

Perceptions of Intelligence in Leaderless Groups: The Dynamic Effects of Shyness and Acquaintance

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Perceptions of intelligence were investigated in 2 longitudinal studies of leaderless discussion groups (LDGs). In Study 1 ($N = 87$), students completed trait-shyness questionnaires and met 7 times in groups of 4–5. After Meetings 2 and 7, participants rated all group members on state shyness and intelligence. Trait-shy participants were initially judged to be less intelligent on both self- and peer ratings. At Time 2, however, trait-shy participants were no longer derogated by peers. Study 2 ($N = 103$) replicated the same pattern of shy derogation while demonstrating no actual relation between IQ and trait shyness. Again, trait-shy derogation disappeared by Time 2, but state-shy derogation continued. The state shy were now the low-IQ participants, who had begun to talk less. Thus, the bias against quiet individuals, originally inappropriate, gradually became a valid cue for low intelligence. Results were traced to overlapping cues for intelligence and shyness in LDGs.

Shyness¹ has been linked to a cascade of negative consequences. These include low self-esteem (Cheek & Buss, 1981), loneliness (Jones & Carpenter, 1986), depression (Traub, 1983), and overconformity (Santee & Maslach, 1982). Moreover, shyness is inversely related to such positive sequelae as dating frequency and satisfaction, number of friends, and level of self-disclosure to friends (Jones & Briggs, 1984). In a longitudinal study, Caspi, Elder, and Bem (1988) found that shy men married later, had less stable marriages, and became parents later than nonshy men; they were also delayed in settling into a career, which limited their overall career achievement.

In short, trait shyness is associated with impairments in self-concept, personal relationships, and career success. There is reason to believe that the plight of shy people is due, at least in part, to unwarranted negative perceptions of their intellectual abilities. Little is known, however, about which abilities are derogated and why. In this report, we pursued the possibility that this ability derogation of shy persons is limited to unfamiliar perceivers in socially demanding contexts. To this end, we examined perceptions of shy persons' abilities in a demanding social situation, namely, leaderless discussion groups.

Perceptions of Shy Persons' Intellectual Abilities

Although there is some evidence to justify a negative view of their social skills (e.g., Meleshko & Alden, 1993), the derogation of shy individuals appears to overgeneralize to other evaluative domains. Of particular interest here are several studies

reporting a derogation of shy persons' intellectual abilities. For example, trained interviewers rated shy individuals as less intellectually competent than their nonshy counterparts (Gough & Thorne, 1986). A similar derogation was found when peers were asked to judge targets talking about themselves on videotape: Shy targets were rated as less talented (Jones, Cavert, & Indart, 1983). Note, by contrast, that Jones, Briggs, and Smith (1986) found no relation between a person's shyness and ratings of intelligence by their friends and relatives.

Ironically, the derogation of shys' intelligence is even stronger and more consistent on self-ratings. For example, in a sample of high school and college women, Zimbardo (1977) found that shy participants gave themselves significantly lower self-ratings of intelligence than did nonshy participants. In a sample of both sexes, Jones et al. (1986) found that shyness was negatively associated with self-perceived intelligence ($r = -.17$). Finally, Cheek, Melchior, and Carpentieri (1986) found that shyness was negatively related to academic self-esteem ($r = -.39$), although results were stronger for men than for women.

Shyness and Objective Measures of Intelligence

Of course, the term *derogation* would be a misnomer if shys were indeed inferior in intellectual ability. In truth, there is no empirical basis for supposing a relation between shyness and overall ability.

Among children, researchers have found no relation between shyness and performance on intelligence or achievement tests (Hedrick, 1972; Ludwig & Lazarus, 1983). Traub (1983) found a small positive correlation between shyness and grade point average, but again, it is more common to find no relation (Ludwig & Lazarus, 1983; Mamrus, O'Connor, & Cheek, 1983;

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¹ Because the major measures of shyness and social anxiety are highly intercorrelated (Leary, 1991), it seems clear that the two research traditions are studying the same targets. Therefore, we draw on literature and instruments from both traditions, despite our choice of the term *shy*.

Maroldo, 1986). Nor have researchers found any relation between shyness and Scholastic Assessment Test scores (Arnold & Cheek, 1986; Gough & Thorne, 1986). The only mental ability that shows some deficit for shys is creative production, but this deficit appears only when respondents anticipate a public evaluation of their work (Camacho & Paulus, 1995; Cheek & Stahl, 1986). Overall, the evidence indicates no consistent relation between shyness and measured intelligence.²

Given the minimal empirical relation between shyness and intelligence, it is puzzling that shys are downgraded in this domain. Moreover, this derogation holds for first-time interviewers but not friends and spouses. To explicate such a pattern, we concluded that it would be necessary to study shys over time in a situation that typically induces shyness.

Acquaintance and Shyness in Leaderless Discussion Groups

The leaderless discussion group (LDG) is ideal for studying the group dynamics of person perception: The group situation provides the prototypical form of social influence; at the same time its unstructured nature highlights personality differences among group members. Moreover, the presence of multiple observers provides the psychometric benefits of aggregating judgments from several perceivers of the same events.

Shyness, in particular, seems amenable to analysis in LDGs. After all, the situation reported to elicit the strongest sense of shyness is being the focus of attention in a group (Zimbardo, 1977). Given the strength of this effect, it is particularly surprising that such research is lacking.³ Where shyness is most important, we know the least about it. Note also that the type of audience eliciting the most shyness is strangers (Russell, Cutrona, & Jones, 1986). Therefore, it behooves us to use groups of complete strangers.

Finally, given our goals, it is critical to study LDGs in a longitudinal fashion. Ongoing groups can provide key data regarding our core question of why some observers (first-time interviewers) derogate shys' intellectual ability, whereas others (friends, spouses) do not. We can determine with certainty whether level of acquaintance is the key factor only by systematically manipulating it.

Study 1

In Study 1, we examined the extent of the derogation of shys' abilities in several ways. First, we extended the range of intellectual abilities to Sternberg's (1988) three facets of intellectual ability: intelligence, creativity, and wisdom. Second, we examined the development of perceptions over time, specifically, a seven-meeting sequence. Third, we collected both self- and peer perceptions.

These perceptions were rated in the context of small LDGs. Groups of 4–5 met weekly for a total of 7 weeks. Before group assignment, participants completed a personality inventory that included two measures of trait shyness. After Meetings 2 and 7 (henceforth known as Time 1 and Time 2), group members rated each other and themselves on various intellectual abilities and on level of shyness in that meeting (i.e., state shyness).

Hypotheses

Hypothesis 1. The three modes of measuring shyness (questionnaire, self-ratings, and peer ratings) will converge strongly at Time 1. This hypothesis was based on the evidence, cited above, that trait shyness is most evident in interactions among strangers.

Hypothesis 2. At Time 1, shy individuals will be perceived as lower in intellectual abilities than nonshy individuals. Studies cited above found that unacquainted raters judged shy individuals as less intellectually competent and less talented than nonshy individuals (Gough & Thorne, 1986; Jones et al., 1983).

Hypothesis 3. The derogation of shys' abilities by peers will diminish with increasing acquaintance. This hypothesis was based on the earlier finding that spouses and friends are less derogatory about the abilities of shy persons than are first-time assessors (Gough & Thorne, 1986; Jones et al., 1986). We knew, from our recent longitudinal studies, that personality perceptions become more accurate with increased acquaintance (Paulhus & Bruce, 1992; Paulhus & Reynolds, 1995). We presumed the same pattern would obtain with perceptions of intellect. Our use of random assignment and a longitudinal design was designed to rule out the selection bias artifact, that is, the possibility that friends and spouses would be less derogatory about shy persons merely because of the special relationship between them.

Method

Participants

Participants were 87 students, 40 male and 47 female, enrolled in a 3rd-year psychology course at a large Canadian university. After the course was completed, they were asked if their data could be analyzed for research purposes. All agreed.

Instruments

Trait measures. Two measures of trait shyness were included. The Revised Shyness Scale (Cheek, 1983), a 13-item revision of the Cheek and Buss (1981) Shyness Scale, was designed to assess both the behavioral and subjective aspects of shyness. Participants also completed the 6-item Social Anxiety subscale of the Self-Consciousness Scale (Fenigstein, Scheier, & Buss, 1975). On both instruments, responses were collected with 7-point scales. Both measures have been validated with a combination of peer-rating and behavioral criteria (e.g., Leary, 1991; Paulhus & Trapnell, in press).

Self- and peer ratings. After Meetings 2 and 7, participants rated all group members on the single 15-point bipolar item, *shy–nonshy*. Use of this single item has been found to be a valid indicator of shyness (Pilkonis, 1977). Ratings of intellect were collected on three 15-point unipolar items: *creative, intelligent, wise*. These terms were chosen to represent Sternberg's (1988) three facets of intellect. Ratings of time talking in the group were obtained on a 15-point scale anchored by the phrases *talked little* and *talked a lot*. Talk time has been found to

² The term *measured intelligence* will be used to refer to scores on objectively scored performance measures, such as IQ tests.

³ Observers in the Institute for Personality Assessment and Research (IPAR) studies (Gough & Thorne, 1986) did observe targets in LDGs, but that information was pooled with information based on personal interactions.

be substantially associated with shyness ratings ($r = .62$; Briggs, 1985, p. 46).

Free-response explanations. Finally, the Meeting 7 rating sheet also asked participants to consider each individual to whom they had given low intelligence ratings. They were asked to describe, in free-response format, the reason(s) for the low rating of intelligence.

Procedure

Before being assigned to groups, all participants completed a package of trait questionnaires. Next, participants were organized into 19 groups: Eleven of the groups comprised 5 members, and the remaining 8 groups comprised 4 members. Group assignments were random with the constraint of heterogeneity with regard to gender and ethnicity. The groups met weekly for 20 min for 7 consecutive weeks. Participants were requested to avoid interaction with fellow group members outside of official meetings. No instructions were given regarding leadership within the groups, but weekly instructions advised specifically that each member was to participate in the meeting.

Before each meeting, a discussion topic or task was assigned. Topics had been selected to encourage interaction with class readings and lecture topics and to provide opportunity for a variety of personality dimensions to be brought into play. The topics were, in chronological order, descriptions of family's and friend's personality, verbal and quantitative problem solving, positive and negative qualities of the self, worries and concerns, creative and absorbing experiences, social issues, and characteristics of well-adjusted persons.

After completion of each group meeting, participants were given a rating sheet in an envelope and asked to return the completed sheet to the instructor, sealed in the envelope, at the next class session. The sheets asked the participant to rate the behavior, during that meeting, of each member of the discussion group, including himself or herself, on a variety of 15-point scales. No ties were allowed, that is, no 2 members were to be assigned the same number on any one scale.

Results

Trait Questionnaires

The alpha reliabilities were .88 and .85 for the Cheek Shyness Scale and the Social Anxiety scale, respectively. The two measures were highly intercorrelated ($r = .85, p < .01$), suggesting that despite the different labels, they tap the same trait construct. For this reason, the two shyness measures were standardized and combined for subsequent analyses. Henceforth, the composite measure will be called *trait shyness*.

Convergence of Shyness Measures at Time 1

We examined the intercorrelations of the three methods for measuring shyness, that is, the trait measure and the two state measures, at Time 1. First, trait shyness correlated highly (.59) with self-rated shyness and moderately (.41) with peer-rated shyness. There was particularly strong agreement on the two state ratings: Self- and peer ratings of shyness correlated a substantial .69. In summary, this convergence of three indicators of shyness supports Hypothesis 1, that is, trait shyness is particularly evident to self and peers in an initial meeting with a group of strangers.

Shyness and Perceived Intellectual Abilities

Table 1 contains the correlations between self-reported shyness and the three facets of intellectual ability, as rated by other group members. Two indicators of self-reported shyness were used as predictors here: (a) pretested trait shyness and (b) the state self-rating of shyness during the Time 1 and Time 2 meetings.

Hypothesis 2 was supported by the fact that all correlations were significantly negative at Time 1, indicating that shys were initially perceived as lower on all three abilities. At Time 2, the pattern appeared to differ for trait versus state shyness. The derogation of shys continued for state shyness but disappeared for trait shyness. Thus, the pattern for trait shyness supported Hypothesis 3, in that correlations with intelligence and creativity were significantly lower at Time 2 than Time 1 (both $Z_s > 2.5, p < .01$) and wisdom showed a trend in the same direction. By contrast, the correlations of state shyness with rated intellect did not diminish over time, failing to support Hypothesis 3.

Trait Shyness and Perceived Intelligence

In subsequent analyses, we present only the intelligence ratings, for a number of reasons. First, the presentation would be unduly complex if all three intellectual abilities were presented. Second, of the three facets, intelligence was our major focus. Third, the present analyses will be comparable to those in Study 2, where only the intelligence facet is used. In general, the pattern of findings was similar for creativity but much weaker for wisdom.

Table 1
Correlates of Self-Reported Shyness in Study 1: Perceptions of Intellect by Facet and Time

Shyness self-report	Peer perceptions of intellect					
	Intelligence		Creativity		Wisdom	
	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
Pretested trait shyness	-.40	-.11	-.45	-.10	-.22	.13
State self-rated shyness	-.50	-.45	-.53	-.45	-.22	-.18

Note. Each table entry is a correlation of self-reported shyness with a peer rating of intellect. $n = 87$. Time 1 = Week 2; Time 2 = Week 7. Correlations exceeding $|.18|$ were significant at $p < .05$; correlations exceeding $|.25|$ were significant at $p < .01$.

Table 2
Correlates of Pretested Trait Shyness in Study 1: Self- and Peer Perceptions of Shyness and Intelligence

Rater	Perceived shyness		Perceived intelligence	
	Time 1	Time 2	Time 1	Time 2
Peers	.41	.35	-.40	-.11
Self	.59	.50	-.46	-.37

Note. Each table entry is a correlation of pretested trait shyness with a peer rating. $n = 87$. Time 1 = Week 2; Time 2 = Week 7. Correlations exceeding $|.25|$ were significant at $p < .01$.

Table 2 contains the correlations between pretested trait shyness and eight types of ratings. Ratings are separated by dimension (shyness or intelligence) and perceiver (self or peers). Note that initially, trait shyness was negatively associated with intelligence as perceived by the self ($-.46$) and as perceived by peers ($-.40$).⁴ That is, trait shys were seen as less intelligent both by themselves and by peers, supporting Hypothesis 2.

The correlation for peer ratings was significantly lower at Time 2 (.11) than at Time 1 (.40; $Z = 2.95$, $p < .01$), thereby supporting Hypothesis 3. Recall that we did not make a prediction about a corresponding drop in self-ratings. In fact, they did not change significantly. Not in the table is the fact that, at both times, individuals judged by peers to be shy were also judged to be (a) less talkative ($r = -.70$, $-.62$, $ps < .01$) and (b) lower in intellectual ability ($r = -.59$, $-.50$, $ps < .01$).

Free-Response Explanations for Assigning Low Intelligence Ratings

Recall that after finishing their final ratings, participants were asked to consider the individuals to whom they had given lower intelligence ratings and to provide reasons for giving these low ratings. Altogether, 82 reasons were listed. In a content analysis, two judges classified these explanations into one of five categories: quantity of participation, quality of comments, poor communication skills, lack of confidence, and other.

Judges agreed on the classification of 66 of the 82 explanations, that is, 80%. Of these 66 explanations, 24 were classified as quantity of participation (e.g., "quiet"), and 23 referred to quality of comments (e.g., "just repeated other people's ideas"). Six of the explanations concerned poor communication quality ("fumbling speech"), 8 concerned lack of confidence (e.g., "uncertain about everything"), and 5 were categorized as "other" (e.g., "they were unenthusiastic" or "narrow-minded"). For the moment, we venture no interpretation of these explanations but simply note with surprise that observers used quietness as direct evidence for low intelligence.

Study 2

Study 2 included a critical element missing in Study 1, namely, an objective measure of intelligence. This addition provided a twofold advantage. First, because it provided a criterion for perceptions of intelligence, the IQ test allowed us to confirm that actual differences in intelligence could be discriminated by

their fellow group members. Moreover, we predicted that such perceptions would become more valid as group members became more acquainted.

Second, rather than our having to rely on previous studies that indicated no relation between shyness and measured intelligence, the IQ test allowed us to confirm the same null relation in our own data. Otherwise it could be alleged that in our samples, shys actually *were* less intelligent. In that case, negative perceptions of their intellectual abilities would be justified.

Unfortunately, we could not administer corresponding objective measures of creativity and wisdom and therefore restricted our rating dimensions to intelligence. Otherwise, the procedure was identical to that of Study 1.

Hypotheses

Hypotheses 1-3. We predicted a replication of our Study 1 results. Rather than maintaining our original Study 1 hypotheses, it seemed more reasonable to predict a replication of the most similar available study.

Hypothesis 4. The correlation of perceived intelligence with measured intelligence (IQ) will increase with time. Similar studies of leaderless groups showed increasing accuracy of personality judgments over time (Paulhus & Bruce, 1992; Paulhus & Reynolds, 1995). We expected that intelligence perceptions would fare at least as well.

Hypothesis 5. There will be no association between trait shyness and measured intelligence. As noted in the introduction, previous studies found minimal relation between shyness and measured intelligence. Therefore, we predicted the same.

Method

Participants

Participants were 103 students, 40 male and 63 female, enrolled in a 3rd-year psychology course at a large Canadian university. After the course was completed, they were asked if their data could be analyzed for research purposes. All agreed.

Procedure

The procedure was parallel to that of Study 1. After the initial testing session, we divided the participants into 21 groups, which then met for 7 weeks. After Meetings 2 and 7, group members rated one another on shyness, talk time, and intelligence.

Added to the trait-shyness measurement in the initial testing session was the administration of the Wonderlic Personnel Test (1977), a speeded intelligence test. Although taking only 12 min to administer, the 50-item Wonderlic correlates strongly with the Stanford-Binet Intelligence Scale and other well-established intelligence tests (Dodrill, 1981). Our modifications to the Wonderlic were intended to simplify wording, eliminate antiquated language, and clarify response scales.

⁴ Note that the correlation of trait shyness with perceived intelligence appears in both Tables 1 and 2, to make two different points.

Results and Discussion

Personality Results

Trait shyness was again operationalized with the questionnaire composite used in Study 1. Table 3 contains the correlations between pretested trait shyness and self- and peer ratings of shyness and intelligence at Time 1 and Time 2. These are the data required for examining Hypotheses 1–3.⁵

Ratings

The consensus on talk time was extremely high in all respects: (a) Intercorrelation among peers was high (mean $r > .70$), (b) self–peer correlations were high (mean $r > .85$), and (c) the correlations across time were very high (mean $r > .80$). Therefore, we summed the self- and peer ratings to get composite measures of talk time at Time 1 and Time 2.

Hypothesis 1 (convergence). Note from Table 3 that as in Study 1, trait shyness correlated at least moderately with self- and peer-rated shyness at both points in time. The third indication of convergence does not appear in the tables: Peer- and self-rated shyness correlated .68 and .50 at Times 1 and 2. The convergence at Time 1 supports Hypothesis 1, but note that the convergence remains substantial at Time 2.

Hypothesis 2 (derogation). Again, the significant negative correlations of trait shyness with perceived intelligence at Time 1 indicate that shys were initially derogated both by themselves and peers.

Hypothesis 3 (diminishing derogation). As in Study 1, the derogation of shys by peers diminished significantly from $r = -.40$ to $r = -.09$ ($Z = 3.04$, $p < .01$). Also as in Study 1, the self-derogation of shys did not decrease significantly ($r = -.45$ to $r = -.30$).

In short, Hypotheses 1–3 were generally supported. That is, the Study 2 findings generally replicate those of Study 1, providing further assurance that the patterns are reliable.

Perceived and Measured Intelligence

In Table 4, our objective measure of intelligence was used to predict perceptions of shyness and intelligence. Note, first, that the correlation of IQ with peer-perceived intelligence rose from .12 to .37. This increase was significant ($Z = 2.67$, $p < .01$). Therefore Hypothesis 4 was supported. The corresponding

Table 4

Correlates of IQ in Study 2: Self- and Peer Perceptions of Shyness and Intelligence

Perceiver	Perceived shyness		Perceived intelligence	
	Time 1	Time 2	Time 1	Time 2
Peers	.05	-.20	.12	.37
Self	-.05	-.16	.20	.35

Note. $n = 103$. Time 1 = Week 2; Time 2 = Week 7. Correlations exceeding $|.23|$ were significant at $p < .01$; correlations exceeding $|.17|$ were significant at $p < .05$.

correlation with self-rated intelligence also rose, but not significantly.

Thus, with a standard IQ test as the criterion, our participants demonstrated increasing accuracy in judging their group members' intelligence as they became more acquainted. This improvement of accuracy with increasing acquaintance matches that found in longitudinal studies of the Big Five personality traits (Paulhus & Bruce, 1992; Paulhus & Reynolds, 1995). After seven meetings, both self-ratings ($r = .35$) and peer ratings ($r = .37$) of ability were significantly associated with measured intelligence. These values are comparable to those reported by Paulhus (1992) and Borkeu and Liebler (1993) and higher than those reported by Sternberg (1988). In short, individuals perceived as intelligent by their peers are, to some degree, the same individuals who have the ability to score high on IQ tests.

In a sense, these values were underestimates, given that in a discussion-group format, verbal abilities predominate over other aspects of intelligence. A global IQ test, such as the Wonderlic that we used, will therefore yield lower validities than would a pure measure of verbal IQ. To pursue this possibility, we rationally partitioned the IQ items into separate verbal and quantitative scores. Of 50 questions, 15 were clearly quantitative; the other 35 were classified as verbal. Logic questions were included in the verbal category because they involved verbal reasoning. When verbal IQ score was used as the criterion, the validity of peer-rated intelligence at Time 2 increased from .37 to .44. Although not significantly higher, the latter figure seems a more appropriate validity estimate, given that the information available to group members was primarily verbal. This correlation indicates a rather impressive ability of discussion-group members to estimate each other's intelligence.

Hypothesis 5 was clearly supported. As expected, trait shyness was not associated with the IQ test ($r = -.11$, ns). Therefore, the shy members of our sample did not, in fact, have lower intelligence. To pursue this issue, we recalculated the correlations separately for the verbal and quantitative subscales and found that neither IQ component was significantly associated with trait shyness. Nonetheless, our Study 2 participants, once again, downgraded their shy peers' abilities.

⁵ The possibility of gender effects was examined by testing for gender differences in correlations in Tables 3 and 4. None of the tests exceeded the Bonferroni t value for 16 two-tailed t tests, $p < .01$. Therefore all the analyses reported here are based on pooled data.

Table 3

Correlates of Pretested Trait Shyness in Study 2: Self- and Peer Perceptions of Shyness and Intelligence

Rater	Perceived shyness		Perceived intelligence	
	Time 1	Time 2	Time 1	Time 2
Peers	.53	.37	-.40	-.09
Self	.55	.49	-.45	-.30

Note. Each table entry is a correlation of pretested trait shyness with a peer rating. $n = 103$. Time 1 = Week 2; Time 2 = Week 7. Correlations exceeding $|.23|$ were significant at $p < .01$.

Analyses of Variance on Perceived Intelligence and Talk Time

A number of the correlational findings were intriguing enough to follow up with analyses of variance (ANOVAs). The interactions found with time, in particular, cannot be fully understood without converting the individual-differences variables to categories and examining the associated means.

Perceived intelligence. Recall that the correlation of trait shyness with perceived intelligence diminished with time and that the correlation of IQ with perceived intelligence increased to significance. To clarify this interaction, we conducted a $2 \times 2 \times 2$ ANOVA on perceived intelligence as a function of trait shyness (median split) and IQ scores (median split). Main effects were significant for shyness, $F(1, 99) = 8.26, p < .01$, and IQ, $F(1, 99) = 3.71, p < .05$. Two-variable interactions were significant for IQ \times Time, $F(1, 99) = 17.3, p < .01$, and Shyness \times Time, $F(1, 99) = 16.3, p < .01$. No other effects were significant. The pattern is evident from Figure 1. At Time 1, shyness was a more important contributor to intelligence perceptions, whereas at Time 2, IQ scores became more important.

Talk time. Another provocative (albeit unpredicted) finding was the significant negative correlation in Table 4 between IQ and shyness ratings at Time 2. The corresponding correlation at Time 1 was not significant. Apparently, low-IQ participants were perceived as shy at Time 2 but not at Time 1. Perhaps the less able participants began to talk less over the course of the seven meetings, thereby pulling attributions of shyness. To pursue this speculation, we conducted an ANOVA on peer ratings of talk time as a function of time (Time 1 or Time 2) and IQ (median split).⁶ Sure enough, we found the predicted pattern supported by a significant IQ \times Time interaction, $F(1, 99) = 6.02, p < .05$. In fact, the pattern was almost identical to that obtained with perceived intelligence as the dependent variable. The only difference was that a clear effect for trait shyness remained at Time 2, $t(99) = 2.09, p < .05$.

The similarity of the ANOVAs on perceived intelligence and perceived talk time suggested that the latter might mediate the former. In fact, when we introduced talk time as a covariate in the ANOVA on perceived intelligence, all effects weakened to nonsignificance. To summarize, at Time 1, talk time was solely

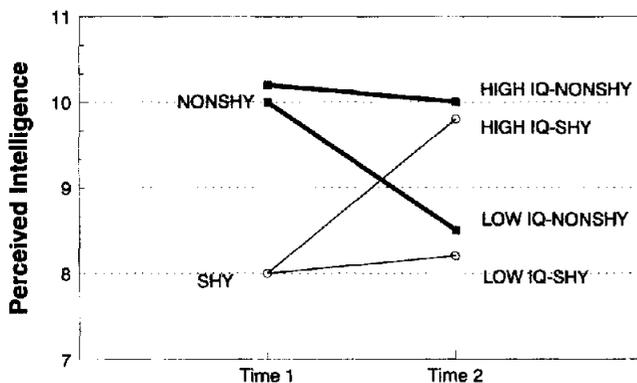


Figure 1. Peer-rated intelligence as a function of shyness, IQ, and time.

determined by trait shyness, whereas at Time 2, it was jointly determined by trait shyness and IQ. Nonetheless, perceivers appeared to base their shyness and intelligence ratings largely on talk time on both occasions.

General Discussion

Regrettably, our studies have confirmed the bad news regarding how the intellectual abilities of shy people are perceived. On all three facets—intelligence, creativity, and wisdom—shys were derogated in early interactions. On the brighter side, our studies confirmed the speculation of previous writers (Cheek et al., 1986; Gough & Thorne, 1986) that such negative perceptions would dissipate with sufficient familiarity. After seven meetings, our shy participants were no longer being derogated.

Our use of a longitudinal design was critical for ruling out a selection artifact as the explanation for previous findings that unacquainted raters derogate shys but well-acquainted raters do not (Cheek et al., 1986; Gough & Thorne, 1986). In those studies, the relationship of the targets to the acquainted raters (spouses and friends) differed in many important ways from that of the unacquainted raters (randomly assigned judges). After all, spouses and friends are not selected randomly but rather on the basis of similarity and liking (e.g., Fehr, 1996). Their warmth and acceptance might have deterred these judges from derogating their shy partner's intelligence. To rule out this artifact, we ensured that the same randomly assigned judges provided both the early and later impressions. Any observed differences must therefore be a function of time, not biased selection. We address these time effects in more detail below.

Study 2 contributed another critical piece of information, namely, an objective measure of the intellectual abilities of our participants. This measure allowed us to confirm, in our own sample, that the derogation of trait shys' intelligence was unjustified. That is, it occurred despite the lack of relation between shyness and actual intelligence.⁷ Note that the derogation was even more extreme on self-ratings than on peer ratings. Therefore, we discuss them separately.

Self-Perceptions of Intelligence

Self-derogation was evidenced by a consistent negative relation between shyness and self-perceived intelligence. The correlations were significant for both trait and state ratings of shyness and did not dissipate over time. The negative impact of shyness on self-perceived ability may simply be an expression of shys' global negativity in self-evaluations (e.g., Cheek & Buss, 1981; Jones et al., 1986). Using peer perceptions and behavior as the criterion for accuracy, a number of studies have documented how shy individuals negatively distort their self-perceptions (Alden & Wallace, 1995; Clark & Arkowitz, 1975). From this perspective, shy people are their own worst critics (Cheek & Melchior, 1990).

⁶ We first verified that the variances did not differ significantly across cells, through Bartlett's test.

⁷ Lest the reader think we are naive in equating IQ tests with "actual" intelligence, we point to a paper expressing our own skepticism (Paulhus & Lysy, 1996).

Alternatively, the correlation between shyness and self-rated intelligence could be the result of nonshys overrating their own abilities. A substantial literature supports the notion that many people regularly use self-serving illusions (for reviews, see Greenwald, 1980; Taylor & Brown, 1988). Particularly prone to self-serving biases are those high in narcissism (John & Robins, 1994) and self-deception (Paulhus, 1986). In fact, such individuals are already known to inflate self-perceptions of intelligence (Paulhus, Yik, & Lysy, 1995). In comparison, our shy participants may have been realistic in their self-perceptions in a process similar to depressive realism (see Alloy & Abramson, 1988). Given that we have no absolute metric for comparing perceived and measured intelligence, we cannot answer this question with the present data set.

Peer Perceptions of Intelligence

Previous evidence for the derogation of shys' intellectual abilities by unacquainted judges was confirmed and extended by the present studies. In early interactions, trait shys (those scoring high on pretested trait measures of shyness) were perceived to be not only less intelligent but also less creative and less wise. Although this derogation of trait shys had diminished by the final meeting, state shys (those acting shy during a specific meeting) were still being derogated. These results provoke two fundamental questions: Why are shy people derogated, and why does the derogation eventually cease?

Why the Derogation of Shys?

To address this issue, we first turned to a question that we had posed to our participants on one of the rating sheets. We had asked them to specify reasons for why they had derogated the intelligence of certain group members. The two largest categories of reasons were low quantity and poor quality of participation. Although poor quality was an understandable criterion, it astonished us that participants were even more likely to cite lack of participation as their justification for an attribution of low intelligence: Why didn't they assign a neutral rating to shys due to lack of information? Apparently, in our discussion groups, there existed an implicit norm of "saying nothing means nothing to say."

To determine the comparable cues for shyness, we recently asked a separate sample of student judges to provide three behavioral cues for shyness in discussion groups. All 45 cited some variant of quietness, well above the 24 citations for "nervousness." Apparently, in the group context, the predominant cue for shyness is also the predominant cue for lower intelligence, namely, talk time.⁸

The dual role of talk time as a cue is also supported by its strong correlations at both times with peer-rated intelligence (.55, .70) as well as peer-rated shyness (.83, .80). Consequently, when talk time was partialled out, the relation between perceived shyness and perceived intelligence dropped to nonsignificance at both Time 1 and Time 2. A similar drop occurred when talk time was partialled out of the relation between trait shyness and perceived intelligence. Together, these analyses implicate the dual cue value of talk time as the link between perceived shyness

and perceived intelligence. That is, the quietness of our shy participants initially misled observers about their intelligence.⁹

Where did our participants come up with the stereotype that "saying nothing means nothing to say"? We were able to shed some light on this question by analyzing talk time as a function of IQ scores. Although there was no difference at Time 1, by the final meeting, the lower IQ participants were talking less than the higher IQ individuals. Over time, the less intelligent participants may have concluded that they had little to contribute to the discussions, at least partly because of negative feedback from other group members. At the same time, positive feedback to the intelligent participants may gradually have encouraged their participation.

To the extent that the Time 2 situation (working with familiar others) is more common than the Time 1 situation (working with strangers), then the negative stereotype about quiet participants may have arisen from everyday experience. That is, people in work groups adjust their level of talk to suit the value of their contribution. Clearly, in our own data, this stereotype (eventually) held true. Unfortunately, any irrelevant factor that contributes to quietness (e.g., fatigue, shyness, or language problems) will result in negative, and unfair, attributions.

Why Does Shy Derogation Cease?

We considered four potential explanations of the diminishing derogation of shys over time. Two explanations focused on changes in the perceivers: (a) Accumulating information about shys' abilities eventually yields accuracy, and (b) increased liking modulates the derogation. Two other explanations focused on changes in the shy individuals: (a) a shift in their self-presentation style over time and (b) improved performance due to improving comfort. We consider each in turn.

Exposure begets liking, which begets leniency. Consider the distinct possibility that group members came to like one another due to mere exposure (Zajonc, 1968). Perhaps this increased liking diminished the derogation of unimpressive group members, including shys. Thus, a ceiling effect would reduce differences in ratings of the intelligence of shy and nonshy members.

This explanation is untenable for several reasons. First is the fact that shy behavior was still being derogated at Time 2. The difference was that the shy behavior was now being driven by participants' IQ rather than their trait shyness. Second, a ceiling effect would entail a reduced variance in intelligence ratings from Time 1 to Time 2. No such difference was found. In short, our results are incompatible with a mere exposure explanation.

⁸ Note that quietness accounted for only 13% of the nominations when people were asked, "How do you know . . . that you are shy?" (Cheek & Watson, 1989). This lower value is consistent with the fact that in our own data, talk time correlated less with self-rated shyness than with peer-rated shyness.

⁹ Given that talk time was also rated rather than measured, we must consider the possibility that perceptions of intelligence influenced perceptions of talk time. Perhaps intelligent participants were remembered as having spoken more than unintelligent participants. For a number of reasons, we doubt that the talk-time ratings are subject to distortion. First, the self-peer and peer-peer agreement was close to perfect. Second, in pilot data, we found near-perfect correlations between rated and measured talk time.

Accumulating information increases accuracy. Although little information was available about shys at Time 1, their intelligence was assumed to be not average, but low. As argued above, it appears that this attribution was based on the norm of "saying nothing means nothing to say." Given that shys never did talk as much as nonshys, why did they eventually receive comparable intelligence ratings?

Perhaps, in early meetings, insufficient evidence had accumulated to attribute intelligence to the shys who warranted that attribution. Over subsequent meetings, however, behavior emitted across the range of weekly exercises may have eventually been sufficient to reveal the abilities of shys to their group colleagues. Their final ratings were therefore average rather than low. This explanation is certainly consistent with evidence that personality judgments become more accurate as acquaintanceship increases (Funder, Kolar, & Blackman, 1995; Paulhus & Bruce, 1992). But our data show that perceivers cannot be credited with overcoming their bias against quiet people. Rather, the quiet ones (at Time 2, the lower-IQ members) were now more deserving of that derogation.

Rather than a change in the perceivers, we now consider the possibility that perceptions changed because of a changing reality; that is, the derogation of shys may have diminished because their performance rose from poor to average.

Shifting self-presentation. A key change in shys' behavior was an increase in talk time from Time 1 to Time 2. One explanation for their initial quietness (and consequent derogation) may be their self-presentation style (see Arkin, 1981; Schlenker & Leary, 1985). Arkin described the shy's style as self-protective rather than acquisitional (see also Baumeister et al., 1989). Thus, shys place more importance on avoiding a bad impression than on making a good one.

This theory would explain shys' initial quietness as a tactic to avoid negative evaluations. Unfortunately, it does not explain why they eventually started participating. According to Arkin, Lake, and Baumgardner (1986), shys will participate when they are guaranteed success. Why shys would perceive such a guarantee in later meetings is difficult to imagine, unless a reduction in discomfort were involved. We deal with that possibility next.

Diminishing impairment of shys. Although shy participants were objectively as intelligent as nonshy participants, their discomfort during public evaluation may have hampered their actual performance, that is, during the early discussions, their participation may have been objectively poor (e.g., clumsy or superficial comments) as well as being infrequent. Unfortunately, we did not collect any information about changes in performance.

We do know that shys' performance on creative tasks is particularly hampered by public evaluation (Camacho & Paulus, 1995; Cheek & Stahl, 1986; DePaulo, Epstein, & LeMay, 1990). Perhaps this impairment extends to other facets of intellectual performance. Such an impairment is consistent with the fact that social anxiety is accompanied by high self-focus (Carver & Scheier, 1986), which tends to disrupt performance by increasing irrelevant comments (Ganzer, 1968) and off-task thinking (Smith & Sarason, 1974). Ensuing disfluency in speech has been found to be a major influence on observers' perceptions of intelligence (Borkenau & Liebler, 1993). Attempts to cope do not help shys because their coping strategies are typically

maladaptive (Eisenberg, Fabes, & Murphy, 1995). They may simply have to habituate to the novel situation, a process that takes longer for shys than nonshys (Buss, 1995). Eventually, however, the shys may have become as comfortable as nonshys, thereby allowing a comparable quality of performance.

Inconsistent with the discomfort theory is the fact that unlike outside observers, shys continued to derogate their own intelligence even at Time 2. If they had improved their comfort and performance, they showed no indication that they were aware of this improvement. Of course, given that ratings were completed after a delay (1 hr to 2 days), shys may have recalled a reasonable performance in a negatively biased fashion (Graziano, Feldesman, & Rahe, 1985).

A drop in discomfort may also explain why shys, particularly high-IQ shys, began to talk more. Perceptions of their intelligence would naturally rise because of the higher ratings accorded to individuals who participate. Our covariate analyses suggest that this change in talk time can account for the change in attributions of intelligence. But if diminishing discomfort was the cause of improving quality and quantity of performance, it is difficult to know which of the three cues actually changed observers' perceptions of intelligence.

Because of our nonexperimental methodology, we cannot definitively rule out any of the four competing explanations. Nonetheless, our best bet is that the diminishing derogation of our shy participants resulted primarily from an increased participation rate, which then permitted an accurate evaluation of their true abilities. Because shys' participation rate never fully matched that of nonshys, however, we assume that accumulation of information over time also played a role. In other words, objective observers who rated only the last meeting might still have derogated shys' abilities.

Conclusion

Our two studies illuminate the intertwining roles of shyness and acquaintance in the dynamics of perceived intelligence. Despite the lack of relation between measured intelligence and trait shyness, shys were derogated temporarily by their peers and continually by themselves. The state-rated shys suffered even more derogation, suggesting that overlapping behavioral cues were being used to judge shyness and intelligence. Amount of participation in the discussion groups appears to be the primary cue linking the two perceptions. The consequences of this misattribution are far-reaching.

Shy individuals will suffer derogation whenever they are evaluated during limited intervals, particularly if their participation must be self-initiated. In educational settings that require public participation, shy students may be at a distinct disadvantage in the evaluations they receive from instructors (Friedman, 1980). In social encounters, too, shy individuals may leave a poor impression of their intelligence. Hence, an intelligent but shy person would have difficulty establishing relationships with persons who would make a good intellectual match.

The career advancement of shys is surely handicapped from the beginning, that is, the typical face-to-face job interview. Its stress and brevity render it unfair for assessing the ability of shy applicants—unfair unless the job itself involves the ability to make good impressions in initial contacts. For most positions,

however, objective information, rather than interview performance, should be a more valid predictor of the job performance of shy individuals.

Indeed, few social and career evaluations provide the multiple opportunities that our participants had to redress a bad first impression. Those who first appear unintelligent are unlikely to be given a second chance. Job opportunities and potential romantic partners can be lost by such fleeting impressions. Such repeated social failures may explain why shys have so strongly internalized their negative self-image. In short, the studies presented here have clarified the insidious dynamics of ability perception in shys. The cascade of negative life consequences detailed in the introduction now seems almost inevitable.

Dynamic Validity

An intriguing issue raised by our data is the dynamic validity of social cues. As a cue for judging intelligence, quietness is initially invalid, then valid. On the other hand, quietness as a cue for shyness is initially valid then, if anything, less valid. This peculiar pattern of mutating validities appears to result from the particular context of person perceptions, that is, repeated contact in an academic discussion group context.

Given that low-IQ participants were gradually discouraged from talking, then the impact of their IQ on peer perceptions would be amplified as time passed. In short, the consensual norm that only smart people should talk eventually makes talk time a valid cue. At the same time, perceptions of trait shyness may have been gradually occluded by the fact that participation came to be a function of IQ as well as shyness.

Such dynamics lead us to believe that some behavioral cues to personality do not have enduring, universal validity. Although the arguments for the ecological validity of cues are convincing (Baron & Misovich, 1993), there is also evidence that the context is influential in determining the value of a cue (e.g., Graziano, Moore, & Collins, 1988). This ephemeral quality of validity in person perception exemplifies the difficulty of defining an error in social judgment. Funder (1987) noted that judgments that are incorrect in terms of a limited experimental context may be correct when applied to a wider, more realistic context. Here, for example, we found that the tendency to derogate quiet individuals initially seemed unfair but was ultimately vindicated.

But surely our perceivers cannot be correct both initially and finally. Or can they? One could argue that initial judgments should be qualitatively different from acquainted judgments. Perhaps initial heuristics are valid when judged by their purpose, for example, "Is this person intelligent in the sense of offering immediate knowledge?" Given that shys will not contribute in early interactions, that heuristic is accurate and adaptive. Acquainted heuristics, however, should be judged by a different criterion, for example, "Does the target have the long-term ability or not?"

Limitations and New Directions

As noted above, the fluctuating pattern of person perception seems to follow from the dynamics of repeated leaderless discussions on academic topics. No doubt the LDG simulates a common situation in both academic and career life, that is, a

group deliberation on an intellectually challenging topic. At the same time, use of academic LDGs may have circumscribed the generalizability of our findings.

For example, had the group interactions been purely social in nature, the association between shyness and intelligence may not have emerged. That is, perceivers might have attributed shy participants' quietness to social discomfort rather than a lack of intellectual ability. A study comparing intellect perceptions in these two contexts would be informative. Although we assume that observers would consider the context, it would also be of interest to determine whether such considerations are automatic or deliberate.

Our results raised several other intriguing questions that we were unable to answer with our present data. First, is the term *derogation* an appropriate label for the fact that shys' abilities are rated lower than those of nonshys? The fact that, after 7 weeks, shys were rated on par with nonshys does suggest that shys were initially being underestimated. Of course, it could be that nonshys were initially being overrated. In response, it could be argued that the term *shy derogation* applies whether shys are being underestimated or nonshys overestimated. In either case, shys are relatively disadvantaged.

Similar arguments could be made about the self-derogation, which continued from Time 1 to Time 2. Were our shy participants more realistic in their self-ratings of intelligence than the nonshy participants, in a process similar to depressive realism, or were their self-perceptions negatively distorted? This question, as well as the previous questions, could be tested in future studies by including a metric that is objective or, at least, comparable to objective ability measures. For example, participants could be asked to estimate all group members' performance on an IQ test. Alternatively, rankings of self and peer could be used instead of ratings (John & Robins, 1994).

Were our observers so simple as to use only one cue, talk time, to evaluate both shyness and intelligence? We hesitate to make such a pronouncement because our only measured cue, talk time, is correlated with many other cues, which are therefore confounded in this methodology. Teasing apart the impact of other cues extends beyond scope of our present studies by requiring experimental manipulation of talk time along with other cues. Among many possible candidates, of particular interest would be behaviors indicating low confidence: weak voice, fidgeting, and absence of eye contact. Ideally, such behaviors would be videotaped unobtrusively and later rated by a separate panel of judges from videotapes of the discussions. Indeed, such methodologies have already been developed (Borkenau & Liebler, 1993; Gifford & Hine, 1994; Tckes, Robertson, Tooke, & Teng, 1986).

Finally, the puzzling self-deprecation in shys' ratings of their own intellect could be further explored by asking participants to explain what cues they used for rating their own abilities. These cues could be compared to other explanations for low intelligence ratings. Such information might be useful in improving current therapies for shy clients (Arkowitz, Hinton, Perl, & Himadi, 1978), including students (Friedman, 1980).

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