 years; range: 17-67 years) participated in the study. Demographic characteristics of each group are summarized in Table 1. The two groups were matched with respect to age, gender, ethnic background, and highest educational level. All subjects spoke English as their primary language. Three of the matched pairs were Hispanic. All other subjects were Caucasian. Each group consisted of 38 males and 14 females, so that the ratio of male subjects to female subjects in this study was approximately three to one, whereas a male-to-female ratio of five to one is typical of the stuttering population (Bloodstein, 1987). Thus, female stutterers were over-represented in our sample. The majority of stuttering subjects were recruited from the Dallas and Houston chapters of the National Stuttering Project (NSP). Because it was critical that our groups be matched across several demographic variables, control subjects were recruited through personal contact or by referral in the Dallas and Houston areas.

Each stuttering subject rated the severity of his or her stuttering on a 5-point scale. Self-ratings characterized this group's stuttering as follows: 19, very mild to mild; 23, moderate; and 10, severe to very severe. Forty-two of the stuttering subjects had received from 6 months to 20 years of speech treatment. Four of the subjects who stuttered had received less than 6 months of treatment and 6 had never received speech treatment. We did not control for specific type of

treatment received. At the time of data collection, 30 of the 52 stuttering subjects actively participated in the monthly meetings of their local stuttering support group.

Test Instruments

The Beck Depression Inventory (BDI) (Beck, 1987) is a 21-item questionnaire widely used for assessing depression. The BDI is designed to reflect a general syndrome of depression composed of three highly intercorrelated first-order symptom dimensions: negative attitudes, performance impairment, and somatic disturbances. Examples of test items are included in Appendix A. Each item is rated on a 4-point scale ranging from 0 to 3. Subjects are asked to circle the number next to the one statement in each group that best describes "the way you have been feeling the past week, including today" (Beck, 1987, pg. 4). BDI scores greater than 15 suggest possible depression; however, an interview by a trained clinician is necessary for confirmation (Oliver & Simmons, 1984).

The State-Trait Anxiety Inventory (STAI) (Spielberger, 1983) consists of two, 20-item questionnaires designed to measure two aspects of anxiety: state (S-Anxiety) and trait (T-Anxiety). The S-Anxiety scale asks subjects to indicate how they feel "right now, at this moment" (Spielberger, 1983, p. 2). The T-Anxiety scale assesses how subjects feel "generally" (Spielberger, 1983, p. 2). Examples of test items for the S-Anxiety and T-Anxiety scales are included in Appendix A. Subjects respond by marking a response ranging from 1 (Not at all) to 4 (Very much so). The examiner uses a scoring template to determine the subject's weighted score on each scale. The maximum weighted score on each scale is 80, which indicates the greatest degree of anxiety.

The Erickson Modified 24 Scale (Erickson) (Andrews & Cutler, 1974) measures communication attitude. This 24-item scale distinguishes the extent to which a stuttering person's communication attitude deviates from normed attitudes. Statements require a true or false answer. The higher the score, the poorer the communication attitude. Examples of test items from the Erickson are included in Appendix A.

Procedures

Questionnaires were distributed to the stuttering subjects during monthly meetings of the Dallas and Houston chapters of the NSP or mailed to stuttering subjects from the Dallas NSP membership directory. Questionnaires were distributed or mailed to control subjects. All subjects were asked to complete a form requesting their age, gender, race, highest educational level completed, and current occupational status. Each stuttering person was asked to rate the severity of his or her stuttering from I to 5 (with I indicating very mild stuttering and 5 indicating very severe stuttering). All tests were scored by the same investigator (S. Miller).

Data Analyses

Between-group (stutterer vs. nonstutterer) differences in raw scores for each test instrument were examined using repeated measures analyses of variance (ANOVA). Between-group (stutterer vs. nonstutterer) differences in the distribution of scores on each test instrument were examined

using χ^2 analyses. Within-group (stutterer) differences in raw scores on each instrument were examined using repeated measures ANOVA. Finally, relations among scores on each test instrument were examined separately for nonstutterers, stutterers as a group, and stutterers grouped by severity by computing Pearson product-moment correlation coefficients.

Results Comparisons Between Stutterers and Nonstutterers

Mean and standard deviation raw scores for each group are summarized in Table 2. A two (stutterers and nonstutterers) by four (Erickson, BDI, S-Anxiety and T-Anxiety) repeated measures ANOVA revealed a significant main effect for assessment [$F(3,306) = 780.59, p < 0.0001$] and a significant assessment-by-group interaction [$F(3,306) = 6.33, p < 0.0004$]. There was no main effect for group [$F(3,306) = 2.01, p > .15$]. Between-group comparisons for each assessment (Erickson, BDI, S-Anxiety, and T-Anxiety) were conducted using separate ANOVA. A significant between-group difference was obtained for only the Erickson Scale [$F(1,103) = 26.94, p < 0.0001$]. The mean Erickson score for the stuttering group was 13.25 (SD = 6.48) with scores ranging from 1 to 24. The mean Erickson score for the nonstutterers was 7.35 (SD = 5.02) with scores ranging from 1 to 20. The mean score for the nonstutterers is very similar to the mean normal score of 9.14 (SD = 5.38) reported by Andrews and Cutler (1974). However, stutterers in this study scored below the mean score of 19.22 (SD = 4.24) reported for a group of 36 stutterers by Andrews and Cutler (1974).

No significant between-group differences were noted on the BDI. Mean depression scores for the stuttering and nonstuttering groups fell within the normal range of 0 to 9 (Beck, 1987). Depression scores within the stuttering group ranged from 0 to 20, whereas BDI scores for the nonstuttering group ranged from 0 to 38. No significant between-group differences were noted on the S-Anxiety or T-Anxiety scales of the STAI. Mean state anxiety scores for both groups were similar to American working adult norms for men [mean S-Anxiety = 35.72 (SD = 10.40)] and women [mean S-Anxiety = 35.20 (SD = 10.61)] (Spielberger, 1983). Mean trait anxiety scores for male stutterers and nonstutterers were also similar to American working adult norms for the males [mean T-Anxiety = 34.89 (SD = 9.19)]. Mean trait anxiety scores for the female subjects, especially for the nonstuttering ones, were higher than the normed mean trait anxiety score for working adult women [mean T-Anxiety = 34.79 (SD = 9.22)] (Spielberger, 1983). The range of scores on the S-Anxiety and the T-Anxiety scales was similar for both groups [stutterers: S-Anxiety (20-65), T-Anxiety (20-64); nonstutterers: S-Anxiety (20-58), T-Anxiety (21-60)].

A two (stutterers and nonstutterers) by two (male and female) by four (Erickson, BDI, S-Anxiety, and T-Anxiety) repeated measures ANOVA was performed to determine whether gender effects were significant. Analysis revealed significant gender [$F(1,100) = 4.27, p < .04$], assessment [$F(3,300) = 625.12, p < 0.0001$] and group-by-assessment interaction [$F(3,300) = 4.30, p < .005$] effects. Between-group (male and female) comparisons for each assessment revealed significant gender effects for the BDI [$F(1,103) = 10.56, p < .002$] and T-Anxiety Scales [$F(1,103) = 5.07, p .03$]. The female subjects in this study, regardless of group membership, scored higher than the male subjects on the BDI and T-Anxiety Scale; however, the females' scores fell within the normal range on the BDI (Beck, 1987) and within the normal range for working adult women on the T-Anxiety Scale (Spielberger, 1983).

Both groups evidenced scores that ranged from the lowest attainable to greater than two standard deviations above the published normal mean on all four test instruments. Variability within each group was examined by analysis of frequency distributions of individual subject z-scores for the Erickson, the S-Anxiety, and T-Anxiety scales and frequency distributions of nominal classifications of BDI scores. Means and standard deviations for the 52 nonstutterers reported here were used to calculate z-scores for Erickson raw scores. Each subject's raw scores on STAI measures were converted to z-scores using published normative means and standard deviations. Frequency distributions for BDI raw scores were based on Beck's classification guidelines for depression. Raw scores in the normal range of 0 to 9 were assigned a value of 1; mild to moderate scores (10-18) were assigned a value of 2; moderately severe (19-29) scores were assigned a value of 3, and extremely severe (30-38) scores were assigned a value of 4. Chi-square tests were performed on the frequency distributions to determine whether stuttering subjects' distribution of scores differed significantly from nonstutterers' distributions on the four measures.

Figure 1 shows z-score frequency distributions for the Erickson. Positive z-scores indicate poorer communication attitudes and negative z-scores reflect better communication attitudes. A significant between-group difference was obtained for these frequency distributions [$\chi^2(3, n = 104) = 18.68, p < 0.0001$]. Comparison of group frequency distributions reveals the greatest number of stuttering subjects with scores one standard deviation above the mean; indeed, 16 of them scored greater than two standard deviations above the mean. The greatest number of nonstutterers attained scores one standard deviation below the mean.

Figure 2 shows z-score frequency distributions for the S-Anxiety scale. Comparison of group frequency distributions reveals similarity in the shape of these distributions with the greatest number of stutterers and nonstutterers scoring one standard deviation below the normative mean. Figure 3 presents z-score frequency distributions for the T-Anxiety scale. Most nonstutterers' trait anxiety scores fell one standard deviation below the normative mean, while most stuttering subjects' trait anxiety scores fell one standard deviation above the normative mean. However, between-group differences were not significant. Figure 4 shows frequency distributions for the BDI. Both groups show almost identical distributions of scores across the Beck's three classifications of depression. Ninety-two percent of all subjects scored within the normal range.

Correlations among scores on the test instruments were computed separately for nonstutterers, stutterers as a group, and stutterers subgrouped by self-ratings of severity. Results of correlation analyses for nonstutterers are summarized in Table 3. Significant positive correlations among scores on the BDI, S-Anxiety, and T-Anxiety scales are consistent with reports in the psychology literature (Gurney et al., 1970; Klerman, 1977; Leckman et al., 1983). Relatively small but significant positive correlations were obtained for scores on the Erickson and BDI scales and for scores on the Erickson and T-Anxiety scales. Scores on the Erickson were not significantly related to scores on the S-Anxiety scale. Results of correlation analyses for stutterers, as a group, are summarized in Table 4. All pairwise correlations were positive and significant. Again, significant correlations among scores on the BDI, S-Anxiety, and T-Anxiety scales are consistent with the psychology literature. Relatively small but significant correlations were obtained among scores on the Erickson scale and scores on the BDI, S-Anxiety, and T-Anxiety scales. To summarize, the subjects who stuttered showed higher correlations between scores on the

Erickson and anxiety scales than did nonstutterers. Both groups showed small but significant correlations between scores on the Erickson and BDI.

Comparisons Within the Stuttering Group

Subgroups defined by self-ratings of stuttering severity were compared using a three (very mild-to-mild, moderate, severe-to-very severe) by four (Erickson, BDI, S-Anxiety, T-Anxiety) repeated measures ANOVA. Analysis revealed significant assessment [$F(3,147) = 322.62, p < 0.0001$] and assessment x severity interaction effects [$F(6,147) = 3.34, p < .004$]. The severity effect was not significant [$F(2,49) = 289.86, p > .66$]. Between-group comparisons for each assessment were conducted using separate ANOVA. A significant severity effect was obtained for only the Erickson [$F(2,49) = 7.941, p < 0.001$]. The only significant between-group difference identified in post hoc Scheffe comparisons was between very mild-to-mild stutterers and severe-to-very severe stutterers.

Fifty-nine percent of the subjects who stuttered in this study attended the majority of monthly support group meetings. These 31 active members were compared to the 21 members from the mailing list who attended one meeting or joined to receive the monthly newsletter. A two (active member and inactive member) by four (Erickson, BDI, S-Anxiety, T-Anxiety) repeated measures ANOVA revealed a significant assessment effect [$F(3,150) = 342.49, p < 0.0001$] but nonsignificant member effect [$F(1,50) = 1.31, p > .26$] and assessment-by-member interaction [$F(3,150) = 1.04, p > .38$]. Between-group comparisons for each assessment were conducted using separate ANOVA. These analyses revealed a significant member effect for only the Erickson Scale [$F(1,51) = 6.82, p < .01$]. Active members of the support group exhibited a more positive communication attitude (mean Erickson score of 11.41) than did inactive members (mean Erickson score of 15.95).

Results of correlation analyses for stuttering subjects, grouped by self-ratings of severity, are summarized in Table 5. The very-mild-to-mild stutterers showed significant positive correlations between T-Anxiety and BDI scores and between T-Anxiety and S-Anxiety scores. The correlation between S-Anxiety and BDI scores approached significance. The very-mild-to-mild stutterers showed significant positive correlations between scores on the Erickson scale and on the S-Anxiety and T-Anxiety scales. The correlation between scores on the Erickson and BDI scales was not significant. The moderately stuttering subjects showed significant positive correlations for all pairwise comparisons. This subgroup showed the highest r values for correlations between scores on the Erickson and on the two anxiety scales. The severe-to-very-severe stutterers showed significant positive correlations between T-Anxiety and BDI scores and between T-Anxiety and S-Anxiety scores. The correlation between S-Anxiety and BDI scores approached significance. Finally, the severe-to-very-severe stutterers showed a significant positive correlation between scores on the Erickson and BDI, but nonsignificant correlations between scores on the Erickson and on the two anxiety scales. To summarize, stuttering subjects grouped by self-ratings of severity differed in the pattern of significant correlations among measures of communication attitude, depression, and overall state and trait anxiety. Moderate stutterers showed the strongest positive relation between measures of communication attitude and anxiety, very-mild-to-mild stutterers showed a smaller but significant positive relation

between measures of communication attitude and anxiety, and severe-to-very-severe stutterers showed no significant relation between measures of communication attitude and anxiety.

A final analysis was conducted to determine the relation between amount of speech treatment and scores on the Erickson. The average years of speech treatment received by the subjects who stuttered was 4.9 years (range: none to > 20 yrs.). Analysis of the relation between years of speech treatment and Erickson scores revealed a nonsignificant Pearson r of $-.013$.

Discussion Stutterer-Nonstutterer Comparisons

On March 1, 1991, syndicated columnist Ann Landers responded to a plea for help from a self-described "stammerer" as follows, "Stammering is not a sickness. It is a speech problem often caused by an unresolved emotional problem" (The Washington Post, March 1, 1991). Her response reflects the pervasive view that people who stutter are generally more anxious and depressed than nonstutterers (Costa, 1983; Costa et al., 1986; Craig, 1990; Khavin, 1985). However, results of the present study refute the assertion that people who stutter, as a group, are more anxious or depressed than those who don't. No significant differences were found between the two groups on measures of trait and state anxiety and of depression. These findings confirm prior studies of self-report measures of anxiety that found no significant differences between people who stutter and nonstutterers (Kalinowski et al., 1987; Molt & Guilford, 1979; Peters & Hulstijn, 1984),

The stuttering and nonstuttering groups differed significantly on a measure of communication attitude. Furthermore, communication attitude for this group of people who stutter is poor and becomes worse as self-ratings of stuttering become more severe. High scores on the Erickson demonstrated by the most severe stutterers indicate that this subgroup has the poorest attitude regarding communication. These results support Guitar's (1976) and Watson's (1988) findings that people who stutter possess negative communication attitudes.

Results of correlation analyses for nonstutterers and people who stutter, as a group, are consistent with the finding of more similarities than differences between these groups. Both groups showed the highest correlation between scores on the Erickson and the T-Anxiety scales. Both groups also showed small but significant correlations between scores on the Erickson and BDI scales. Stutterers showed a higher correlation between scores on the Erickson and S-Anxiety scales. Correlations among the Erickson and both anxiety scales for the people who stutter is likely related to their perception that speech is unpredictable and represents a threat. Recall that perceptions of unpredictability and threat are common in anxious persons (Epstein, 1972; Spielberger, 1972).

In sum, our group of people who stutter was not more anxious, tense, or depressed than the nonstutterers, but did exhibit a poorer attitude towards speaking. Their speech problems do not appear to be due to "unresolved emotional problems" (Landers, 1991) or to being nervous, tense, or insecure (Kalinowski et al., 1987; Woods & Williams, 1976). Their poorer attitude towards speaking may be a rational response to negative communication experiences. This conclusion is supported by the finding of poorest communication attitude in people who perceive themselves as having severe to very severe stuttering,

Stutterer Comparisons

The first question addressed by within-group analyses of our stuttering subjects was whether our stuttering sample reflects only attitude characteristics of members of the NSP and is not representative of the general stuttering population. While our sample is probably too small to permit a conclusive statement, we found no differences between active and inactive members of the NSP on measures of anxiety or depression. However, active members of the NSP exhibited a more positive communication attitude than did inactive members. These results suggest that participation in a support group such as the NSP may reduce anxiety or fear regarding communication. This finding highlights the potential value of combining direct therapeutic intervention with participation in a support group. Further, recall that Andrews and Cutler (1974) reported a positive relation between low scores on the Erickson by people who stutter and their success in maintaining fluency after treatment. Taken together, present findings and those reported by Andrews and Cutler (1974) support the hypothesis that participation in a support group as an integral part of treatment may facilitate a change in communication attitude that improves long-term maintenance of fluency. Future research should examine more systematically the effect of participation in a support group on communication attitude and therapy outcome.

The second question addressed by within-group analyses of our stuttering subjects was the relation between scores on the Erickson and on indices of depression and anxiety. We found the highest correlation between negative communication attitude and anxiety for the moderate stutterers, a lower, but significant correlation for the very-mild-to-mild stutterers, and a nonsignificant correlation for the severe-to-very-severe stutterers. The moderate and severe-to-very-severe stutterers also showed small but significant correlations between negative communication attitude and depression. The pattern of findings for negative communication attitude and anxiety was unexpected and suggests a dissociation between self-perceptions of stuttering severity and the relation between communication attitude and anxiety for these people who stutter. The apparent paradox can be resolved by considering predictability as the factor that relates negative communication attitude and anxiety. People who stutter who view their disorder as mild or moderate probably produce fewer and less predictable dysfluencies. The infrequency and unpredictability of their dysfluencies may lead these subjects to perceive their environment as uncertain, unpredictable, and threatening. These perceptions characterize anxious persons (Epstein, 1972; Spielberger, 1972). Conversely, people who stutter who view their disorder as severe probably exhibit more frequent, consistent, and predictable dysfluencies; that is, they expect to stutter. This expectation can reduce perceptions of uncertainty and unpredictability in their environment. Thus, while people who stutter severely have negative attitudes towards communication (i.e., high Erickson scores), these attitudes are not related to measures of overall anxiety because their dysfluencies are more frequent and, consequently, more predictable. We know of no studies in which expectancy or predictability of dysfluency by people who stutter was examined as a function of self-ratings of severity or in combination with measures of communication attitude or overall anxiety. If, indeed, predictability is the link between negative communication attitude and anxiety, then those people who stutter who are better able to predict stuttering moments should show a poor correlation between these measures.

A design factor might also account for our unexpected findings. Specifically, severity was based on subjects' self-ratings. Group assignment for some stuttering subjects might have been different if severity ratings were based on behavioral measures of frequency and type of dysfluency. Statistical significance of Pearson r values is influenced by sample size. For example, the 19 very-mild-to-mild stutterers showed a significant r value of 0.514 for the relation between Erickson and S-Anxiety scores while the 10 severe-to-very-severe stutterers showed a nonsignificant r value of 0.575 for the relation between Erickson and T-Anxiety scores. Future research should combine behavioral, and perhaps physiologic, measures of stuttering severity with evaluations of communication attitude, depression, and state and trait anxiety.

Zimmermann, Smith, and Hanley (1981) and Weber (1989) hypothesized that emotional arousal may interfere with mechanisms underlying motor control for fluent speech. This arousal may not be a function of generalized anxiety or depression but may be a function of negative cognitions (Beck & Emery, 1985) regarding poor performance, learned sound or word fears, or perception of a speaking situation as critical, demanding, or associated with repeated failure. The fears of people who stutter regarding communication may induce physiological changes such as increased heart rate and/or rapid, shallow breathing, which disrupt speech motor control (Weber, 1989; Weber & Smith, 1990; Zimmermann, Smith & Hanley, 1981). One means of testing this hypothesis is to examine physiologic measures of arousal in stuttering subjects who differ in their scores on the Erickson scale.

Present findings support a therapeutic approach for people who stutter that addresses more than fluency. Active participants of a support group showed a more positive communication attitude. For certain stuttering subjects, negative communication attitude was positively correlated with overall anxiety. Finally, negative thoughts, anxiety, and communication fears may contribute to a breakdown in fluency. These observations support treatment programs that combine fluency-shaping techniques with access to a support system of other people who stutter and management of speech-specific and general anxiety (e.g., relaxation therapy).

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TABLE 1. Gender, mean age and range, and mean education and range for each group.

Legend for Chart:

- A - Group
- B - Gender M
- C - Gender F
- D - Age Mean
- E - Age Range
- F - Education Mean
- G - Education Range

A	B	C	D	E	F	G
Nonstutterers	38	14	41	17-67	15	11-20

Stutterers	38	14	41	16-68	15	12-20
Very mild to mild	10	9	39	16-65	16	12-20
Moderate	20	3	42	23-68	16	12-20
Severe to very severe	8	2	43	31-62	16	13-19

TABLE 2. Mean and standard deviation raw scores for dependent variables for each group.

Legend for Chart:

- A - Group
- B - N
- C - Erickson M
- D - Erickson SD
- E - BDI M
- F - BDI SD
- G - S-Anxiety M
- H - S-Anxiety SD
- I - T-Anxiety M
- J - T-Anxiety SD

	A	B	C	D	E	F
			G	H	I	J
Nonstutterers		52				
Male		38	6.32	4.72	4.47	6.72
			31.53	9.56	33.16	8.97
Female		14	10.14	4.89	8.78	7.30
			36.07	9.91	41.04	10.01
Stutterers		52				
Male		38	13.42	6.30	3.76	3.84
			34.76	11.70	35.68	11.37
Female		14	12.79	7.17	7.93	6.63
			33.57	11.91	37.86	10.17
Very mild to mild		19	9.89	5.82	4.84	5.05
			33.79	10.40	34.53	8.72
Moderate		23	13.61	5.89	5.04	5.45
			31.60	9.63	33.90	10.33
Severe to very severe		10	18.80	5.22	5.63	7.08
			32.75	9.77	35.31	9.84

Note. N = number of subjects in each group.

TABLE 3. Summary of Pearson r (and associated probability) values for nonstutterers.

Legend for Chart:

- B - Erickson
- C - BDI

D - S-Anxiety

	A	B	C	D
BDI		0.312 (0.023)		
S-Anxiety		0.262 (0.060)	0.680 (0.0001)	
T-Anxiety		0.442 (0.001)	0.754 (0.0001)	0.781 (0.0001)

TABLE 4. Summary of Pearson r (and associated probability) values for stutterers.

Legend for Chart:

B - Erickson
C - BDI
D - S-Anxiety

	A	B	C	D
BDI		0.361 (0.008)		
S-Anxiety		0.492 (0.0002)	0.651 (0.0001)	
T-Anxiety		0.569 (0.0001)	0.686 (0.0001)	0.837 (0.0001)

TABLE 5. Summary of Pearson r (and associated probability) values for stutterers grouped by self-ratings of severity.

Legend for Chart:

A - Severity
B - Erickson
C - BDI
D - S-Anxiety

	A	B	C	D
Very mild to mild				
BDI		0.241 (0.319)		
S-Anxiety		0.514 (0.024)	0.432 (0.064)	
T-Anxiety		0.606 (0.006)	0.488 (0.033)	0.679 (0.001)
Moderate				
BDI		0.503 (0.014)		

S-Anxiety	0.722 (0.0001)	0.808 (0.0001)	
T-Anxiety	0.747 (0.0001)	0.776 (0.0001)	0.918 (0.0001)
Severe to very severe			
BDI	0.619 (0.055)		
S-Anxiety	0.395 (0.257)	0.580 (0.078)	
T-Anxiety	0.575 (0.081)	0.835 (0.002)	0.784 (0.007)

GRAPH: FIGURE 1. Z-score frequency distributions of stutterers (circle) and nonstutterers (shaded circle) for the Erickson Scale.

GRAPH: FIGURE 2. Z-score frequency distributions of stutterers (circle) and nonstutterers (shaded circle) for the S-Anxiety Scale of the State-Trait Anxiety Inventory.

GRAPH: FIGURE 3. Z-score frequency distributions of stutterers (circle) and nonstutterers (shaded circle) for the T-Anxiety Scale of the State-Trait Anxiety Inventory.

GRAPH: FIGURE 4. Frequency distributions of stutterers (square) and nonstutterers (shaded square) for the Beck Depression Inventory.

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Appendix

Beck Depression Inventory (Beck, 1978)

1. 0 I do not feel sad

1 I feel sad.

2 I am sad all the time and I can't snap out of it.

3 I am so sad or unhappy that I can't stand it.

2. 0 I am not particularly discouraged about the future.

1 I feel discouraged about the future.

2 I feel I have nothing to look forward to.

3 I feel that the future is hopeless and that things cannot improve.

S-anxiety scale of the STAI (Spielberger, 1983)

Legend for Chart:

- B - Not at all
- C - Somewhat
- D - Moderately
- E - Very Much So

	A	B	C	D	E
1. I feel sad		1	2	3	4
2. I feel secure		1	2	3	4
3. I am tense		1	2	3	4

T-Anxiety scale of the STAI (Spielberger, 1983)

1. I feel pleasant		1	2	3	4
2. I feel satisfied with life		1	2	3	4
3. I wish I could be as happy as others seem to be.		1	2	3	4

Erickson Communication Inventory S-scale
(Andrews & Cutler, 1974)

1. T F I usually feel that I am making a favorable impression when I talk.
2. T F I find it easy to talk with almost anyone.
3. T F I find it very easy to look at my audience while speaking to a group.

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