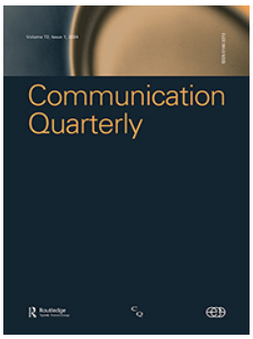

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A longitudinal analysis of communication traits: communication apprehension, willingness to communicate, and self-perceived communication competence

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ABSTRACT

This longitudinal study assessed the communication apprehension, willingness to communicate, and self-perceived communication competence for a group of participants across a 15-year span. In total, 220 of 237 participants completed the 15-year project. The data represent six time points, with data collections happening once every three years. The results show that meeting communication apprehension, dyadic communication apprehension, public communication apprehension, willingness to communicate, and self-perceived communication competence all changed across time, indicating these traditionally thought of trait-like variables behaved more as state-like characteristics. Group communication apprehension did not change over time, indicating it may be more trait-like than state like. Results are limited by evidence of poor temporal stability for the public communication apprehension, self-perceived communication competence, and willingness to communicate measures.

KEYWORDS

Communication apprehension; willingness to communicate; self-perceived communication competence; trait; state; reliability; temporal stability

Traits are long-lasting tendencies or dispositions to act, behave, feel, or think in a particular way (Daly & Bipuss, 1998; Wagner et al., 2019).[1] Within the field of communication, three highly correlated traits have been widely studied: Communication Apprehension (CA), Self-Perceived Communication Competence (SPCC), and Willingness to Communicate (WTC). CA is "an individual's level of fear or anxiety associated with either real or anticipated communication with another person or persons" (McCroskey, 1977, p. 78). SPCC is an individual's belief that his/her ability to perform communication activities is adequate (McCroskey & McCroskey, 1988). WTC is a trait that indicates a person's willingness and readiness to start communication with others (McCroskey & Richmond, 1987). Each of constructs has been extensively researched in the field of communication, with more than 19,500 citations of the scales measuring these constructs since 1995, and more than 17,000 since 2010

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according to Google Scholar. These constructs have been studied predominantly among university students in the United States (Violanti et al., 2018), while there has also been extensive research conducted among university students in different national contexts (see Croucher et al., 2019, 2020; Seibold et al., 2009).

The overwhelming majority of researchers exploring these three communication traits have used the Personal Report of Communication Apprehension (PRCA-24) to explore CA (McCroskey, 1982), the Self-Perceived Communication Competence Scale (SPCC-Scale) to measure SPCC (McCroskey & McCroskey, 1988), and the Willingness to Communicate Scale (WTC Scale) to assess WTC (McCroskey, 1992). Each of these measures was designed and initially validated in the U.S. context (Allen et al., 2008; Martin et al., 2002; Teven et al., 2010), although subsequent research has explored the validity and reliability of each of these measures outside of this original U.S. context. Despite the later contextual widening, reliability and validity analyses of each measure have subsequently raised reliability and validity concerns with each of the three measures. For example, researchers have found the PRCA-24 (Croucher et al., 2020, Croucher & Kelly, 2019; Hsiao, 2010; Hsu, 2007; Pribyl et al., 1998), the WTC-Scale (Croucher et al., 2019, 2020), and the SPCC-Scale (Croucher, 2013) each lack acceptable factorial structure. Recent work has shown the three scales PRCA-24, the SPCC and the WTC scale all lack validity in cross-cultural settings (Croucher et al., 2019; Kelly et al., 2024). Collectively, this growing body of research raises questions about the overall validity of these three measures. Building from this research, this current longitudinal study has two objectives. First, this study examines the stability of each measure across time, or each measure's temporal stability (Huber, 1985). Second, this study examines changes in CA, SPCC, and WTC levels over time. Each of these constructs has been defined as a trait, and thus is theoretically and methodologically assumed to be relatively stable.

Communication apprehension

The original conceptualization of Communication Apprehension (CA) was defined as a broad-based anxiety associated with oral communication (McCroskey, 1970). Later, the definition was slightly modified to "an individual's level of fear or anxiety associated with either real or anticipated communication with another person or persons" (McCroskey, 1977, p. 78). The original conceptualization of CA emphasized the oral aspects of the communication act, whereas the modified version of CA is broader and concerned with the trait-based conceptualization of communication anxiety (McCroskey, 1984). CA conceptualizes personal anxiety/fear as being composed of three facets: cognitive, affective, and behavioral (Neuliep & McCroskey, 1997). Cognitive elements refer to anxiety/fear arising from heightened self-awareness, negative outcome expectations, and perceived helplessness (Neuliep & McCroskey, 1997). In terms of affective elements, anxiety/fear manifests as distress and emotional discomfort (Neuliep &

McCroskey, 1997). The behavioral element of the anxiety/fear is associated with an individual becoming more hesitant unsettled and uncomfortable when engaging in communication interactions with others.

The concept of CA is overwhelmingly measured using the Personal Report of Communication Apprehension (PRCA-24) scale (McCroskey, 1982). The PRCA-24 assesses four communication contexts: dyadic, meeting, public, and small group. The PRCA-24 has 24 items. Respondents are asked to rate their level of agreement with each item using a 5-point Likert-type scale. Scores on the PRCA-24 range from 24 to 120, with lower scores indicating lower levels of communication anxiety and higher scores indicating higher levels of CA. In research conducted among predominantly among U.S. university students, researchers have shown the PRCA-24 to be both a reliable and valid measure (Allen et al., 2008; Beatty, 1988; Levine & McCroskey, 1990; Martin et al., 2002; Teven et al., 2010). In non-U.S. based research, unsatisfactory validity results have been found, but reliability has remained high (see Croucher et al., 2019). These, and similar findings, have caused some researchers, for example, Levine and McCroskey (1990) to question the feasibility of using of the PRCA-24 outside of a U.S. context. Other researchers have consistently called for further validity analyses of this frequently used measure (Croucher et al., 2019; Levine & McCroskey, 1990).

In addition, with the PRCA-24 not holding a consistent validity profile, the place of CA as a definable trait is sometimes questioned. As the scale that measures the construct is in question, it is possible that it is not the scale but the conceptualization of the construct as a trait itself which requires further exploration. Similarly, longitudinal studies have been mixed in their conclusion as to whether CA is a trait or whether it is a state-like variable. Research supporting it being potentially considered a trait includes Rubin et al. (1990) who found no significant change in CA levels over a four-year period among university students and Ericson and Gardner (1992) who similarly found no significant change in CA levels among university students over a four-year university degree. While researchers with results supporting that CA may be a state-like variable include Dwyer and Fus (2002), Dwyer et al. (2002), Howe and Dwyer (2007), and Sidelinger et al. (2011), who found CA of university students decreases over a semester, particularly when students participated in a public speaking course. However, where these studies have shown CA levels to fluctuate, these studies have methodological impediments to reaching firm conclusions because they have only been conducted with university students, and they have typically revolved around participation in a public speaking class, and usually are limited to a semester or year (with a few exceptions). To clarify the overall understanding of communication apprehension as a trait or state, the following research question is put forth:

RQ1: To what extent will communication apprehension change over time?

Self-perceived communication competence

Self-perceived communication competence (SPCC) is defined as an individual's view of how competently they believe they can perform communication activities (McCroskey & McCroskey, 1988). SPCC is inextricably linked to both communication apprehension (CA) and willingness to communicate (WTC) such that the more competent communicators perceive themselves to be, the more they are willing to communicate with other and the less apprehensive they feel about communication (Teven et al., 2010). SPCC has been used to examine communication competence in the context of acquaintances, friends, and strangers and in small group, public speaking, and interpersonal communication. Research on SPCC has been conducted across a range of national contexts, including the U.S., Australia, France, Germany, and to many Asian countries, including Thailand, Indonesia, and the People's Republic of China. These research results have indicated variations in levels of SPCC (Burroughs et al., 2003; Croucher et al., 2019). Research has traditionally shown SPCC is positively correlated with WTC and negatively correlated with CA. In addition, past studies suggest low-context and individualistic contexts, such as the U.S. and parts of Europe, typically score higher on SPCC than those contexts that are high-context and collectivistic cultures such as Asia (Burroughs et al., 2003; Croucher, 2013, Croucher etal., 2016; Hsu, 2010; Mansson & Myers, 2009).

SPCC is usually measured using the 12-item SPCC-Scale (McCroskey & McCroskey, 1988). The items are assessed on a scale ranging from 0 (completely incompetent) to 100 (completely competent) (McCroskey & McCroskey, 1988). Higher scores on the scale represent higher self-perceived levels of communicative competence. The SPCC-Scale has shown high reliability in U.S. and non-U.S. contexts, while largely located among university students (Barraclough et al., 1988; Dilbeck et al., 2009; Donovan & MacIntyre, 2004; Hsu, 2007; Sallinen-Kuparinen et al., 1991; Teven et al., 2010). In terms of validity, the validity profile of the measure is unclear. Numerous studies have assumed the scale has strong validity; however, such claims are not regularly empirically tested for the relevant context, or when the "strong" validity of the SPCC scale is cited in published research, the references often cited do not directly test/measure, or report validity results" (Croucher et al., 2018). Only five articles published since 2000 have conducted construct validity testing on the SPCC-Scale, all of which have found validity issues with the measure (Croucher, 2013, Croucher etal., 2016; Croucher & Kelly, 2019; Hsu, 2004, 2007). Chesebro et al. (1992) and Croucher et al. (2019) observed the pattern of reliance on previous published research, which did not test for validity to assert/assume validity, and consequently both studies called for further research exploring the validity of the SPCC-scale. The research by Croucher et al. (2019) was particularly relevant because it found the scale could not yield an *acceptable fit* in a 12-nation sample, including among U.S. students and adults.

As with CA, research has shown the SPCC of university students changes over the course of a semester (increasing), particularly in a public speaking course (Dwyer & Fus, 2002; Dwyer et al., 2002). While studies have shown SPCC levels do change, these studies have solely been conducted on university students in a public speaking class and have been limited to a semester. Thus, to improve our overall understanding of self-perceived communication competence, as a trait, a longitudinal analysis was conducted. Therefore, the following research question is proposed:

RQ2: To what extent will self-perceived communication competence change over time?

Willingness to communicate

The concept of "Willingness to Communicate" (WTC) was initially developed by McCroskey and Baer (1985) by extending Burgoon's (1976) concept of unwillingness to communicate. There has been a substantial amount of research on WTC. Typically, most research has focused on what it takes to promote or facilitate WTC in a classroom setting (Alm, 2016; Bernales, 2016; Lee, 2013; Nazari & Allahyar, 2012). Additionally, researchers have tried to establish a link between WTC in second language communication (L2) and other variables such as emotions (Wang et al., 2021), autonomy support (Zarrinabadi et al., 2021), self-confidence (Clément et al., 2003), motivation (Ghonsooly et al., 2012; Hashimoto, 2002), processing styles of learners (Shahsavani & Shahsavar, 2014), and social support (MacIntyre et al., 2001). WTC studies published to date have tended to adopt a monolithic approach to culture (i.e. East versus West perspective), perhaps because initial research on WTC was based in the U.S. and Canada (Clément et al., 2003; MacIntyre et al., 2001, 2003) and increasingly newer WTC studies have been conducted in other regions (Baghaei et al., 2012; Croucher, 2013; Ghonsooly et al., 2012; Hashimoto, 2002; Öz et al., 2015; Peng, 2007; Yashima, 2002).

WTC is typically measured using the 20-item Willingness to Communicate Scale (McCroskey, 1992). The scale measures WTC in four different contexts (public, meetings, small groups, and dyads), with three different receiver groups (strangers, acquaintances, and friends). Higher scores on the scale represent higher self-perceived levels of willingness to communicate. The WTC-Scale has shown high reliability among U.S. and international student cohorts (Clément et al., 2003; MacIntyre et al., 2001; McCroskey, 1992) but the validity profile of the scale is less established. Aside from the initial work of McCroskey (1992), only the work of Teven et al. (2010) and Gałajda (2013) has supported the discriminant validity and factorial structure of the scale. In addition, Kelly et al. (2024) showed that when examined cross-culturally, the

scale was not a valid measure of willingness to communicate in all settings. Thus, while widely used, researchers using the WTC scale have not empirically shown the validity of the scale.

Whether WTC is a state-like or trait-like variable is also widely discussed in the literature. When looking at the ways individuals communicate in their first language (L1), WTC was originally conceptualized as the likelihood of engaging in communication when given a free opportunity (McCroskey & Baer, 1985). In this context, WTC was described as a personality-based, trait-like predisposition that is relatively stable across different contexts and receiver types (McCroskey & Richmond, 1990). When looking at WTC in second language communication (L2), WTC is defined as "a readiness to enter into discourse at a particular time with a specific person or persons, using a L2" (MacIntyre et al., 1998, p. 547). MacIntyre et al. (1998) argued WTC should be treated as a situational variable in L2, where changes are embraced depending on the context. Therefore, WTC in L2 has been categorized as a state-like variable (MacIntyre, 2020; MacIntyre et al., 1998). MacIntyre et al. (1998) created a WTC model for understanding L2, where they found both state and trait factors affect an individual's WTC in L2, whereas only trait features are present in L1. Thus, to improve an overall understanding of willingness to communicate, particularly in a second language, a longitudinal analysis was conducted. The following research question was put forth:

RQ3: To what extent will willingness to communicate in L2 change over time?

Method

Participants and data collection

After ethics approval, a longitudinal panel study was conducted between 2006 and 2021. Such studies track samples over time and allow researchers to observe changes in samples (Agresti & Finlay, 2009). The sample initially included 237 native-born, Caucasian (White) French participants who were initially recruited in 2006 as part of a larger study. Participants were contacted via social networks. The primary researcher had been conducting research in France in 2006 and had made numerous contacts in hospitality, tourism, finance, and in other sectors. Through these contacts, the primary researcher contacted participants via a snowball sampling to complete a paper-based 5-page survey in 2006. Participants were informed that the study was a longitudinal study and asked to include their contact information for future contact purposes. Participants were informed that the study was

Table 1. Participant demographics.

Variable	*N*	*M*	*SD*
Sex			
Female	102 (46.4%)		
Male	118 (53.6%)		
Age-2006		26.99	10.15
Age-2009		29.98	10.15
Age-2012		32.99	10.15
Age-2015		35.98	10.15
Age-2018		38.99	10.16
Age-2021		42.01	10.15

seeking to understand their communicative behaviors. In 2009, 2012, and 2015 paper-based surveys were used again among participants. In each case the primary researcher met participants in a café and purchased each participant a beverage for their participation. In 2018 and 2021 participants completed the surveys online using SurveyMonkey. Between 2006 and 2021, 17 participants dropped out of the study, for an attrition rate of 7.17%. Table 1 presents the demographic information of the remaining 220 participants who completed the study over the 15-year period.

All surveys included demographic questions, the PRCA-24, the SPCC-Scale, and the WTC-Scale. In the instructions, participants were asked to think about communicating with a person who is also White, Catholic, and French. The survey was first prepared in English and then translated into French by the primary investigator. After this initial translation, the survey was then back translated independently from French into English by two separate English/French bilingual foreign language teachers. This process developed a linguistically reliable survey ($\kappa = .82$).

Measures

Personal Report of Communication Apprehension (PRCA-24)

The PRCA-24 has 24 items that assess trait-like communication apprehension across four contexts: dyadic, group, meeting, and public speaking, which can be combined for a measure of overall trait-CA (McCroskey, 1982). The measure is a 5-point Likert type-scale ranging from (1) *strongly agree* to (5) *strongly disagree*. Sample items include: "I dislike participating in group discussions," and "Ordinarily I am very calm and relaxed in conversations."

Self-Perceived Communication Competence Scale

The SPCC-Scale includes 12 items that measure an individual's person's perceptions of their communicative competence among strangers, friends, and acquaintances (McCroskey & McCroskey, 1988). Items on the measure

range from (0) *not at all competent* to (100) *completely competent*. Items include: "Talk with a stranger," "Present a talk to a group of friends," and "Talk in a small group of friends."

Willingness to Communicate Scale

The WTC-Scale is a 20-item scale that measures an individual's overall orientation toward communication (McCroskey, 1992). Items are assessed on a scale ranging from (0) *never* to (100) *always*. Sample items include: "Talk with a service station attendant" "Talk with a salesperson in a store" and "Talk with a friend while standing in line."

Temporal Stability

Temporal stability of the measures was examined using omega reliability calculations (see Table 2). Omega reliability is a superior method of assessing reliability to Cronbach's alpha because it does not artificially inflate scores based on the number of items composing the measure and has an assumption that items assessing the same construct cannot be negatively or non-correlated (Goodboy & Martin, 2020). The groupCA, meetingCA, and dyadicCA measures yielded strong signs of temporal stability, with omega scores consistently produced and well above .7 at each year. However, the publicCA, SPCC, and WTC measures violated the assumptions of omega that no items can be negatively or non-correlated throughout multiple data collection periods. In other words, no omega reliability score can be calculated because the items in the measures were not all positively correlated with one another during these time periods. Given this, the publicCA, SPCC, and WTC measures did not maintain temporal stability. This indicates that these three measures were not reliable across time.

Results

Change in CA, SPCC, and WTC over time

A common practice in quantitative communications scholarship popularized over the last decade has been to check factor structures of measures and respecify as necessary to ensure high fit statistics before engaging in hypothesis testing (Kelly & Westerman, 2020). In keeping with the original conceptualization and operationalization of CA, SPCC, and WTC, and to examine the trait vs state nature of the constructs as conceptualized, the original measures are utilized for analyses. Means, standard deviations, correlations, and reliabilities for CA, SPCC, and WTC for data collection points are shown in Table 2. A series of One-Way Repeated Measure Analysis of Variances were conducted to test for change over time in CA, SPCC, and WTC. Table 3 illustrates post-hoc comparisons based on the Bonferroni post-hoc test.

Table 2. Means, Standard Deviations, and correlations for study variables.

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	*M*	*SD*	*ω*
2006										
(1) GroupCA	-							18.57	1.39	.95
(2) MeetingCA	.13	-						18.44	2.21	.91
(3) DyadicCA	.04	−.15*	-					16.75	2.48	88
(4) PublicCA		.18**	−.23**	.20**	-			14.20	2.74	–
(5) Total CA	.49**	.30**	.60**	.65**	-			68.07	4.62	
(6) SPCC	−.09	.53**	−.28**	−.46**	−.17**	-		62.91	11.83	.72
(7) WTC	−.19**	−.29**	−.22**	−.40**	−.27**	.68**	-	61.35	10.86	–
2009										
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	*M*	*SD*	*ω*
(1) GroupCA	-							18.37	1.35	.94
(2) MeetingCA	.14*	-						18.83	2.28	.90
(3) DyadicCA	−.13	−.13*	-					17.11	2.56	.88
(4) PublicCA	.12	−.35**	−.08	-				14.10	1.86	–
(5) Total CA	.44**	.42**	.55**	.29**	-				68.41	3.51
(6) SPCC	−.10	.48**	−.27**	−.19**	−.02	-		63.49	11.39	–
(7) WTC	−.14*	.25**	−.19**	−.12	−.10	.66**	-	62.18	9.81	–
2012										
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	*M*	*SD*	*ω*
(1) GroupCA	-							18.36	1.29	.95
(2) MeetingCA	−.17*	-						18.16	1.97	.90
(3) DyadicCA	.15*	.12	-					16.60	2.10	.89
(4) PublicCA	−.02	−.45**	−.10	-				13.66	2.34	.80
(5) Total CA	.37**	.29**	.69**	.37**	-			66.78	3.35	
(6) SPCC	−.18**	.47**	−.10	−.31**	−.08	-		63.40	10.57	–
(7) WTC	−.13	.34**	−.06	−.11	.04	.62**	-	61.47	10.40	–
2015										
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	*M*	*SD*	*ω*
(1) GroupCA	-							18.32	1.38	.95
(2) MeetingCA	−.12	-						18.92	2.14	.90
(3) DyadicCA	−.02	.04	-					16.79	2.21	.90
(4) PublicCA	−.09	−.36**	.09	-				12.64	3.13	–
(5) Total CA	.20**	.23**	.63**	.60**	-			66.68	4.05	
(6) SPCC	−.17*	.53**	−.11	−.24**	−.02	-		67.15	12.14	–
(7) WTC	−.18**	.38**	−.11	−.10	−.01	.75	-	64.53	13.30	.83
2018										
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	*M*	*SD*	*ω*
(1) GroupCA	-							18.20	.99	.97
(2) MeetingCA	.18**	-						18.21	.98	.97
(3) DyadicCA	.08	.21**	-					18.37	1.39	.96
(4) PublicCA	.29**	.22**	.08	-				17.83	1.10	.87
(5) Total CA	.58**	.61**	.64**	.62**	-			72.61	2.76	
(6) SPCC	−.05	−.01	−.16*	.03	−.09	-		65.97	6.99	–
(7) WTC	.13	−.04	.05	.14*	.11	.38	-	63.45	9.50	.58
2021										
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	*M*	*SD*	*ω*
(1) GroupCA	-							18.43	2.26	.94
(2) MeetingCA	.07	-						17.90	1.43	.89
(3) DyadicCA	.09	−.41**	-					18.84	2.32	.89
(4) PublicCA	.44**	.04	.03	-				19.77	2.48	–
(5) Total CA	.76**	.15*	.42**	.75**	-			74.93	4.77	
(6) SPCC	.12	−.09	.34**	.17*	.28**	-		63.42	7.69	–
(7) WTC	−.12	−.07	.29**	.08	.11	.23**	-	62.63	10.09	–

*$p < .05$, **$p < .01$.

For groupCA, Mauchly's test indicated the assumption of sphericity was violated, $\chi^2(14) = 159.31$, $p < .001$; therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of spherecity ($\varepsilon = .72$). Results show there was no significant effect of time on groupCA, $F(3.60, 788.73) = 1.57$, $p = .19$, partial $\eta^2 = .01$ suggesting groupCA did not statistically change over time.

For meetingCA, Mauchly's test indicated the assumption of sphericity was violated, $\chi^2(14) = 182.76$, $p < .001$; therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of spherecity ($\varepsilon = .80$). Results show there was a significant effect of time on meetingCA, $F(4.00, 875.55) = 9.32$, $p < .001$, partial $\eta^2 = .04$ suggesting meetingCA did statistically change over time such that the data oscillated.

For dyadicCA, Mauchly's test indicated the assumption of sphericity was violated, $\chi^2(14) = 81.21$, $p < .001$; therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of spherecity ($\varepsilon = .89$). Results show there was a significant effect of time on dyadicCA, $F(4.46, 222.42) = 39.46$, $p < .001$, partial $\eta^2 = .15$ suggesting dyadicCA did statistically increase over time.

For publicCA, Mauchly's test indicated the assumption of sphericity was violated, $\chi^2(14) = 393.13$, $p < .001$; therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of spherecity ($\varepsilon = .55$). Results show there was a significant effect of time on publicCA, $F(2.74, 600.31) = 354.87$, $p < .001$, partial $\eta^2 = .62$ suggesting publicCA did statistically increase over time.

For totalCA, Mauchly's test indicated the assumption of sphericity was violated, $\chi^2(14) = 149.45$, $p < .001$; therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of spherecity ($\varepsilon = .76$). Results show there was a significant effect of time on totalCA, $F(3.80, 832.40) = 175.29$, $p < .001$, partial $\eta^2 = .45$ suggesting totalCA did statistically increase over time.

For SPCC, Mauchly's test indicated the assumption of sphericity was violated, $\chi^2(14) = 365.24$, $p < .001$; therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of spherecity ($\varepsilon = .71$). Results show there was a significant effect of time on SPCC, $F(3.57, 780.81) = 7.26$, $p < .001$, partial $\eta^2 = .03$ suggesting SPCC did statistically change over time such that the data increased through 2015 then began to decline again.

For WTC, Mauchly's test indicated the assumption of sphericity was violated, $\chi^2(14) = 138.29$, $p < .001$; therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of spherecity ($\varepsilon = .80$). Results show there was a significant effect of time on WTC, $F(4.00, 875.34) = 3.47$, $p = .008$, partial $\eta^2 = .02$ suggesting WTC did statistically increase over time.

Table 3. Pairwise comparisons for communication apprehension, willingness to communicate, and self-perceived communication competence.

GroupCA			MeetingCA		
Year (i)	Year (j)	Mean diff. (i-j)	Year (i)	Year (j)	Mean diff. (i-j)
2006	2009	.20	2006	2009	−.39
	2012	.21		2012	.28
	2015	.25		2015	−.48
	2018	.37*		2018	.23
	2021	.15		2021	.54*
2009	2006	−.20	2009	2006	.39
	2012	.01		2012	.67*
	2015	.05		2015	−.09
	2018	.17		2018	.62
	2021	−.06		2021	.93
2012	2006	−.21	2012	2006	−.28
	2009	−.01		2009	−.67
	2015	.04		2015	−.76
	2018	.16		2018	−.05
	2021	−.07		2021	.26
2015	2006	−.25	2015	2006	.48
	2009	−.05		2009	.09
	2012	−.04		2012	.76*
	2018	.12		2018	.71*
	2021	.11		2021	1.02*
2018	2006	−.37*	2018	2006	−.23
	2009	−.17		2009	−.62*
	2012	−.16		2012	.05
	2015	−.12		2015	−.71*
	2021	−.23		2021	.31
2021	2006	−.15	2021	2006	−.54*
	2009	.06		2009	−.93*
	2012	.07		2012	−.26
	2015	.11		2015	−1.02*
	2018	.23		2018	−.31
DyadicCA			PublicCA		
Year (i)	Year (j)	Mean diff. (i-j)	Year (i)	Year (j)	Mean diff. (i-j)
2006	2009	−.36	2006	2009	.21
	2012	.16		2012	.65*
	2015	−.04		2015	1.66*
	2018	−1.61*		2018	−3.53*
	2021	2.08*		2021	−5.46*
2009	2006	.36	2009	2006	−.21
	2012	.51		2012	.44*
	2015	.32		2015	1.46*
	2018	−1.26*		2018	−3.73*
	2021	−1.72*		2021	−5.67*
2012	2006	−.16	2012	2006	−.65*
	2009	−.51		2009	−.44*
	2015	−.19		2015	1.02*
	2018	−1.77*		2018	−4.17*
	2021	−2.24*		2021	−6.11*
2015	2006	.04	2015	2006	−1.66*
	2009	−.32		2009	−1.46*
	2012	.19		2012	−1.02*
	2018	−1.58*		2018	−5.19*
	2021	−2.05		2021	−7.13*
2018	2006	1.61*	2018	2006	3.53*
	2009	1.26*		2009	3.73*
	2012	1.77*		2012	4.17*
	2015	1.58*		2015	5.19*
	2021	−.47		2021	−1.94

(*Continued*)

Table 3. (Continued).

DyadicCA			PublicCA		
Year (i)	Year (j)	Mean diff. (i-j)	Year (i)	Year (j)	Mean diff. (i-j)
2021	2006	2.08*	2021	2006	5.46*
	2009	1.72*		2009	5.67*
	2012	2.24*		2012	6.11*
	2015	2.05*		2015	7.13*
	2018	.47		2018	1.94*
TotalCA			SPCC		
Year (i)	Year (j)	Mean diff. (i-j)	Year (i)	Year (j)	Mean diff. (i-j)
2006	2009	−.35	2006	2009	−.58
	2012	1.29*		2012	−.48
	2015	1.40*		2015	−4.24*
	2018	−4.54*		2018	−3.06
	2021	−6.86*		2021	−.51
2009	2006	.35	2009	2006	.58
	2012	1.64*		2012	.09
	2015	1.74*		2015	−3.66*
	2018	−4.19*		2018	−2.48*
	2021	−6.51*		2021	.07
2012	2006	−1.29*	2012	2006	.48
	2009	−1.64*		2009	−.09
	2015	.11		2015	−3.75*
	2018	−5.94*		2018	−2.57*
	2021	−8.26*		2021	−.02
2015	2006	−1.40*	2015	2006	4.24*
	2009	−1.74*		2009	3.66*
	2012	−.11		2012	3.75*
	2018	−5.94*		2018	1.18
	2021	−8.26		2021	3.73*
2018	2006	4.54*	2018	2006	3.06*
	2009	4.20*		2009	2.48*
	2012	5.83*		2012	2.57*
	2015	5.94*		2015	−1.18
	2021	−2.32*		2021	2.55*
2021	2006	6.86*	2021	2006	.51
	2009	6.51*		2009	−.07
	2012	8.15*		2012	.02
	2015	8.26*		2015	−3.73*
	2018	2.32*		2018	−2.55*
WTC					
Year (i)	Year (j)	Mean diff. (i-j)			
2006	2009	−.93			
	2012	−.11			
	2015	−3.18*			
	2018	−2.10*			
	2021	−1.28			
2009	2006	.83			
	2012	.72			
	2015	−2.34*			
	2018	−1.26			
	2021	−.45			
2012	2006	.11			
	2009	−.72			
	2015	−3.06*			
	2018	−1.98*			
	2021	−1.17			
2015	2006	3.18*			
	2009	2.34*			

(*Continued*)

Table 3. (Continued).

WTC		
Year (i)	Year (j)	Mean diff. (i-j)
	2012	3.06*
	2018	1.08
	2021	1.90
2018	2006	2.10*
	2009	1.26
	2012	1.98*
	2015	−1.08
	2021	.82
2021	2006	1.28
	2009	.45
	2012	1.17
	2015	1.90
	2018	−.82

*$p < .05$.

Discussion

The primary objective of this study was to explore the extent to which CA, WTC, and SPCC change over time. As each construct has been commonly deemed a stable trait, it would be logical to assume that each trait should remain relatively consistent over time. An analysis of each construct's temporal stability and overall mean scores was conducted from 2006 to 2021. The results reveal multidimensional results in terms of the trait-like nature of CA, SPCC, and WTC. For each construct, statistically significant change was observed.

For CA, results revealed each sub-measure, except publicCA, maintained temporal stability over time. In addition, except for groupCA, each sub-measure, and totalCA showed statistically significant changes over time. MeetingCA fluctuated, dyadicCA showed an increase from 2006–2021, publicCA increased, and totalCA increased over time. These fluctuations in CA over this period demonstrate the changing nature of CA. While McCroskey (1982) acknowledged CA is situational (public, meeting, group, and dyadic), the results of this study add to previous research, conducted over the course of a semester or year (Dwyer & Fus, 2002; Dwyer et al., 2002; Howe & Dwyer, 2007; Sidelinger et al., 2011), which showed CA could also be state-like, in that it fluctuates naturally over time. For WTC and SPCC, there was a general increase over time, with a decrease in 2021; thus, a fluctuation over time. The changes in WTC and SPCC are consistent with previous research suggesting WTC and SPCC are more *state-like* than *trait-like* (Dwyer & Fus, 2002; Dwyer et al., 2002; MacIntyre, 2020; MacIntyre et al., 1998).

The fact that groupCA behaved differently from the other dimensions of CA and remained stable across time is curious. This implies that while public, meeting, and dyadic CA are state-like, groupCA is trait-like. It is possible that

groupCA simply behaves differently than other types of CA. Building off the concept of group norms (Arrow & Burns, 2004; Hogg & Reid, 2006; Lapinski & Rimal, 2005), it is possible that as group members, individuals have developed set prototypes of what are and are not normative behaviors. These norms have configured what is acceptable within communicative situations. Thus, when communicating in groups it is highly possible individuals have set norms, which are not easily changing, that guide their behaviors. These prescriptive group norms provide a guide for group communication; therefore, regulating group apprehension. Future research would benefit from exploring the link between group norms and group communication apprehension. It is also possible that the measurement of CA is conflated with other personality traits such as extroversion/introversion, which means this inconsistency is a measurement issue rather than the identification of unique behavior. Additional research is needed to investigate the unique behavior of groupCA.

The results of the current study differ from previous longitudinal CA, WTC, and SPCC studies in numerous methodological ways. First, previous longitudinal studies have been conducted over short periods of time, normally the course of one semester in a public speaking class. While this design can show change in CA over the time of a university course, its ability to measure long-term change is questionable. The current study assessed CA, WTC, and SPCC from 2006–2021 at six data points, which allowed for multiple years of emotional and psychological development. Second, previous longitudinal research reported alpha reliabilities of the PRCA-24, SPCC-Scale, and the WTC-Scale. Omega reliability is a superior method of assessing reliability as it does not artificially inflate scores based on the number of items and it has an assumption that items assessing the same construct cannot be negatively or non-correlated. This means that prior research which have used these measures to show change over time may be reporting results with an abundance of measurement noise because the high number of items composing these measures made the assessments appear reliable, when really many of the items composing the measure were not (or negatively) related. Future research must adopt omega vs. alpha reliability assessment so that such measurement noise can be detected (Goodboy & Martin, 2020).

Implications

The findings of this study indicate that the publicCA, SPCC, and WTC measures did not maintain temporal stability over time. This means that for both classroom assessment and future research, it is time to consider developing new measures of these constructs. While a measure may have been developed using perfect psychometric practices, all measures are likely to age out of utility as new generations of assessment takers place different meanings

on the words used to compose individual items (Autman & Kelly, 2017; Croucher et al., 2020). The findings from this study indicate that the time has likely come to develop new measures of public speaking, SPCC, and WTC.

The findings of this study also have implications for the way we discuss communication apprehension. While group apprehension seems to be stable over time, dyadic and meeting apprehension were not. This means that investigations cannot assume that assessments of these constructs at one time represent apprehension later. Further, that the data indicated that dyadic, meeting and group apprehension behave in separate ways (i.e., dyadic increased, meeting oscillated, and group was unchanged) calls to question whether scholars should talk about an overall communication apprehension score in the future, as those scores are composed of differently changing variables.

Limitations and future research

A limitation of the study was the strength of the measures. The publicCA, SPCC, and WTC measures each showed signs of poor temporal stability, meaning findings from those measures may not be well generalized. Additionally, some recent studies have also questioned whether the SPCC and CA measures are valid at all (Croucher et al., 2019, 2020). Though the weakness of the measures may hinder the generalizability of the trait/state claims made here, it does provide evidence that new measures of CA, SPCC, and WTC are needed. Even research which utilizes weak measures is critical for pointing to the future of measurement needs (Bowman & Goodboy, 2020).

Research into anxiety and other behaviors has suggested revisiting constructs once identified as trait-like behaviors. With advancements in measurement techniques and the ability to conduct longer longitudinal studies, researchers have more ability to reevaluate these models of personality and behavior more accurately. For example, Endler and Kocovski (2001) asserted anxiety is a multi-dimensional construct, that shows both state and trait-like characteristics, which appears to be the case with CA. Kelly and McKillop (1996) further argued it is not clear as to the state-trait-like nature of self-disclosure. Carrizales et al. (2021) explored both empathy and prosocial behaviors among adolescence and found empathy is a more state-like personality trait than previously thought. Croucher (2017) found conflict styles change not only based on the situation but over time, indicating approaches to conflict are state-like and not trait-like. Croucher et al. (2018) found that as migrants adapt to living in France, their approach to argumentativeness changes over time (also see Croucher et al., 2020).

There have been hundreds of studies that have supported the trait-like orientation of these three constructs. We acknowledge this long line of research and its contribution to our understanding of CA, WTC, and

SPCC. However, based on the results of this longitudinal study, as we move forward in exploring these constructs, it is possible that these long-understood to be trait-like variables, may not trait-like. Future research should continue to focus on longitudinal studies to further understand how these constructs potentially change over time. In addition, it would be worthwhile for researchers to revisit other traditionally trait-like constructs with in-depth analyses. This distinction between trait-like and state-like natures of these constructs has serious implications for how data on these traits are collected. If, as suggested by this study, CA, SPCC, and WTC are state-like, an individual's score will change depending upon the context they are directed to think about or are experiencing. This means that in survey-based research, we advise scholars to have participants consider a specific context when completing these measures rather than complete them without a referent context.

Note

1. Traits often sit alongside "States" which are temporary patterns of behavior at a given point in time.

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Data availability statement

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

References

Agresti, A., & Finlay, B. (2009). *Statistical methods for the social sciences*. Pearson/Prentice Hall.

Allen, J. L., Long, K. M., O'Mara, J., & Judd, B. B. (2008). Students' predispositions and orientations toward communication and perceptions of instructor reciprocity and learning. *Communication Education*, *57*(1), 20–40. https://doi.org/10.1080/03634520701670908

Alm, A. (2016). Creating willingness to communicate through L2 blogging. *Computer Assisted Language Learning Electronic Journal*, *17*(1), 67–79.

Arrow, H., & Burns, K. L. (2004). Self-organizing culture: How norms emerge in small groups. In M. Schaller & C. S. Crandall (Eds.), *The psychological foundations of culture* (pp. 171–200). Erlbaum.

Autman, H., & Kelly, S. (2017). Reexamining the writing apprehension measure. *Business and Professional Communication Quarterly*, *80*(4), 516–529. https://doi.org/10.1177/2329490617691968

Baghaei, P., Dourakhshan, A., & Salavati, O. (2012). The relationship between willingness to communicate and success in learning English as a foreign language. *Modern Journal of Applied Linguistics*, *4*(2), 53–67.

Barraclough, R. A., Christophel, D. M., & McCroskey, J. C. (1988). Willingness to communicate: A cross-cultural investigation. *Communication Research Reports*, *5*(2), 187–192. https://doi.org/10.1080/08824098809359822

Beatty, M. J. (1988). Situational and pre-dispositional correlates of public speaking anxiety. *Communication Education*, *37*(1), 28–39. https://doi.org/10.1080/03634528809378701

Bernales, C. (2016). Towards a comprehensive concept of willingness to communicate: Learners predicted and self-reported participation in the foreign language classroom. *System, an International Journal of Educational Technology and Applied Linguistics*, *56*, 1–12. https://doi.org/10.1016/j.system.2015.11.002

Bowman, N. D., & Goodboy, A. K. (2020). Evolving considerations and empirical approaches to construct validity in communication science. *Annals of the International Communication Association*, *44*(3), 219–234. https://doi.org/10.1080/23808985.2020.1792791

Burgoon, J. K. (1976). The unwillingness-to-communicate scale: Development and validation. *Communication Monographs*, *43*(1), 60–69. https://doi.org/10.1080/03637757609375916

Burroughs, N. F., Marie, V., & McCroskey, J. C. (2003). Relationships of self-perceived communication competence and communication apprehension with willingness to communicate: A comparison with first and second languages in Micronesia. *Communication Research Reports*, *20*(3), 230–239. https://doi.org/10.1080/08824090309388821

Carrizales, A., Branje, S., & Lannegrand, L. (2021). Disentangling between-and within-person associations between empathy and prosocial behaviors during early adolescence. *Journal of Adolescence*, *93*(1), 114–125. https://doi.org/10.1016/j.adolesence.2021.10.006

Chesebro, J. W., McCroskey, J. C., Atwater, D. F., Bahrenfuss, R. M., Cawelti, J. L., & Hodges, H. (1992). Communication apprehension and self-perceived communication

competence of at-risk students. *Communication Education*, *41*(4), 345–360. https://doi.org/10.1080/03634529209378897

Clément, R., Baker, S. C., & MacIntyre, P. D. (2003). Willingness to communicate in a second language: The effects of context, norms, and vitality. *Journal of Language and Social Psychology*, *22*(2), 190–209. https://doi.org/10.1177/0261927X03022002003

Croucher, S. M. (2013). Communication apprehension, self-perceived communication competence, and willingness to communicate: A French analysis. *Journal of International & Intercultural Communication*, *6*(4), 298–316. https://doi.org/10.1080/17513057.2013.769615

Croucher, S. M. (2017). Changes in conflict over time: A longitudinal examination of conflict style approaches. In B. Lewandowska-Tomaszczyk, P. Wilson, & S. M. Croucher (Eds.), *Approaches to conflict: Theoretical, interpersonal, and discursive dynamics* (pp. 33–42). Rowman & Littlefield.

Croucher, S., & Kelly, S. (2019). Measurement issues in intercultural communication. In J. Mazer & E. Graham (Eds.), *Communication research measures III: A sourcebook* (pp. 141–159). Sage.

Croucher, S. M., Kelly, S., Condon, S. M., Campbell, E., Galy-Badenas, F., Rahmani, D., Zeng, E., & Nshom, C. (2018). A longitudinal analysis of the relationship between adaptation and argumentativeness. *International Journal of Conflict Management*, *29*(1), 91–108. https://doi.org/10.1108/IJCMA-0502017-0045

Croucher, S. M., Kelly, S., Rahmani, D., Subanaliev, T., Jackson, K., Galy-Badenas, F., Lando, A. L., Chibita, M., Nyiranasbimana, V., Turdubaeva, E., Eskiçorapçı, N., Condon, S., Stanalieva, G., Orunbekov, B. & Burkey, M. (2019). A multi-national validity analysis of the personal report of communication apprehension (PRCA-24). *Annals of the International Communication Association*, *43*(3), 193–209. https://doi.org/10.1080/23808985.2019.1602783

Croucher, S. M., Kelly, S., Rahmani, D., Burkey, M., Subanaliev, T., Galy-Badenas, F., Lando, A., Chibita, M., Nyiranasbimana, V., Turdubaeva, E., Eskiçorapçı, N., & , and Jackson, K. (2020). A multi-national validity analysis of the self-perceived communication competence scale. *Journal of International & Intercultural Communication*, *13*(1), 1–12. https://doi.org/10.1080/17513057.2019.1569250

Croucher, S. M., Kelly, S., Zeng, C., Burkey, M., & Galy-Badenas, F. (2020). A longitudinal examination of validity and temporal stability of organizational dissent measurement in France. *Journal of Intercultural Communication Research*, *49*(2), 107–118. https://doi.org/10.1080/17475759.2020.1716827

Daly, J. A., & Bipuss, A. M. (1998). Personality and interpersonal communication: Issues and directions. In J. C. McCroskey, J. A. Daly, M. M. Martin, & M. J. Beatty (Eds.), *Communication and personality: Trait perspectives* (pp. 1–40). Hampton Press.

Dilbeck, K. E., McCroskey, J. C., Richmond, V. P., & McCroskey, L. L. (2009). Self-perceived communication competence in the Thai culture. *Journal of Intercultural Communication Research*, *38*(1), 1–7. https://doi.org/10.1080/17475750903381598

Donovan, L. A., & MacIntyre, P. D. (2004). Age and sex differences in willingness to communicate, communication apprehension, and self-perceived competence. *Communication Research Reports*, *21*(4), 420–427. https://doi.org/10.1080/08824090409360006

Dwyer, K. K., Carlson, R. E., & Kahre, S. A. (2002). Communication apprehension and basic course success: The lab supported public speaking course intervention. *Basic Communication Course Annual*, *14*(9), 87–112. https://ecommons.udayton.edu/bcca/vol14/iss1/9

Dwyer, K. K., & Fus, D. A. (2002). Perceptions of communication competence, self-efficacy, and trait communication apprehension: Is there an impact on basic course success?

Communication Research Reports, *19*(1), 29–37. https://doi.org/10.1080/08824090209384829

Endler, N. S., & Kocovski, N. L. (2001). State and trait anxiety revisited. *Journal of Anxiety Disorders*, *15*(3), 231–245. https://doi.org/10.1016/S0887-6185(01)00060-3

Ericson, P. M., & Gardner, J. W. (1992). Two longitudinal studies of communication apprehension and its effects on college students' success. *Communication Quarterly*, *40*(2), 127–137. https://doi.org/10.1080/01463379209369828

Gałajda, D. (2013). Communication apprehension and self-perceived communication competence as variables underlying willingness to communicate. In K. Piątkowska & E. Kościałkowska-Okońska (Eds.), *Correspondences and contrasts in foreign language pedagogy and translation studies. second language learning and teaching*. Springer. https://doi.org/10.1007/978-3-319-00161-6_5

Ghonsooly, B., Khajavy, G. H., & Asadpour, S. F. (2012). Willingness to communicate in English among Iranian non-English major university students. *Journal of Language and Social Psychology*, *31*(2), 197–212. https://doi.org/10.1177/0261927X12438538

Goodboy, A. K., & Martin, M. M. (2020). Omega over alpha for reliability estimation of unidimensional communication measures. *Annals of the International Communication Association*, *44*(4), 422–439. https://doi.org/10.1080/23808985.2020.1846135

Hashimoto, Y. (2002). Motivation and willingness to communicate as predictors of reported L2 use: The Japanese ESL context. *Second Language Studies*, *20*(2), 29–70.

Hogg, M. A., & Reid, S. A. (2006). Social-identity, self-categorization, and the communication of group norms. *Communication Theory*, *16*(1), 7–30. https://doi.org/10.1111/j.1468-2885.2006.00003.x

Howe, M. M., & Dwyer, K. K. (2007). The influence of diaphragmatic breathing to reduce situational anxiety for basic course students. *Basic Communication Course Annual*, *19*(1), 104–137. https://ecommons.udayton.edu/bcca/vol19/iss1/9

Hsiao, T. (2010). Testing rival measurement models of the personal report of communication apprehension in two Taiwanese samples. *Psychological Reports*, *107*(1), 127–138. https://doi.org/10.2466/02.07.11.20.PR0.107.4.127-138

Hsu, C. (2007). A cross-cultural comparison of communication orientations between Americans and Taiwanese. *Communication Quarterly*, *55*(4), 359–374. https://doi.org/10.1080/01463370701497831

Hsu, C.-F. (2004). Sources of differences in communication apprehension between Chinese in Taiwan and Americans. *Communication Quarterly*, *52*(4), 370–389. https://doi.org/10.1080/01463370409370207

Hsu, C.-F. (2010). Acculturation and communication traits: A study of cross-cultural adaptation among Chinese in America. *Communication Monographs*, *77*(4), 414–425. https://doi.org/10.1080/03637751.2010.499367

Huber, G. P. (1985). Temporal stability and response-order biases in participant descriptions of organizational decisions. *The Academy of Management Journal*, *28*(4), 943–950. https://doi.org/10.5465/256247

Kelly, S., Croucher, S. M., Kim, K. Y., Permyakova, T., Turduvaeva, E., Stanalieva, G., Orunbekov, B., & Winchester, D. (2024). A multi-national validation portfolio for a willingness to communicate measure. *Journal of Intercultural Communication Research.*

Kelly, A. E., & McKillop, K. J. (1996). Consequences of revealing personal secrets. *Psychological Bulletin*, *120*(3), 450–465. https://doi.org/10.1037/0033-2909.120.3.450

Kelly, S., & Westerman, D. (2020). Doing communication science: Thoughts on making more valid claims. *Annals of the International Communication Association*, *44*(3), 177–184. https://doi.org/10.1080/23808985.2020.1792789

Lapinski, M. K., & Rimal, R. N. (2005). An explication of social norms. *Communication Theory*, *15*(2), 127–147. https://doi.org/10.1111/j.1468-2885.2005.tb00329.x

Lee, S. (2013). Revisiting willingness to communicate. *English Language Teaching*, *25*(3), 117–134. https://doi.org/10.17936/pkelt.2013.25.3.006

Levine, T. R., & McCroskey, J. C. (1990). Measuring trait communication apprehension: A test of rival measurement models of the PRCA-24. *Communication Monographs*, *57*(1), 62–72. https://doi.org/10.1080/03637759009376185

MacIntyre, P. D. (2020). Expanding the theoretical base for the dynamics of willingness to communicate. *Studies in Second Language Learning and Teaching*, *10*(1), 111–131. https://doi.org/10.14746/ssllt.2020.10.1.6

MacIntyre, P. D., Baker, S. C., Clément, R., & Conrod, S. (2001). Willingness to communicate, social support, and language-learning orientations of immersion students. *Studies in Second Language Acquisition*, *23*(3), 369–388. https://doi.org/10.1017/S0272263101003035

MacIntyre, P. D., Baker, S. C., Clément, R., & Donovan, L. A. (2003). Talking in order to learn: Willingness to communicate and intensive language programs. *The Canadian Modern Language Review*, *59*(4), 589–607. https://doi.org/10.3138/cmlr.59.4.589

MacIntyre, P. D., Dörnyei, Z., Clément, R., & Noels, K. A. (1998). Conceptualizing willingness to communicate in a L2: A situational model of L2 confidence and affiliation. *The Modern Language Journal*, *82*(4), 545–562. https://doi.org/10.1111/j.1540-4781.1998.tb05543.x

Mansson, D. H., & Myers, S. A. (2009). A reexamination of Swedish and American college students' communicative attributes. *Journal of Intercultural Communication Research*, *38*(1), 9–22. https://doi.org/10.1080/17475750903381622

Martin, M. M., Valencic, K. M., & Heisel, A. D. (2002). The relationship between students' communication apprehension and their motives for communicating with their instructors. *Communication Research Reports*, *19*(1), 1–7. https://doi.org/10.1080/08824090209384826

McCroskey, J. (1992). Reliability and validity of the willingness to communicate scale. *Communication Quarterly*, *40*(1), 16–25. https://doi.org/10.1080/01463379209369817

McCroskey, J. C. (1970). Measures of communication-bound anxiety. *Speech Monographs*, *37* (4), 269–277. https://doi.org/10.1080/03637757009375677

McCroskey, J. C. (1977). Oral communication apprehension: A summary of recent theory and research. *Human Communication Research*, *4*(1), 78–96. https://doi.org/10.1111/j.1468-2958.1977.tb00599.x

McCroskey, J. C. (1982). *An introduction to rhetorical communication* (4th ed.). Prentice-Hall.

McCroskey, J. C. (1984). The communication apprehension perspective. In J. A. Daly & J. C. McCroskey (Eds.), *Avoiding communication: Shyness, reticence, and communication apprehension* (pp. 13–38). Sage.

McCroskey, J. C., & Baer, J. E. (1985). Willingness to communicate: The construct and its measurement. Paper presented at the meeting of the Annual Convention of the Speech Communication Association, Denver, CO

McCroskey, J. C., & McCroskey, L. L. (1988). Self-report as an approach to measuring communication competence. *Communication Research Reports*, *5*(2), 108–113. https://doi.org/10.1080/08824098809359810

McCroskey, J. C., & Richmond, V. P. (1987). Willingness to communicate. In J. C. McCroskey & J. A. Daly (Eds.), *Personality and interpersonal communication* (pp. 129–156). Sage.

McCroskey, J. C., & Richmond, V. P. (1990). Willingness to communicate: A cognitive view. *Journal of Social Behavior and Personality*, *5*(2), 19–44 .

Nazari, A., & Allahyar, N. (2012). Increasing willingness to communicate among English as a foreign language (EFL) students: Effective teaching strategies. *Investigations in University Teaching and Learning*, *8*(1), 18–29.

Neuliep, J. W., & McCroskey, J. C. (1997). The development of intercultural and interethnic communication apprehension scales. *Communication Research Reports*, *14*(2), 145–156. https://doi.org/10.1080/08824099709388656

Öz, H., Demirezen, M., & Pourfeiz, J. (2015). Willingness to communicate of EFL learners in Turkish context. *Journal of Learning and Individual Differences*, *37*, 269–275. https://doi.org/10.1016/j.lindif.2014.12.009

Peng, J. E. (2007). Willingness to communicate in an L2 and integrative motivation among college students in an intensive English language program in China. *University of Sydney Papers in TESOL*, *2*(1), 33–59.

Pribyl, C. B., Keaten, J. A., Sakamoto, M., & Koshikawa, F. (1998). Assessing the cross-cultural content validity of the personal report of communication apprehension scale (PRCA-24). *Japanese Psychological Research*, *40*(1), 47–53. https://doi.org/10.1111/1468-5884.00074

Rubin, R. B., Graham, E. E., & Mignerey, J. T. (1990). A longitudinal study of college students' communication competence. *Communication Education*, *39*(1), 1–14. https://doi.org/10.1080/03634529009378783

Sallinen-Kuparinen, A., McCroskey, J. C., & Richmond, V. P. (1991). Willingness to communicate, communication apprehension, introversion, and self-reported communication competence: Finnish and American comparisons. *Communication Research Reports*, *8*(1), 55–64. https://doi.org/10.1080/08824099109359876

Seibold, D. R., Rubin, R. B., & Rubin, A. M. (2009). Measurement in cross-cultural and intercultural communication. In R. B. Rubin, A. M. Rubin, E. E. Graham, E. M. Perse, & D. R. Seibold (Eds.), *Communication research measures II: A sourcebook* (pp. 57–75). Routledge.

Shahsavani, S., & Shahsavar, Z. (2014). On the relationship between willingness to communicate and identity processing styles of the Iranian advanced EFL learners. *International Journal of Language Learning and Applied Linguistics World*, *5*(1), 57–67.

Sidelinger, R. J., Myers, S. A., & McMullen, A. L. (2011). Students' communication predispositions: An examination of classroom connectedness in public speaking courses. *Basic Communication Course Annual*, *23*(1), 248–278. https://ecommons.udayton.edu/bcca/vol23/iss1/13.

Teven, J. J., Richmond, V. P., McCroskey, J. C., & McCroskey, L. L. (2010). Updating relationships between communication traits and communication competence. *Communication Research Reports*, *27*(3), 263–270. https://doi.org/10.1080/08824096.2010.496331

Violanti, M., Kelly, S., Garland, M., & Christen, S. (2018). Instructor clarity, humor, immediacy, and student learning: Replication and extension. *Communication Studies*, *69*(4), 251–262. https://doi.org/10.1080/10510974.2018.1466718

Wagner, J., Lüdtke, O., & Robitzsch, A. (2019). Does personality become more stable with age? Disentangling state and trait effects for the big five across the life span using local structural equation modeling. *Journal of Personality and Social Psychology*, *116*(4), 666–680. https://doi.org/10.1037/pspp0000203

Wang, H., Peng, A., & Patterson, M. M. (2021). The roles of class social climate, language mindset, and emotions in predicting willingness to communicate in a foreign language. *System*, *99*, 102529. https://doi.org/10.1016/j.system.2021.102529

Yashima, T. (2002). Willingness to communicate in a second language: The Japanese EFL context. *The Modern Language Journal*, *86*(1), 54–66. https://doi.org/10.1111/1540-4781.00136

Zarrinabadi, N., Lou, N. M., & Shirzad, M. (2021). Autonomy support predicts language mindsets: Implications for developing communicative competence and willingness to communicate in EFL classrooms. *Learning and Individual Differences*, *86*, 101981. https://doi.org/10.1016/j.lindif.2021.101981