

## Development of an instrument to measure reticence.

by James A. Keaten, Lynne Kelly and Cynthia Finch

Currently there is no standardized, quantitative measure of the reticence construct created by Phillips (1965, 1984, 1986). Critics (e.g., Glaser, 1981) have argued that this has made it difficult to compare findings across studies of reticence as well as to establish the effectiveness of skills training programs such as the rhetorithery program Phillips developed for the treatment of reticence. In response to the need for a measure of reticence, Kelly, Keaten, and Begnal (1992) developed the Reticence Scale. The six dimensions of the Reticence Scale were designed to correspond to the categories of skill deficiencies detailed by Phillips in his latest work on reticence (1991). The scale is a generalized-context (McCroskey, 1984) measure which assesses reticence in social situations. The purpose of this research is to assess the validity of the Reticence Scale. Participants, drawn from the Penn State University Reticence Program, completed the Reticence Scale, the PRCA-24, the Willingness to Communicate Scale (McCroskey & Richmond, 1987), and/or the Conversational Skills Rating Scale (Spitzberg & Hurt, 1987). In addition, some of them wrote responses to six open-ended questions (tapping the six dimensions of the scale) asking them to assess their communication skills in social situations. Independent raters coded the responses using three levels: no problems, moderate problems, high problems. Results overall supported the construct validity of the scale. There were moderate, positive correlations between the Reticence Scale and the PRCA-24 and its dimensions except for the public dimension of the PRCA, which obtained a low correlation. In addition, the relationships between the Reticence Scale and both the Conversational Skills Rating Scale and the Willingness to Communicate Scale were moderate and in the negative direction as hypothesized. The concurrent validity of the Reticence Scale was supported by the high correlations between its dimensions and the open-ended responses.

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The reticence construct was introduced to the field of speech communication in 1965 by Gerald M. Phillips. The significance and impact of the construct is made apparent by the subsequent development of cognate concepts such as communication apprehension (McCroskey, 1970, 1984; McCroskey & Beatty, 1986) and unwillingness to communicate (Burgoon, 1976) and by the extensive published literature on reticence (e.g., Phillips, 1965, 1968, 1977, 1984, 1986, 1991). To help reticent communicators, Phillips developed a treatment approach known as rhetorithery (1986, 1991; Phillips & Sokoloff, 1979; Kelly, Phillips, & Keaten, 1995).

Over the years the reticence construct and the research examining the effectiveness of the rhetorithery program have been the focus of some criticism (Glaser, 1981; Page, 1980). One of the issues noted by researchers and critics is the lack of a standardized, quantitative instrument to measure reticence (Glaser, 1981; Kelly, Duran & Stewart, 1990; Kelly & Keaten, 1992). Early in the development of the reticence construct, Phillips and Erickson (1965) created the "R" scale to measure reticence. The instrument has 85 true-false items, making it unwieldy and inappropriate for many statistical analyses, and its validity was never established. Furthermore, Phillips rejected the measure and other standardized tests as unsatisfactory and developed an alternative procedure to screen reticent students for treatment (see Kelly, 1989 for a description) involving an interview with no paper and pencil measurement.

Although the interview process appears to be effective and valid for identifying candidates for rhetorithery (Sours, 1979), it is less useful as a means of measuring reticence for research purposes, particularly when one wants to compare results across studies. To make cross-study comparisons or to assess the relationship of reticence to other constructs such as communication apprehension, a standardized measure is needed. A measure of reticence would better enable researchers to empirically assess the effectiveness of rhetorithery or other skills training treatment programs because it would measure communication skills primarily, in addition to the sorts of fears experienced by reticent individuals. Measures of apprehension do not tap communication skills such as organization and delivery of ideas. Communication competence scales generally do not assess fears about communication at the same time that they measure skills or behaviors, and do not measure the set of skill deficits considered central to the reticence experience as explained in the next section.

Of the existing measures of cognate constructs such as shyness and communication apprehension (CA), none is

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congruent with the conceptualization of reticence. For instance, the PRCA-24, used extensively in the discipline, operationalizes the communication apprehension construct. CA is conceptualized as fear or anxiety about communication, and the PRCA items, appropriately, tap only fear and anxiety about communicating. Reticence, discussed below, is conceptualized as primarily, although not exclusively, a skills-based problem; thus, the PRCA-24 is incongruent with the reticence construct. There are several conceptualizations of shyness, each of which has been operationalized by specific instruments. Although some shyness measures (e.g., the Social Reticence Scale) incorporate items about awkward behavior, none of these measures tap molar-level communication skills that are essential to the reticence construct.

Thus, the purpose of this study is to report on the development of an instrument to measure reticence. First, we trace the history of the conceptualization of reticence and discuss its current definition. Next we discuss the development of the instrument, which we call the Reticence Scale (Kelly, et al., 1992). Then we report on the research conducted to assess its reliability and validity.

### History of the Reticence Construct

In 1965, Phillips coined the term "reticent" and introduced to the field of communication the notion that there are people who have difficulty communicating across a range of situations. Until that time, the field had focused almost exclusively on fear of public speaking. Phillips' original conceptualization defined reticence as a personality-based, anxiety disorder. By 1973 he had shifted somewhat away from the emphasis on the reticent personality toward a description of the reticent person's behavior (Phillips & Metzger, 1973). The refinement of the conceptualization was completed by 1977 (Phillips, 1977); in that and subsequent publications, Phillips defined reticence as a problem of inadequate communication skills (Phillips, 1984, 1986, 1991). The reticent person avoids and is inept at social interaction and public performance. One central statement of the reticent perspective is included in most of Phillips' discussions of the concept: "When people avoid communication because they believe they will lose more by talking than by remaining silent, we refer to it as reticence" (Phillips, 1984, p. 52). It is the realization of their own ineptitude that leads reticent communicators to this conclusion.

In his latest treatise on reticence, Phillips (1991) provides more detail about the kinds of skill difficulties reticent or incompetent people may have (He uses the term "incompetent" to include reticent individuals). Phillips proposes that the classical canons of rhetoric "specify the components of the communication act: inventing and arranging ideas, choosing and delivering clusters of words, and maintaining in memory a storehouse of ideas and repertoire of behaviors" (1991, p. 70). Furthermore, he states that "The Canons provide categories to deal with each of the components of the speaking process. We need the categories for diagnostic purposes, that is, if we are to modify social performance, we must be able to identify specific patterns of performance that must be changed" (Phillips, 1991, p. 70). Phillips goes on to discuss specifically the types of problems individuals can have within each of the five processes of invention, disposition, style, delivery, and memory.

Thus, although the reticence construct has undergone an evolution, the key notion that the reticent person has communication skill deficiencies has been present for twenty years. The latest work by Phillips (1991; Kelly et al., 1995) further delineates the nature of those skill deficiencies. Specifically, the reticence construct assumes that skill deficiencies defining the problem correspond to the rhetorical canons of invention, disposition, style, delivery, and memory. It is this most recent conceptualization of reticence which serves as the foundation for the Reticence Scale. No existing instrument is isomorphic with this conceptualization, and communication competence or skill measures do not assess these particular skills.

### Initial Development of the Reticence Scale

Our intent was to develop a self-report measure that could be used both for research and to provide teachers of reticent students more detailed assessment information to help them individualize treatment. A recent survey (Robinson, 1997) found that most college and university communication departments reported that treatment of apprehensive students is handled in the normal basic course, and that 96% of respondents indicated that instructors use skills training alone or in combination with other treatment approaches. The Reticence Scale could perhaps aid these instructors in assessing the skill deficiencies of the apprehensive students in their basic course sections.

We selected a self-report technique for several reasons. First, it is consistent with Phillips' conceptualization of the reticent

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person as one who sees him or her self as incompetent. Although one could argue that the reticent individual must demonstrate inadequate behavior to be deemed reticent, a stronger case can be made that the person must only perceive his or her skills as deficient. Phillips clearly states: "When people avoid communication because they believe they will lose more by talking than by remaining silent, we refer to it as reticence" (Phillips, 1984, p. 52). Furthermore, as Phillips notes: "But incompetent or not, it is virtually impossible to perform competently if one does not believe it possible" (1986, p. 358). Thus, Phillips is suggesting that although reticent people may not have serious skill deficiencies, their behavior is not likely to be competent simply because of their belief that they cannot speak well. To measure reticence, then, one needs to look at those beliefs through a self-report approach.

A second reason for the choice of self-report concerns the practical issues of ease of distribution, scoring, and so forth. It would be impractical and expensive to try to observe and measure actual communication performance. This would also present potentially insurmountable ethical difficulties.

Finally, our intent was to create an instrument that was more traitlike than situational. Self-reports allow respondents to reflect on their behavior more generally, rather than being restricted to how they performed in a specific interaction. To make a more general assessment with behavioral observation would require observing individuals in more than one interaction, which would increase the cost and other practical difficulties.

As experienced instructors in the Penn State Reticence Program, we had interviewed hundreds of reticent students over the years and had read their "Self-as-Communicator" papers in which they described their weaknesses as communicators. Using the skill categories suggested by Phillips (1991)--invention, disposition, style, delivery, and memory--we began to generate items. We discovered immediately that to try to include items from more than one context (i.e., social conversation, groups, public speaking, etc.) would make the instrument much too long because we would have to include several items assessing each canon for each context. Therefore, we made the decision to gear the instrument toward the social conversation context, producing what McCroskey (1984) calls a "generalized context" measure. Such a measure assesses a respondent's perception of how he or she usually or generally behaves in such a situation. We chose the social conversation context because our experience with reticent communicators suggests that those who have trouble in this context usually have difficulties in most other contexts, whereas people who cannot speak well in groups or public speaking situations do not necessarily find social conversation difficult. By identifying those with skill problems in social situations, the measure would be most useful for screening candidates for treatment. Moreover, social communication difficulties probably best differentiate reticent persons from those who tend to have problems only in large group situations.

As we began to generate items for each of the skill areas, we decided to eliminate the canon of style. It was difficult to assess style in a generalized context instrument because appropriate style is so closely tied to the specific situation. In addition, we included the skill of timing one's remarks to fit within the flow of the interaction. This decision was justified by the large number of students in the Reticence Program who talked about thinking of things to say after it was too late to make the remarks or simply waiting too long to speak and missing the opportunity to say something relevant. Although timing is not a separate rhetorical canon, Phillips (1991) noted its importance in his discussion of problems of invention experienced by reticent individuals. He stated: "A public speaker can take time to think through each idea and adapt it appropriately. When to threaten, when to beg, when to offer quid pro quo, depends on perception of the situation for which the public speaker can carefully prepare. The social speaker, on the other hand, must be responsive. It is like a Markov Chain; each remark is contingent on the preceding remark" (Phillips, 1991, p. 77). To include a timing dimension, therefore, appears to be consistent with Phillips' conceptualization. Moreover, an experimental study by Fischetti, Curran, and Wessberg (1977) found that socially competent males differed from incompetent males in the timing, not frequency, of their responses during communication.

Finally, we made the decision to include items about nervousness and anxiety, for two reasons, even though in Phillips' Conceptualization anxiety is not a necessary condition. First, so many of the reticent students we had worked with spoke of their feelings of tension and nervousness. As McCroskey (1984) noted, a rational person with unsatisfactory communication skills ordinarily will experience communication apprehension. Second, research we conducted on students enrolled in the Penn State Reticence Program revealed that the largest percentage of them in each of two separate samples (49% in 1993; 67% in 1994) reported themselves to be both anxious and unskilled in social situations (Kelly, Keaten, & Begnal, 1994). Only a small percentage of students in each sample (13% in 1993; 10% in 1994) fit Phillips' definition of reticence, reporting that they were unskilled but not anxious. These empirical observations, then, supported

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the decision to include an anxiety dimension in the measure in spite of the fact that Phillips' conceptualization of the problem emphasized skill deficiencies.

These decisions produced six categories or dimensions for which we generated items: anxiety, knowledge (invention), timing, organization of thoughts (disposition), delivery, and memory. We produced four items per dimension, two of which were reflected. This resulted in a 24-item scale which uses a six-point Likert format (See Appendix A). The remainder of this paper reports research assessing the validity of the Reticence Scale, first used by Kelly, Keaten, and Begnal in a 1992 study.

### Hypotheses

This study examined the construct and concurrent validity of the Reticence Scale by comparing it to other established measures and to open-ended responses to a set of questions. The measures chosen were the Personal Report of Communication Apprehension-24 (McCroskey, 1984), the Conversational Skills Rating Scale (Spitzberg & Hurt, 1987), and the Willingness to Communicate Scale (McCroskey & Richmond, 1987).

The PRCA-24 is a traitlike measure of communication apprehension, which is a person's level of anxiety about communicating. Using Guilford's (1956) operational definition of a moderate correlation (.40 to .70), we expected a moderate and positive relationship between the Reticence Scale and the PRCA-24, producing the following hypothesis:

[H.sub.1]: The Reticence Scale is moderately and positively related to the PRCA-24.

The correlation is predicted to be moderate because one of the dimensions measured by the Reticence Scale is anxiety about communicating in social situations, which should contribute to overlap between the measures.

The Conversational Skills Rating Scale (CSRS) measures other-reported communication competence at social conversation following an interaction (Spitzberg & Hurt, 1987). For the purposes of this study, the directions were altered to obtain self-reports of conversational skill in general, rather than for a specific conversation. We expected a moderate relationship between the two measures because, although both assess skill at social conversation, there is an important difference between them. The CSRS contains a large number of items about micro-level nonverbal and verbal behaviors, whereas the Reticence Scale items focus on molar level assessments (e.g., "I clearly say what I want to say"; "I muddle my words.") This difference in the measures should generate a moderate, rather than a high, correlation. The relationship between the Reticence Scale and the CSRS should be negative because a higher score on the Reticence Scale indicates greater problems with social interaction. Therefore, the following hypothesis was posited:

[H.sub.2]: The Reticence Scale is moderately and negatively related to the CSRS.

Willingness to communicate refers to a person's general tendency to communicate more or less across situations (McCroskey & Richmond, 1991). The Willingness to Communicate Scale (WTC) is a 20-item self-report measure which assesses willingness to communicate in public speaking, meeting, group, dyadic situations with strangers, acquaintances, and friends. Since the reticent person is presumed to avoid communication situations in which he or she feels inept, there should be a negative relationship between willingness to communicate and reticence. The WTC is a broader measure than the Reticence Scale, assessing willingness to communicate with three types of receivers in four contexts. Therefore, the two measures should achieve a moderate correlation, producing the hypothesis:

[H.sub.3]: The Reticence Scale is moderately and negatively related to the WTC Scale.

The relationship might be expected to be at the low end of the moderate range because the WTC Scale taps a much wider range of contexts than is included in the Reticence Scale, which measures only social conversation situations. However, given the overlap between the strangers dimension of the WTC and the focus of the Reticence Scale on conversing with strangers, a correlation at the higher end of the moderate range should be obtained.

In addition to the standardized scales, the Reticence Scale was compared to descriptions written by participants of their communication abilities. They were asked to answer six questions about their skills in social situations which corresponded to the dimensions of the Reticence Scale (Actual questions are presented in the "Method" section).

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Responses to the open-ended questions were coded following the procedures described later. We would expect a high (.70 -.90) to very high (.90 - 1.) positive association between the written assessments of skills in the six areas and the scores on those six dimensions as measured by the Reticence Scale because both instruments were designed to measure the identical construct. Thus, the following hypothesis was posed:

[H.sub.4]: Open-ended responses assessing levels of reticence are positively and highly to very highly related to scores on the Reticence Scale.

### Method

#### Participants

Data have been collected using the Reticence Scale over the past five years. Participants in all of the studies were undergraduate students enrolled in the Penn State University Reticence Program. All participants were volunteers who received no course credit for participating. The volunteer rate was extremely high with nearly all of the students approached agreeing to participate. Participants were informed that the research was designed to examine people's attitudes about communicating. As a result of the multi-stage data collection, the sample sizes for various analyses reported here range from 48 to 269.

#### Measuring Reticence

In order to measure reticence, the Reticence Scale was used (Kelly et al., 1992). The Reticence Scale consists of six dimensions: (1) feelings of anxiety; (2) knowledge of communication topics; (3) timing skills; (4) organization of thoughts; (5) delivery skills; and (6) memory skills. The Reticence Scale focuses on how individuals assess their feelings and skills regarding communication in social settings. Specifically, the scale consists of 24 statements, four statements for each dimension (See Appendix A). Participants were asked to rate their level of agreement using a 6-point Likert-type scale. Scores for each of the six dimensions range from 1 to 21, where a low score indicates less anxiety, fewer problems with knowledge, organization, etc. The total scores ranged from 6 to 126, with a lower number indicating lower levels of reticence.

Kelly et al. (1992) found that the overall reliability of the total scale was .95 with the six dimensions having the following reliability coefficients: feelings of anxiety (.91); knowledge of communication topics (.90); timing skills (.82); organization of thoughts (.82); delivery skills (.80); and memory skills (.92). Other studies have produced similar reliability estimates (Keaten, Kelly, & Begnal, 1995; Kelly, et al., 1994), supporting the reliability of the Reticence Scale and its dimensions.

An item analysis was performed on all twenty-four items. Each of the questionnaire items was significantly related to the total score (See Table 1).

Table 1: Reticence Scale Item Analysis/Part-Whole Correlations

ITEM	CORRELATION
1	.7391(**)
2	-.7761(**)
3	.5972(**)
4	-.3213(*)
5	.5535(**)
6	-.7943(**)
7	-.7847(**)
8	.7248(**)
9	-.8067(**)
10	.6788(**)
11	-.6773(**)
12	.8352(**)
13	.7473(**)

ITEM	CORRELATION
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14	-.7113(**)
15	.4688(**)
16	-.5795(**)
17	.5552(**)
18	-.7730(**)
19	-.7732(**)
20	.8228(**)
21	-.8523(**)
22	.8300(**)
23	-.7340(**)
24	.8175(**)

(\*) =  $p < .05$  (\*\*) =  $p < .01$

To assess the structure of the Reticence Scale, eight different structural models were tested for goodness of fit (see Table 2).(1)

Table 2: Model Test Statistics

Model type	n	avg. absolute	chi square stdzd residual	df	p
1 second-order (initial model)	269	.046	600.995	251	.001
2 first-order (initial first-order)	269	.040	574.533	237	.001
3 first-order (removed outliers)	267	.038	563.963	237	.001
4 first-order (within factor error covariances)	267	.030	351.931	230	.001
5 first-order (within/across factor error covariances)	267	.030	304.849	227	.001
6 second-order (within factor error covariances disturbances constrained equal)	267	.040	394.385	244	.001
7 second-order (within error covariances four of six disturbances constrained equal)	267	.035	377.092	242	.001
8 second-order (final model) (within/across factor error covariances four of six disturbances constrained equal)	267	.034	325.472	239	.001
Model type	SB chi-square	p	CFI	Robust CFI	
1 second-order (initial model)	524.20	.00000	.901	.906	
2 first-order (initial first-order)	474.90	.00000	.903	.917	
3 first-order (removed outliers)	491.54	.00000	.907	.913	
4 first-order (within factor error covariances)	309.96	.00034	.965	.973	
5 first-order	270.705	.02480	.978	.985	

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(within/across factor error covariances)

6 second-order 347.926 .00001 .957 .964  
(within factor error covariances disturbances constrained equal)

7 second-order 332.406 .00010 .962 .969  
(within error covariances four of six disturbances  
constrained equal)

8 second-order 289.181 .01456 .975 .983  
(final model) (within/across factor error covariances four of six  
disturbances constrained equal)

The final second-order confirmatory model produced an acceptable fit to the data as indicated by the Comparative Fit Index (CFI, Bentler & Bonnet, 1980; Bentler, 1989). As Levine and McCroskey (1990) note in their analysis of the structure of the PRCA-24, a second-order model "conceptually allows for the use of subscores since each subscale is viewed as a distinct sub-construct" (pp. 65-66). In addition, support for a second-order model allows the researcher to use total scores as well (Levine & McCroskey, 1990). Table 3 presents the means and standard deviations for the Reticence Scale and its dimensions for five years of data collection, indicating remarkable consistency in scores. Table 4 presents correlations between the Reticence Scale and its dimensions.

Table 3: Means and Standard Deviations for Reticence Scale and Dimensions

	RET	ANX	KNW	TIME
1992 (N=40)				
Mean	73.95	14.05	11.85	12.38
S.D.	21.33	4.32	4.54	4.07
1993 (N=39)				
Mean	66.85	12.64	10.82	11.54
S.D.	16.17	3.82	3.52	3.59
1994 (N=60)				
Mean	71.32	14.10	11.15	12.27
S.D.	16.17	3.82	3.52	3.59
1995 (N=47)				
Mean	67.15	13.15	10.79	11.83
S.D.	18.18	3.88	3.60	3.89
1996 (N=57)				
Mean	72.60	14.61	10.57	12.36
S.D.	17.73	4.18	3.46	3.72
ALL DATA (N=243)				
Mean	70.53	13.79	11.00	12.11
S.D.	18.12	4.07	3.80	3.78
	ORG	DEL	MEM	
1992 (N=40)				
Mean	11.28	12.90	11.50	
S.D.	4.26	3.82	4.49	
1993 (N=39)				
Mean	10.03	11.46	10.38	
S.D.	3.44	3.71	3.39	
1994 (N=60)				
Mean	10.35	12.65	10.80	
S.D.	3.44	3.71	3.39	
1995 (N=47)				
Mean	9.87	11.57	9.93	
S.D.	3.76	3.72	3.89	

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1996 (N=57)

Mean	10.58	13.07	11.24
S.D.	3.84	3.94	3.97

ALL DATA (N=243)

Mean	10.41	12.39	10.78
S.D.	3.83	3.79	3.89

Table 4: Correlation Matrix for Reticence Scale and Dimensions (N=243)(\*)

SCALE	ANX	KNW	TIME	ORG	DEL	MEM
RET	0.86	.78	.82	.79		.83
ANX	--	.59	.65	.59	.73	.63
KNW		--	.61	.54	.60	.55
TIME			--	.53	.65	.61
ORG				--	.64	.66
DEL					--	.69

(\*) All correlations are statistically significant ( $p < .01$ )

RET=Reticence Scale

ANX=Anxiety Dimension

KNW=Knowledge Dimension

TIME=Timing Dimension

ORG=Organization Dimension

DEL=Delivery Dimension

MEM=Memory Dimension

### Procedures

For each data collection occurrence, participants were selected during the second week of the semester, and were given the Reticence Scale and some or all of the other measures (PRCA-24, WTC, and/or CSRS). In addition, 96 participants were asked to respond to six open-ended questions regarding their knowledge, attitudes, and behaviors concerning communication. The six open-ended questions directly paralleled the six dimensions of the Reticence Scale. For each open-ended question, participants were asked to respond about their ability to communicate with a stranger at a social gathering. The purpose of this set of questions was to test the concurrent validity of the Reticence Scale. The six questions were as follows (the name of the Reticence Scale dimension in parentheses):

1. How do you feel about communicating in this type of situation? What feelings (if any) do you experience? (anxiety)
2. How would you evaluate your ability to come up with topics to talk about or things to say when talking to a stranger at a social gathering? (knowledge)
3. How would you evaluate your ability to organize your thoughts when talking to a stranger at a social gathering? (organization)
4. How would you evaluate your ability to remember what you wanted to say when talking to a stranger at a social gathering? (memory)
5. How would you evaluate your ability to time your comments/questions so they fit smoothly within the conversation when talking to a stranger at a social gathering? (timing).

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6. How would you evaluate your ability to deliver your remarks (i.e., speak fluently, make eye contact, etc.) when talking to a stranger at a social gathering? (delivery).

Responses to open-ended questions were quantified using content analysis. A coding scheme was developed to assess the degree of problems reported by participants for each of the six dimensions of the Reticence Scale. The coding scheme consisted of three categories:

1 = No problems (typified by words such as always and never).

2 = Some or moderate problems (typified by words such as sometimes, at times, and context dependent responses).

3 = High level of problems (typified by words such as always and never).

The following statements serve as examples of the categories in the coding scheme. A code of

1 (no problems) was assigned to statements such as:

"I really do not have any problem on this level, I'm an open person and feel I can create conversation easily."

"I like it (communicating with strangers); it's exciting, especially if other people are lively and friendly also."

Examples of responses receiving a 2 (moderate problems) are:

"When I say something, I sometimes get hyper and blurt out whatever is on my mind.

This blurring out has caused me to tongue twist words..."

"It depends on my mood. Generally, I'm a very moody person. But if I happen to be in a good mood- I'll probably just babble on about anything. When I'm in a bad/depressed mood, I tend to just stand there staring at the person, basically adding nothing to the conversation at all."

A code of 3 (high problems) was given to responses such as:

"I freeze up and my mind goes blank and often I find myself standing there nodding and saying meaningless things;"

"Very poor... I always run out of themes to talk about. I don't know what to say, I don't know what to ask."

Two coders independently coded each of the open ended statements. A unit of content was defined as the entire answer for one question. Interrater reliability, calculated by Scott's method (Holsti, 1969), was .82 for the coding scheme. After interrater reliability was assessed, the coders met to review the reasoning for the particular codes assigned. To resolve discrepancies, the number of key words for each category identified in a response was recorded and assigned the appropriate code. In most instances, after careful review, one coding selection surfaced quickly as the most suitable. For example, if a response was coded as a 2 by one rater and as a 3 by another, the number of key words for each category was calculated, and then the category that had the largest sum determined the code given.

### Results

To address hypotheses 1, 2 and 3, a series of correlations compared scores on the Reticence Scale to scores on the PRCA, the CSRS and the WTC scales. Results indicate that the Reticence Scale is positively correlated with the PRCA ( $r = .61$ ,  $p$  [is less than] .01), falling into the range designated a moderate correlation (Guilford, 1956); thus, [H.sub.1] was supported. The Reticence Scale negatively correlated with the CSRS ( $r = -.61$ ,  $p$  [is less than] .01) and the Willingness to Communicate Scale ( $r = -.58$ ,  $p$  [is less than] .01), and in both cases the correlations were in the moderate range defined by Guilford. Therefore, [H.sub.2] and [H.sub.3] were supported.

To further address these hypotheses, the Reticence Scale was correlated with subscales of the PRCA (See Table 5), the

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CSRS (See Table 6), and WTC (See Table 7). Results in Table 5 indicate that the Reticence Scale is most closely associated with the dyad dimension of the PRCA. The correlations for each of the dimensions were as follows: (1) dyad ( $r = .62$ ,  $p$  [is less than] .01), (2) meetings ( $r = .56$ ,  $P$  [is less than] .01), (3) group ( $r = .44$ ,  $p$  [is less than] .01), and (4) public speaking ( $r = .21$ ,  $p$  [is less than] .01). All of these correlations fall in Guilford's moderate category, except for the low correlation between the Reticence Scale and the public speaking dimension of the PRCA-24. Correlations between the dimensions of the Reticence Scale and the PRCA and its dimensions all fall within the low (.20 to .40) or moderate ranges defined by Guilford, with the anxiety dimension falling at the top end of the moderate range (See Table 5). A redundancy analysis provides support for the claim that the PRCA-24 and the Reticence Scale are sufficiently distinct.(2)

Table 5: Correlations between the Reticence Scale and PRCA-24 (N=92)

	RET	ANX	KNW	TIME
PRCA	.6127(**)	.6747(**)	.3867(**)	.5496(**)
GROUP	.4371(**)	.5790(**)	.2491(*)	.3930(**)
MEET	.5552(**)	.5795(**)	.3750(**)	.4738(**)
DYAD	.6158(**)	.7122(**)	.3475(**)	.5315(**)
PS	.2093(*)	.0738	.1979	.2481

  

	ORG	DEL	MEM
PRCA	.3894(**)	.5575(**)	.2629(*)
GROUP	.2452(*)	.3922(**)	.1516
MEET	.3339(**)	.5186(**)	.2747(**)
DYAD	.4169(**)	.5725(**)	.2541(*)
PS	.1736	.1639	.1105

(\*)  $p < .05$

(\*\*)  $p < .01$

Table 6: Correlations between Reticence Scale and CSRS (N = 48)

	CSRS	ALT	COMP
RET	-.6109(**)	-.5236(**)	-.5340(**)
ANX	-.5643(**)	-.3833(**)	-.5434(**)
KNW	-.4962(**)	-.4817(**)	-.3382(*)
TIM	-.3166(*)	-.2875	-.2790
ORG	-.5215(**)	-.5645(**)	-.3778(**)
DEL	-.5200(**)	-.3440(*)	-.5104(*)
MEM	-.5221(**)	-.4685(**)	-.5139(**)

  

	IM	EXP
RET	-.6096(**)	-.4883(**)
ANX	-.5237(**)	-.4901(**)
KNW	-.5453(**)	-.3919(**)
TIM	-.3541(*)	-.2040
ORG	-.4560(**)	-.3913(**)
DEL	-.5271(**)	-.4817(**)
MEM	-.5277(**)	-.3903(**)

(\*)  $p < .05$

(\*\*)  $p < .01$

ALT = Altercentrism COMP = Composure IM = Interaction Management EXP = Expressiveness

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Table 7: Correlations between Reticence Scale and WTC (N=174)

	RET	ANX	KNW	TIME
WTC	-.5848(**)	-.5908(**)	-.3907(**)	-.4344(**)
WGRP	-.5443(**)	-.5331(**)	-.3385(**)	-.3941(**)
WMEET	-.5499(**)	-.5239(**)	-.3491(**)	-.4085(**)
WDYAD	-.4640(**)	-.4945(**)	-.2897(**)	-.3551(**)
WPS	-.4431(**)	-.4694(**)	-.3512(**)	-.3377(**)
STR	-.5275(**)	-.5393(**)	-.3752(**)	-.4528(**)
ACQ	-.5153(**)	-.5238(**)	-.3256(**)	-.3613(**)
FRND	-.4401(**)	-.4303(**)	-.3015(**)	-.2990(**)

  

	ORG	DEL	MEM
WTC	-.4282(**)	-.5216(**)	-.4561(**)
WGRP	-.3895(**)	-.5217(**)	-.4424(**)
WMEET	-.4469(**)	-.4761(**)	-.4563(**)
WDYAD	-.2992(**)	-.4473(**)	-.3407(**)
WPS	-.2730(**)	-.3568(**)	-.3381(**)
STR	-.3617(**)	-.4308(**)	-.3824(**)
ACQ	-.3492(**)	-.4915(**)	-.4247(**)
FRND	-.3381(**)	-.3925(**)	-.3599(**)

(\*)  $p < .05$

(\*\*)  $p < .01$

Table 6 presents correlation coefficients for the Reticence Scale and its dimensions and the CSRS and its dimensions of altercentrism, composure, expressiveness, and interaction management. All of the Reticence Scale dimensions achieve correlations in the moderate range with the CSRS. In terms of the dimensions of the CSRS, the Reticence Scale has the strongest relationship ( $r = -.61$ ,  $p$  [is less than] .01) with the interaction management factor of the CSRS, which includes items such as "Initiation of new topics," "Use of speaking time relative to partner," and "Maintenance of topics and follow up comments."

Inspection of Table 7 shows the Reticence Scale moderately and negatively correlated to all subdimensions of the WTC: (1) stranger ( $r = -.53$ ,  $p$  [is less than] .01), (2) acquaintance ( $r = -.52$ ,  $p$  [is less than] .01), (3) friend ( $r = -.44$ ,  $p$  [is less than] .01), (4) group ( $r = -.54$ ,  $p$  [is less than] .01), (5) meeting ( $r = -.55$ ,  $p$  [is less than] .01), (6) dyad ( $r = .46$ ,  $p$  [is less than] .01), and (7) public speaking ( $r = -.44$ ,  $p$  [is less than] .01). As Table 7 indicates, all of the correlations between the dimensions of the Reticence Scale and the WTC are in the moderate range, with the exception of the knowledge dimension ( $-.39$ ,  $p$  [is less than] .01) which just misses the .40 cutoff defined by Guilford.

To address [H.sub.4] correlations, corrected for attenuation (Guilford & Fruchter, 1973) and restricted range (Hunter & Schmidt, 1990), were calculated between codes on the open-ended questions and scores on the Reticence Scale dimensions. The correlations for the knowledge ( $r = .97$ ,  $p$  [is less than] .001), delivery ( $r = .94$ ,  $p$  [is less than] .001), memory ( $r = .92$ ,  $p$  [is less than] .001), organization ( $r = .91$ ,  $p$  [is less than] .001), and timing ( $r = .92$ ,  $p$  [is less than] .001) dimensions fall in the very high range defined by Guilford, whereas the correlation for the anxiety dimension ( $r = .87$ ,  $p$  [is less than] .001) is near the top of the high correlation range. These results provide support for hypothesis 4.

### Discussion

This study presents research on the development of the Reticence Scale, a 24-item self-report measure of the reticence construct (Phillips, 1991). Results of this study provide satisfactory support for the construct and concurrent validity of the Reticence Scale. Specifically, the scale achieved moderate correlations with the PRCA-24 and the meeting, group, and dyad subscales and a low correlation with the public speaking subscale. Since the Reticence Scale focuses on interacting in social situations, the low correlation with the public subscale of the PRCA is appropriate. The correlation of .61 between the PRCA-24 and the Reticence Scale is very likely due to the Reticence Scale containing an anxiety dimension, which produced a correlation of .67 with the PRCA-24. The correlations of the other dimensions of the Reticence Scale with the

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PRCA ranged from .27 (memory) to .55 (timing).

Previous experience with students in the Penn State Reticence Program as well as research showing high levels of communication anxiety among program participants (Kelly et al., 1994) justified including anxiety as a dimension of the scale. The anxiety subscale obtained the highest mean in the present study, indicating that anxiety is a substantial component of reticence reported by those in the treatment program. Of the six dimensions of the scale, the highest correlation obtained was between the anxiety dimension and the PRCA dyad subscale. This finding is to be expected given that both subscales assess anxiety about communication in social situations.

Two chief differences between the PRCA-24 and the Reticence Scale are: (1) the PRCA assesses apprehension in four distinct contexts whereas the Reticence Scale focuses exclusively on social interaction; and (2) the PRCA measures communication apprehension only whereas the Reticence Scale has five dimensions that tap specific skill areas and a sixth dimension to assess anxiety. Overall, the pattern of moderate and low correlations between the two measures and results of a redundancy analysis provide evidence that they are measuring distinct but cognate constructs.

Further evidence of the construct validity of the Reticence Scale is its relationship to the Willingness to Communicate Scale. One would expect reticent individuals to be low in willingness to communicate. The correlation between the two measures (expected and found to be negative) was in the moderate range as were the correlations between the Reticence Scale and the subscales of the WTC. Similar correlations between the WTC and measures of communication apprehension have been reported by McCroskey and Richmond (1990). Although for types of receivers the Reticence Scale correlated most highly with the stranger subscale of the WTC, as expected, the WTC's group and meeting contexts achieved higher correlations with the Reticence Scale than the dyad subscale. Given that the Reticence Scale obtained the highest correlation with the dyad dimension of the PRCA-24, the conflicting result for the WTC may reflect that scale's particular operationalization of the dyad context. The three statements of the WTC dyad subscale ask about talking while standing in line, which differs from talking to a stranger at a social gathering. So even though both the PRCA and the WTC contain dyad subscales, what they are measuring appears to be quite different. Furthermore, the group dimension of the WTC includes items about talking in a small group, from a group of strangers to a group of friends. These items do not imply a group task situation; instead they suggest a social situation, which might explain the higher correlation between the WTC group, rather than the dyad, subscale and the Reticence Scale. Major differences between the Reticence Scale and the WTC include: (1) the WTC is a broader instrument than the Reticence Scale, assessing willingness to communicate with three types of receivers in four contexts, and (2) the WTC measures one's tendency to be willing to communicate, not specific communication skills such as knowledge, timing, delivery and so forth.

Results concerning the relationship of the Reticence Scale to the Conversational Skills Rating Scale also lend support for the former's construct validity. The two scales achieved a negative and moderate correlation (-.61), and the Reticence Scale related most strongly to the interaction management dimension of the CSRS, which includes items about initiating and maintaining topics, similar to the knowledge dimension of the Reticence Scale.

This study found strong support for the concurrent validity of the Reticence Scale in the results concerning the open-ended responses written by participants. Five of the six Reticence Scale dimensions achieved very high correlations (as operationalized by Guilford, 1956) and the sixth achieved a high correlation with coded open-ended responses. These results were predicted because both assessments were designed to measure the same six dimensions of the reticence construct.

In addition to the suggestion made above, future research needs to focus on two areas. First, the predictive validity of the Reticence Scale needs to be established. This would strengthen the case for using the Reticence Scale as a measure of the reticence construct. Second, the measure should be used to assess the effectiveness of the Reticence Program. Recent research on how well the program works (Kelly, Duran, & Stewart, 1990; Kelly & Keaten, 1992) has relied on standardized measures of related constructs. Although studies using these measures provide evidence that the Reticence Program is effective, the case for the program's effectiveness would be strengthened if similar results were obtained by studies employing a measure of reticence.

### Notes

(1) The nonsignificant chi-square of the first-order confirmatory factor model indicated that model 5 provided a fit that was

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not significantly worse than that provided by a measurement model in which all latent constructs were free to covary. The change in chi-square from the first-order confirmatory measurement model (model 5) to the final first-order measurement model (model 5) was significant ( $563.963 - 304.849 = 259.114$ , change in  $df = 237 - 227 = 10$ , critical value at .001 is 29.588). In other words, this finding showed that the causal relationships described in model 5 were successful in accounting for the observed relationships between latent constructs.

Intuitively the same type of comparison with the second-order confirmatory factor measurement models can be done. Since the initial model included two outliers ( $n=269$ ) and the final model removed the outliers ( $n=267$ ) a statistical test is not computed here. However, an inspection of the chi-square value for the initial model (chi-square=600.995 and  $df=251$ ) and for the revised second-order measurement model (chi-square=325.472,  $df=239$ ) indicates that the chi-square value has decreased by 275.523. The revised model chi-square value is closer to zero and when using an absolute fit index, the optimal fit would be a chi-square value of zero.

A statistical comparison can, however, be made between the last two revised second-order confirmatory factor measurement models (model 7 and model 8). Model 7 estimates only error covariances within latent constructs while model 8 adds three error covariances across latent constructs. The change in chi-square is significant ( $377.092 - 325.472 = 51.62$ , change in  $df = 242 - 239 = 4$ , critical value at the .001 level = 18.467). The change in chi-square statistic indicates a significant improvement in model fit when appropriate error covariances are allowed to be estimated within and across latent constructs.

A significant change in the chi-square was also found between the independence or "null" model. The independence model in which no relationships among variables are specified is the most common baseline model (Bentler & Bonett, 1980). The chi-square difference between the independence model and the final revised model is quite substantial ( $3803.403 - 325.472 = 3477.931$ , change in  $df = 276 - 239 = 37$ , critical value at the .001 level for  $df=40$  is 73.402).

In summary, the final second-order confirmatory factor model provides an acceptable fit to the data as indicated by the Comparative Fit Index (CFI, Bentler & Bonnet, 1980; Bentler, 1989). The initial second-order confirmatory factor measurement model did not prove to be an acceptable fit using the chi-square statistic (chi-square = 600.995,  $df=251$ ,  $p=.001$ ). A first-order confirmatory covariance model was then fit to the data. After revisions, the final second-order confirmatory factor measurement model showed significant improvement of model fit over previous models. The change in chi-square shows a significant improvement from model 7 to model 8; the change in chi-square was 51.62 with a change in  $df = 4$ , significant at the 0.001 level (critical value = 18.467). This indicates that estimating some of the error covariances contributed to a better model fit (rather than setting covariances equal to zero).(\*)

(2) To further examine the relationships between the Reticence Scale subscales and the PRCA-24 subscales, canonical correlation was performed. A significant canonical root ( $R_c = .788$ ;  $[R_{c.sup.2}] = .621$ ) was obtained between the first (Reticence Scale sub-scales) and second (PRCA-24 sub-scales) set of variables [ $F(24) = 3.4$ ,  $p$  [is less than] .001]. The canonical loadings indicated that the first set was defined primarily by anxiety (-.944), delivery (-.788), and timing (-.733), and secondarily by organization (-.556) and knowledge (-.511). The loading for memory was -.372. The second set was defined by dyad (-.947), meetings (-.796), and group (-.737). The loading for the public speaking sub-scale was -.153.

Results of the redundancy analysis were: set 1 given set 2 = 28.6%, set 2 given set 1 = 52.4%. As Tucker and Chase (1980) explain, "The index of redundancy is a measure of the degree of variable set overlap. It may also be viewed as the proportion of variance in Set 1 predictable from Set 2, and vice versa" (p. 211). These results indicate that approximately 29% of the variance in the variable set (Set 1) defined by the Reticence Scale sub-scales is predictable from the variable set defined by the PRCA sub-scales, whereas about 52% of the variance in the set defined by PRCA sub-scales (Set 2) is predictable from the Set I variables. These findings suggest that the scales are sufficiently distinct to justify a need for the Reticence Scale, which appears, as expected, to be measuring a broader construct than the PRCA-24.

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### Appendix A

#### Reticence Scale

DIRECTIONS: This assessment instrument is composed of 24 statements concerning your skills as a communicator. Please indicate in the space provided the degree to which each statement applies to you by marking whether you (1) strongly disagree, (2) disagree, (3) mildly disagree, (4) mildly agree, (5) agree, or (6) strongly agree. These statements refer to your communication skills when meeting a stranger at a social gathering. Please work quickly; just record your first impression.

- 1. I am nervous when talking. (Anxiety) -- 2. I know what to say. (Knowledge) -- 3. I wait too long to say what I want to say. (Timing) -- 4. I organize my thoughts when talking. (Organization) -- 5. I stumble over my words. (Delivery) -- 6. I remember what I want to say when talking. (Memory) -- 7. I am relaxed when talking. (Anxiety) -- 8. I am unaware of what to say. (Knowledge) -- 9. I say things at the time I want to say them. (Timing) -- 10. My thoughts are disorganized. (Organization) -- 11. I clearly say what I want to say. (Delivery) -- 12. I forget what I want to say when talking. (Memory) -- 13. I feel tense when talking. (Anxiety) -- 14. I know what to discuss. (Knowledge) -- 15. I hesitate too long to say what I want to say. (Timing) -- 16. I arrange my thoughts when talking. (Organization) -- 17. I muddle my words. (Delivery) -- 18. I recall what I want to say when talking. (Memory) -- 19. I am comfortable when talking. (Anxiety) -- 20. I am unfamiliar with what to say. (Knowledge) -- 21. I say things when I want to say them. (Timing) -- 22. My thoughts are jumbled. (Organization) -- 23. I fluently say what I want to say. (Delivery) -- 24. I lose sight of what I want to say when talking.

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(Memory)

Scoring Instructions: Anxiety = 11+Q1+Q13-Q7-Q19 Knowledge = 11+Q8+Q20-Q2-Q14 Timing = 11+Q3+Q15-Q9-Q21  
Organization = 11+Q10+Q22-Q4-Q16 Delivery = 11+Q5+Q 17-Q 11-Q23 Memory = 11+Q12+Q24-Q6-Q18

James A. Keaten is Associate Professor of Communication at the University of Northern Colorado, Greeley, CO 80639. Lynne Kelly is Professor in the Department of Communication, University of Hartford Cynthia Finch is an Instructor of Speech Communication at Pennsylvania State University. The Authors are indebted to Diane Suhr, University of Northern Colorado, for her assistance with the analysis and interpretation of the Reticence Scale factor structure.