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**Development of a Measure of Student Apprehension toward Communicating With
Instructors**

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Abstract

Study one developed a narrow-band measurement to examine student-instructor communication apprehension and determined the instrument's validity and reliability. The instrument was based on the rationale underlying previous measures of communication apprehension. A unidimensional test consisting of twelve items was developed with acceptable internal reliability. The measure correlated positively with more general trait measures of communication apprehension and was significantly correlated with three factors of students' motivation to communicate with instructors. Students' self report of frequency of communication with instructors and their satisfaction with their educational experience were negatively correlated with their apprehension to communicate with their instructors. Study two used confirmatory factor analysis to reduce the scale to six items. It further differentiated the scale from the measurement of classroom communication apprehension.

Development of a Measure of Student Apprehension Toward Communicating With Instructors

The wide-ranging impact of the original conceptualization and measurement of communication apprehension (CA) has been well documented (McCroskey, 1977). In particular, high levels of CA have a major debilitating impact in the instructional setting (e.g. Ericson & Gardner 1992; McCroskey, Booth-Butterfield, & Payne, 1989; Monroe & Borzi, 1988; McCroskey & Sheahan, 1978; Proctor, Douglas, Garera-Izquierdo, & Wartman, 1994; Richmond & McCroskey, 1992). Understanding of the extent of that impact will be greatly enhanced through the development of measures designed to tap into specifically targeted contexts (e.g. Neer, 1987). The purpose of this study is to develop a measure targeted specifically at the general apprehension a student may have about communicating with a teacher.

General CA and Instruction

CA was first operationally defined by McCroskey (1970) using a unidimensional 20-item scale called the Personal Report of Communication Apprehension (PRCA). Other measurement tools designed for more specific purposes were offered at this time but the PRCA emerged as the dominant and most frequently used assessment measure. Communication apprehension (CA) in the classroom has been widely studied and found to have numerous debilitating effects upon student success potential in the college environment including a decrease in the quantity and quality of interaction with instructors.

Students with high CA tend not to remain in an academic environment as long as students with low CA (Ericson & Gardner 1992; McCroskey, Booth-Butterfield, & Payne, 1989, Monroe & Borzi, 1988, and Ericson & Gardner, 1992). High CA students tend to enroll in classes requiring little interaction with the instructor or with other students and to drop out of those classes which do have such requirements (McCroskey & Sheahan, 1978, Richmond & McCroskey, 1992). High-CA students are "less likely to communicate with peers, advisors, counselors, or professors who could offer social comfort and academic assistance" (McCroskey, Booth-Butterfield, & Payne, 1989, p. 101). In fact, High CA students will avoid interacting with instructors who might suggest assistance for this problem (Proctor, Douglas, Garera-Izquierdo, & Wartman, 1994) and with other authority figures ((McCroskey, Booth-Butterfield, & Payne, 1989). These results are consistent with the conceptual definition of CA and the theoretical foundation and propositions posited by McCroskey (1977) regarding the trait nature of this general concept. Clearly, the general concept of CA has a demonstrated negative impact upon student success in higher education. However, the more specifically focused the nature or context of the CA, it would appear the more specific the scientific and applied discoveries and the more specifically targeted can be the potential remedies.

Targeted CA Measurement

Behnke and Sawyer (1998) suggest that the use of wide-band or general trait measures in investigations of more specific periods or contexts tends to limit the degree of measurement precision. The limitation of general trait measures can be avoided if the tools used to assess the trait are more narrowly focused. The more narrow (or specific) the targeting of a general trait, the greater the conceptual validity and precision of measurement. It seems logical to suggest that the depth and scope of scholarly inquiry will be reflected by the focus of the tools used in the inquiry. The tools we use certainly impact the direction of our attention. And, should our focus be only upon the more obvious general trait levels then that level of analysis will likely be the extent of our insight. Although the narrowing of the measurement bandwidth has been profitably used in state anxiety measures, "...the same narrow-band tactics have not been fully applied to

trait anxiety measurement.” (Behnke & Sawyer, 1998, p. 160).

Several communication researchers have addressed that concern with the development of target or context specific measures of CA: Powers & Hutchinson (1979) developed a measure of Spouse CA (SCA); McCroskey (1984) included separate measures of dyadic CA (DCA) group CA, meeting CA and speaking CA; Neer (1987) measured classroom CA (CCA); Hawkins (1991) measured Student-Advisor CA; Ayers, Colby-Rotell, Wadleigh, & Hopf (1996) developed a measure of Patient-Physician CA; Beatty & Dobos (1993) measured Partner CA; and Powers & Love (2001) developed a measure of Dating Partner CA. The DCA construct (McCroskey, 1984) encompassed many different types of relational contexts but restricted the apprehension about communicating to only that associated with another person in a dyadic context. DCA clearly promoted a narrowing of the more general communication apprehension focus yet remained a wider focus than SCA. Thus, the breadth of the measures relative to each other was widest with the overall PRCA measure, narrowed with the DCA measure, and narrowed again with the measures tied to a specific target (e.g. spouse, physician, advisor, partner). Although most targeted measures retained the dimensionality of the original, there were some aberrations in factor structures for differing reasons (e.g. McCroskey, 1984; Neer, 1987; Beatty & Dobos, 1993; and Powers & Love, 2001.)

Neer (1987) developed a contextually defined, narrow-banded measure of CA targeted at the classroom environment with the designate of Class Apprehension about Participation Scale (CAPS) and the combination of CAPS with PRCA items to produce a Self Report of Classroom Apprehension (SRCA). CAPS and SRCA were specifically designed to assess the apprehension felt by a student toward communicating within the context of the classroom environment. CAPS was originally constructed with the idea that it would be composed of two major dimensions as reflected in item construction (communication participation and communication confidence) however these were not requested on a factor analysis rotation¹ and only one dimension emerged from the initial factor analysis. A later factor analysis of CAPS and PRCA-10 (items about class discussions) items produced two factors but were then combined and identified as SRCA. Both tools were very highly correlated with the PRCA-24 (CAPS/PRCA $r = .78$; SRCA/PRCA $r = .86$). Both tools reflected acceptable reliability (CAPS alpha = .86; SRCA alpha = .93 and validity indices. CAPS is further utilized and refined (Neer & Kircher, 1989). Neer (1990) suggests that an expanded CAPS with five dimensions is moderated by the classroom discussion situation as well as the actions of the instructor in the discussion context. Neer and Aitken (1993) indicate little relationship between CAPS and motivation to ask questions and that student motivation was the better predictor of student question-asking in the classroom.

The CAPS model reflects extraordinary association with the PRCA and contains unexpected dimensional structure in the effort to assess student apprehension toward communicating in the classroom context. The instructor is only one of many interacting factors in the CAPS model with generalizability of that apprehension naturally restricted to classroom interactions. The need for measurement of general student apprehension toward communicating with instructors in the wide variety of contexts for such interaction remains. Thus, this research pursues exploration of the following research question:

RQ: What is the most appropriate narrow-band factor and item structure associated with

¹ See McCroskey and Young (1979) for discussion of factor analysis utilization options.

the measurement of general student-instructor communication apprehension (SICA)?

SICA Conceptualization

The combination of the general CA measure and its theoretical foundation and the more recently developed narrow-band measures provided the foundation for conceptualization of SICA. Of special significance to this report is the degree to which McCroskey's (1977) theoretical propositions can be applied to the concept of SICA. Since SICA is defined as an individual's level of fear or anxiety associated with either real or anticipated communication with instructors, the direct relationship with CA is clear. In fact, the most sensible theoretical propositions associated with SICA are directly derived from McCroskey's work:

- 1) People who experience a high level of SICA will withdraw from and seek to avoid communication with their instructors when possible.
- 2) People who experience a high level of SICA will be perceived less positively than people who experience lower levels of SICA by others in the learning environment external to the relationship, by their instructors, and by themselves.
- 3) People who experience a high level of SICA will also experience less satisfaction in their relationships with their instructors, less satisfaction in their interpersonal relationships with other students, less satisfaction with themselves and less satisfaction with their learning environments.
- 4) People who experience a high level of SICA will be less motivated to communicate with their instructors. This proposition follows from the research by Martin, Myers, and Mottet (1999) that identifies a set of motives related to student-instructor communication.

In order to examine these theoretical propositions a reliable and valid measure of SICA must be developed. It was reasoned that there are a number of questions left unanswered by the initial forays into this area that are best answered via two separate studies. Both studies are designed in response to the research question.

Study One

One element tied to the response to the primary research question is the predictive validity of the measurement tool. Clear and substantial support for the following knowledge claims is indicated by the previously displayed propositional statements, their supporting evidence and by the results reported in developmental work with these constructs: 1) The higher the apprehension toward communicating with instructors, the higher the dyadic communication apprehension (McCroskey, 1984; Beatty & Dobos, 1993a,b; Powers & Love, 2001), 2) The higher the apprehension toward communicating with instructors, the less the motivation to communicate (Martin, Myers, & Mottet, 1999), 3) The higher the apprehension toward communicating with instructors, the less the satisfaction with college, instructors, and advising, and 4) The higher the apprehension toward communicating with instructors, the less the in-class and out-of-class interaction frequency with those instructors. Thus, the following hypotheses were utilized to check the validity of the SICA measurement tool:

H1: SICA will be positively and significantly correlated with DCA.

H2: SICA will be negatively and significantly correlated with motivation to communicate.

H3: SICA will be negatively and significantly correlated with satisfaction with college, satisfaction with instructors, and satisfaction with advising.

H4: SICA will be negatively and significantly related to frequency of interaction in class and frequency of interaction out-of-class.

Methods

Participants

Participants in the study were undergraduate students enrolled in lower division communication classes at a southeastern university. 304 students completed the data collection phase; 173 female (56.9%), 123 male (40.5%), and 8 did not indicate sex (2.6%). 26 were Freshmen (8.6%), 62 were Sophomores (20.4%), 132 were Juniors (43.4%), 75 were Seniors (24.7%), and 9 did not indicate class. Mean age was 22.6 years (*s.d.* = 4.74), median age was 21. The median grade point average for the sample fell in the interval of 2.50 – 2.99.

Predictor variables

Two Likert type five-point scales were used to measure students' perception of how much they communicated with instructors (COMQT). The two scales had a composite mean of 2.4227, a standard deviation of 0.902, and a standardized item alpha of .688. The two scales were:

While in class, I tend to interact with the instructor more than most students.

I find myself interacting with my instructors outside of class more than most students.

Responses were on a scale of strongly disagree to strongly agree. A low score (1) indicates low COMQT while a high score (5) indicates high COMQT. Three Likert type, five point scales were developed to measure students' satisfaction with college, instructors, and advising (SATIS). The three scales had a mean of 3.447, a standard deviation of 0.812, and a standardized item alpha of .604. The three scales were:

I am very satisfied with my college experience.

I am very satisfied with my college instructors.

I am very satisfied with my college advising experience.

Responses were on a scale of strongly disagree to strongly agree. A low score (1) indicates low SATIS while a high score indicates high SATIS. The PRCA-24 (McCroskey) was selected to measure students' trait communication apprehension. The PRCA scores were factor analyzed using Principal Components Factor Analysis with Varimax Rotation for 4 Factors. The analysis yielded the expected four factors and is available from the authors). The factor means as well as the overall mean are: PRCA-Group Discussion (PRCAG), $x = 15.875$, *s.d.* = 5.637, standardized item alpha = .917; PRCA-Meetings (PRCAM), $x = 16.934$, *s.d.* = 5.293, standardized item alpha = .919; PRCA-Dyadic (PRCAD), $x = 14.495$, *s.d.* = 4.242, standardized item alpha = .8695; PRCA-Public Speaking (PRCAS), $x = 20.079$, *s.d.* = 5.662, standardized item alpha = .895; PRCA-Overall (PRCA), $x = 67.395$, *s.d.* = 16.928, standardized item alpha = .945.

The Student Motivation to Communicate with Instructors (SMCI) scale (Martin, Myers, & Mottet, 1999) was selected to assess student motivation to communicate. Since the twenty-five item scale has not been replicated in the literature, we submitted the scores to Principal Components Factor Analysis with Varimax Rotation for five factors. The five expected factors were produced; however 3 of the 25 expected items did not meet the +/- .60/40 criterion and were deleted from our analysis. (Details of this analysis are available from the authors). Means for each of the factors are: SMCI-Relational (SMCIR), $x = 3.188$, *s.d.* = 0.982, standardized item alpha = .908; SMCI-Functional (SMCIF), $x = 1.886$, *s.d.* = 0.690, standardized item alpha = .893; SMCI-Excuses (SMCIE), $x = 2.765$, *s.d.* = 1.140, standardized item alpha = .883; SMCI-Participation (SMCIP), $x = 2.627$, *s.d.* = 0.921, standardized item alpha = .846; SMCI-Sycophancy (SMCIS), $x = 3.602$, *s.d.* = 1.139, standardized item alpha = .911. For each of these scales a low score (1) indicates a high level of motivation while a high score (5) indicates a low level of motivation.

Student Instructor Communication Apprehension

In order to measure the critical variable of student communication apprehension as it relates specifically to instructors we conducted a two-phase development procedure within Study One. Phase 1 consisted of instrument development while phase two consisted of data collection and assessment. At the outset we envisioned SICA to be most like dyadic communication apprehension as measured by PRCAD or Dating Partner Communication Apprehension (Powers & Love, 2001). Items from those two scales were modified to refer specifically to communication with instructors. This is similar to the procedure used by Hawkins (1991) but avoids the confounding variable of advisors, who in many cases are separate entities from the professor persona and the classroom instructor. A list of 15 items was compiled and given to a class of 30 communication students with instructions to modify, delete, or edit the list to make it as complete as possible to reflect their feelings concerning communicating with instructors. Compilation of the students' lists with editing resulted in a list of 38 items addressing how students feel about communicating with instructors. 22 of the items were negatively worded ("I am hesitant..."), while 16 were positively worded ("I look forward . . ."). Phase two consisted of having students respond to the actual test. Survey instruments were prepared containing the 38-item SICA, the 24-item PRCA, the 25-item SMCI, the 2-item COMQT, and the 3-item SATIS. In addition we requested information on age, sex, year in school, and GPA. Surveys were administered in classes over a one-week period. Participation was voluntary. Most surveys were completed in less than twenty minutes. All responses were anonymous.

Results

The 38 SICA items were submitted to Principal Components Factor Analysis. The criterion for extraction was eigenvalue > 1 . Nine components accounted for 61.24% of the total variance. 28 items loaded on factor 1 at $\pm .50$ or higher. No additional factor had more than 2 items loading at that level, evidencing a single factor solution. To seek the most parsimonious set of items consequent Principal Component Factor Analyses were conducted in which items not meeting the $\pm .50$ criterion were eliminated from the next analysis. The final solution yielded an eleven-item solution with all items loading at $\pm .60$ on the single factor accounting for 49.42 % of the variance. The SICA had an overall mean of 32.3059, *s.d.* = 8.222, and a standardized item alpha of .8912. Scores range from 12 (low apprehension) to 60 (high apprehension). The eleven-item SICA appears in Table 1.

Table 1: SICA Test Items

I am hesitant to ask questions in class.*
I don't hesitate to meet with my instructors outside of class.
I am reluctant to talk about my plans with my instructors.*
<i>I become nervous when talking with my instructors about my schedule.*</i>
I feel I must guard my opinions when I am around most instructors.*
I avoid discussing controversial topics with my instructors.*
<i>I find that I am very reluctant to seek out counseling from my instructors.*</i>
<i>I am comfortable in developing in-depth conversations with my instructors.</i>
<i>I am hesitant to develop a deep conversation with my instructors.*</i>
<i>I am hesitant to develop casual conversation with my instructors.*</i>
<i>I feel I am an open communicator with my instructors.</i>

*item score should be reflected prior to tabulation

Italicized bolded items compose the 6 item SICA

Hypothesis 1

Hypothesis 1 predicts that SICA will be positively and significantly correlated with measures of communication apprehension, particularly dyadic communication apprehension. Table 2 reports the correlation coefficients between SICA and the five measures of PRCA. The relationship for each case is positive and significant providing support for the hypothesis.

Table 2: Correlations-Coefficients Between PRCA Factors and SICA

PRCAG	PRCAM	PRCAD	PRCAS	PRCA
.608 *	.605 *	.496 *	.379*	.645*

* $p < .01$

Hypothesis 2

Hypothesis 2 predicted that SICA would be negatively and significantly correlated with the measures of student motivation to communicate with instructors. For the three factors of motivation, relational, participation and task the relationships were as predicted with moderate correlations. The sycophancy and accounts dimensions reflected near zero relationships with students self reported instructor apprehension. These data provide partial support for this hypothesis. Since low scores on the motivation scale represent high levels of motivation, the positive correlations reported are actually inverse relationships. Table 3 reports the correlations between SICA and the SMCI factors.

TABLE 3: CORRELATION COEFFICIENTS BETWEEN MOTIVATION FACTORS AND SICA

SMCIR	SMCIF	SMCIE	SMCIP	SMCIS
.455**	.327**	.017*	.409**	-.040*

* $p < .05$; ** $p < .01$

Hypothesis 3

Hypothesis 3 predicted that SICA would be negatively and significantly related with measures of student satisfaction with college, instructors and advising (SATIS). Since a high score on SATIS indicated high satisfaction, the obtained correlation of $-.332, p < .01$, supports the hypothesis, confirming a moderate relationship between students' satisfaction with elements of their college experience and their apprehension toward communicating with their instructors.

Hypothesis 4

Hypothesis 4 predicted a negative and significant relationship between the quantity of communication between student and instructor (COMQT) and the self-report of apprehension (SICA). Since a high score on COMQT indicates a high quantity of interaction, the obtained r of $-.506, p < .01$, supports the hypothesis.

Study Two

Study 2 examined the issue concerning differences between student-instructor communication apprehension and the more context specific classroom communication apprehension measure (Neer, 1987). Ss were 255 undergraduates enrolled in introductory communication courses representing a random university sample. Measures were taken on quantity of communication, communication satisfaction, sex, year in school, college and GPA.

SICA was measured using a six-item test derived from study one through the use of a confirmatory factor analysis conducted over the 11 scales. The confirmatory procedure seeks to determine (1) unidimensionality and (2) the most parsimonious set of items using item alpha as the criterion measure (Hunter & Gerbing, 1982). A chi-square test for deviation from a flat within cluster correlation matrix testing the dual hypothesis that the items were unidimensional and uniform in quality yielded a value of 105.45, $df = 14, p < .000$. The results supported a six item scale with the following characteristics: Standardized item alpha = .823, $x = 15.4, s.d. = 4.2, n = 255$. No similar confirmatory factor analysis had been conducted on the CAPS scale.

Classroom CA was measured using the CAPS measure (Neer, 1987). The standardized item alpha was .9460; $x = 57.004; s.d. = 13.500$. Communication Quantity was measured using four scales having a standardized item alpha = .7470, $x = 10.6078; s.d. = 2.932$. Communication satisfaction was measured using four scales having a standardized item alpha = .6530; $x = 14.027; s.d. = 2.351$.

The Pearson correlation between CAPS and SICA was $.575, p < .000, r^2 = .331$. Both measures correlated positively with communication quantity, SICA = $.542, p < .000$; CAPS = $.751, p < .000$. Neither measure correlated with communication satisfaction: SICA = $-.094, p = .135$; CAPS = $-.045, p = .483$.

Both SICA and CAPS measures were grouped into high and low scores. High scores were + 1 s.d. from the mean; low scores were - 1 s.d. from the mean. Scores were then compared between high and low groups. For CAPS significant differences between the high and low groups were found for the communication quantity measure: hi = 10.282; low = 17.300, $p < .000; F = 118.161$. This finding suggests that low CAPS produced a significantly higher quantity of communication.

Using the same procedure with SICA produced significant differences in GPA, Communication Quantity, and communication satisfaction. High SICAs had significantly lower GPAs than did lows (low = 2.65, hi = 1.90; $F = 7.923, p < .007$). Students scoring high on SICA saw themselves as less satisfied with their communication than students who were low on the SICA scale (low = 12.1500, high = 11.0000; $F = 3.956, p = .051$). Students scoring high on SICA saw themselves as communicating less than students who scored low (low = 11.0000, high

= 10.1500, $F = 55.792$, $p < .000$).

Discussion

The observed data provide strong support for accepting the hypotheses of this study within the limitations and parameters outlined in this discussion. First, it seems apparent that SICA is a valid and reliable measure of communication apprehension somewhat related to general trait apprehension yet definitely different from it also. As we conceptualized the narrow band structure of SICA growing out of the more general we sought a more specific way of examining that trait. The unidimensional SICA seems to provide that more narrow look at a specific kind of communication apprehension.

Importantly, this study provides evidence of the nature of motives to the apprehension phenomenon. While Martin has provided a valuable tool for assessing student's motivation to communicate across situations, two of those motives seem to have little significance for the student who is apprehensive. Neither the excuse making dimension or the "brown nosing" dimension appears to be related to how much anxiety students feel in their instructor interactions. We cautiously interpret the near zero relationships as indicators of irrelevancy. That is to say that a student with high anxiety finds excuse making motives and self-serving motives irrelevant to their feeling of wanting to communicate with the targeted instructors. Such motives as those that drive relationship development, participation in the learning environment, and task achievement appear to distinguish the high apprehensive student from the low apprehensive student. The linkage between motivation, apprehension, and observable communication behaviors, such as interaction, appears to be an important component in further exploration of student communication behavior.

While the relatively straightforward correlational analyses address the hypotheses of this paper, the same data provide insightful post hoc descriptions of the high and low apprehensive student. Two specific questions guided this analysis. 1. What combination of variables best predict SICA? 2. Which variables best distinguish between high and low SICA individuals?

To answer the first question we conducted a multiple stepwise regression analysis using the predictor variables reported above. The regression solution contained seven variables, $F = 58.042$, $p < .000$. In order of their entry into the solution are the following variables with their accompanying Betas and significance tests.

Interestingly two dimensions of trait apprehension and the indicators of quantity and satisfaction were more important predictors than the motivational dimensions. Contrary to our original thinking dyadic apprehension did not emerge as a significant predictor of SICA. This observation suggests that student-instructor communication is indeed something different from and not a subset of what most students perceive as dyadic interaction. This also suggests that the more narrow band SICA taps that unique relational dimension in ways that the dyadic trait measure does not. The apparent meaning of group and meeting dimensions as being predictors of SICA may suggest also that students perceive instructor interactions as more like group and meeting interactions, which may seem less personal, more worklike, and lacking some of the affect dimensions associated with dyadic interactions. The presence of the quantity dimension argues for the face validity of SICA as an indicator reflecting students' perceptions of their actual behavior. Likewise the presence of the satisfaction variable as a predictor also argues for validity. People who fear interaction appear less happy with their communication environment.

To answer the second question we partitioned the sample into two groups, high SICAs and low SICAs. A high was defined as + 1 standard deviation above the sample mean, a low was - 1 standard deviation below the sample mean. Table 5 summarizes the contrasts obtained

using a GLM Manova to test differences between the two subsets. High SICA subjects, when compared with their low SICA counterparts, were younger, communicated less with their instructors, were less satisfied with their college experience, had less motivation to participate, had less motivation to build relationships with their instructors, had less motivation to accomplish tasks, and had higher communication apprehension across all contexts. (Place Table 5 about here). The distribution between high and low SICA by sex was examined yielding a chi-square = 5.360 ($df = 1$), $p < .021$. Low SICAs were composed of 38 females and 11 males, while High SICAs were 29 females and 23 males. These distinctions between High and low SICAs reinforce the validity of the unidimensional nature.

An issue which warrants some speculation here concerns the utility of the single dimension, narrow band measure compared to the more general trait measurement provided by the PRCA. While the relationship between the measures is moderate, we are concerned with what SICA measures that PRCA does not. To examine this issue we conducted a series of multiple linear regression analyses using the two measures as predictors of COMQT and SATIS. When PRCA and SICA were regressed on COMQT we obtained an $R = .520$, $F = 55.268$, $p < .000$. Standardized Betas were SICA = $-.429$, $t = 6.625$, $p < .000$; PRCA = $-.127$, $t = 1.964$, $p < .05$. The same procedure applied to SATIS yielded an $R = .367$, $F = 23.233$, $p < .000$. Standardized Betas were SICA = $-.456$, $t = 6.469$, $p < .000$; PRCA = $-.178$, $t = -2.530$, $p < .012$. When PRCA was decomposed into its four subsets, highly similar solutions were obtained. Clearly SICA provides a more accurate indicator of communication quantity and satisfaction than does the PRCA. This supports the utility of SICA as a more precise tool for examining the more context specific apprehension students experience when communicating with instructors.

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