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Review Article

Bibliometric Analysis of Trends in Research on Communication Apprehension

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ABSTRACT

The bibliometric analysis examined communication apprehension (CA) research trends by analysing 204 articles from the Scopus database published between 2013 and 2022. There was a substantial increase in CA publications after 2021, following a period of stability from 2017 to 2020. The majority of the publications were in English. Most of the publications on CA are in the social sciences. Transdisciplinary studies are on the rise, with researchers investigating CA in computer-mediated communication in online settings and different cultures. Universiti Teknologi Malaysia was at the forefront of university contributions, while the United States had a dominant position on a global scale. The network map shows collaboration between scholars from the United States, Malaysia, Turkey, Thailand, and Taiwan. McCroskey and Richmond are leading researchers in CA, while Arquero is inclined towards co-publications. CA research is most frequently published in PLOS One, Communication Education, and Computers in Human Behaviour. Constraints encompassed dependence on Scopus, restricted search words, and difficulties with citation analysis. Subsequent investigations should utilise a variety of methodologies and databases and concentrate on implementing interventions and longitudinal studies on CA.

Keywords: Bibliometric analysis, citation counts, communication apprehension, publication trend, Scopus database

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INTRODUCTION

Communication apprehension (CA) refers to an individual's emotional discomfort or anxiety associated with interacting with others (McCroskey, 1982, 1984). McCroskey (1977) pioneered the investigation of CA in public speaking, while other researchers investigated how CA adversely influences

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social skills and self-esteem (Horowitz, 2002). High levels of CA are linked to negative personal characteristics, such as low emotional maturity and tolerance for ambiguity (Richmond & McCroskey, 1998). Elevated CA can hinder students' academic achievement, contributing to cognitive impairments, subpar performance, and higher school and workplace disengagement rates. (Blume et al., 2013; McCroskey, 1977).

CA is a psychological state characterised by fear or worry experienced during verbal, auditory, and social interactions (Beatty & Gonzalez, 2020; McCroskey, 2009; Cavanaugh, 2013). This apprehension can manifest in various ways, including physiological symptoms, such as perspiration, tremors, an accelerated heartbeat, and psychological feelings of humiliation or exclusion (Agrawal & Krishna, 2021). In the middle of the mid-20th century, James McCroskey pioneered the concept in the 1960s and 1970s. The theoretical advancements developed to comprehend the factors contributing to CA include the Personal Report of Communication Apprehension (PRCA) scale, a popular tool for evaluating levels of CA (Hashemi et al., 2020).

The development of CA can be associated with genetic and environmental influences, including family communication patterns and past adverse experiences (Hsu, 2009; Stahrfisher, 2013). The effects of CA on communication have been extensively examined, such as investigations on how CA can hinder communication effectiveness in numerous settings, namely, public speaking, group discussion, and individual interaction. Research indicates that when CA increases, academic performance decreases, particularly in oral presentations, where increased CA correlates with lower academic performance (McCroskey, 1977; McCroskey & Andersen, 1976). Coping strategies for managing CA involve relaxation techniques, desensitisation through exposure, and communication skill acquisition through training (Mardesich, 2023). Cross-cultural studies have also explored variations in CA across various cultures, which discovered that cultural norms and communication methods substantially impact individuals' anxiety levels (Chen, 2019; Hofmann & Hinton, 2014; Lim, 2016). Recent research has explored CA within the realm of Computer-Mediated Communication (CMC), driven by the growing use of technology and new digital communication platforms (Carr, 2020; Shimada & Hideshima, 2023).

CA research has developed over the past four decades from the fear of public speaking and reticence in the academic setting to other contexts. Recent research has examined how CA influences interpersonal relationships and group dynamics (Campbell, 2012; McCroskey, 2009). For instance, CA results in poor interprofessional communication with patients (Tahir et al., 2017). Despite the multiple peer-reviewed articles, books, and dissertations on CA, the publications have not identified over-studied areas and angles that require further investigation.

The present study examined the publication trends on CA using bibliometric

analysis. The following research questions guided the analysis:

(a) How did research on CA develop, and how was it disseminated?
(b) What are the main topics discussed in the research on CA?
(c) Who are the key researchers in the field of CA, and how did they collaborate?

A bibliometric analysis brings together the findings of various studies on CA and can show the research trends on CA. Bibliometric analysis is a research approach that compiles and expands knowledge on a particular topic by mapping the relationships among key publications, authors, institutions, themes, and other relevant factors within the discipline (Gumpenberger et al., 2012; Vogel, 2014). Frequency distributions and "word clouds" are generated to assess the significance of a specific topic by examining the most commonly occurring keywords in the literature related to CA (de Oliveira et al., 2019).

LITERATURE REVIEW

Communication Apprehension

Communication, the process of conveying information, messages, or ideas between individuals, is essential to human interaction (Heath & Bryant, 2000). Effective communication plays a crucial role in shaping an individual's self-image, as those who communicate effectively often receive favourable feedback and acknowledgement (Nelson, 2011). This process involves various elements, including information sources and the collaboration between senders and receivers, to ensure a successful exchange of information (Barker, 2010).

Communication can be classified into verbal and non-verbal interactions. Verbal communication involves spoken language, while non-verbal communication encompasses body movements, gestures, tone of voice, and facial expressions, which enhance verbal messages (Bhardwaj, 2008; Lindh et al., 2009). Non-verbal communication is particularly vital, with social anthropologists estimating that it constitutes approximately 60% of all public communication (Barker, 2010; Fiske, 2002; Heath & Bryant, 2000). Both verbal and non-verbal communication are essential in conveying messages effectively and fostering social connections.

A key obstacle to effective communication is CA, also referred to as communication anxiety (McCroskey, 1977; Rimkeeratikul, 2023; Sawyer, 2018). McCroskey (1977) defines CA as the anxiety or fear experienced during actual or anticipated communication. CA can arise in various contexts, from public speaking to one-on-one interactions (West & Turner, 2008). CA is a widespread phenomenon affecting individuals of different ages, genders, and backgrounds (Sellnow, 2005). Factors that contribute to CA include the communication context (e.g., audience, physical setting), individual attributes (e.g., personality, self-esteem, communication skills), and cultural influences (Weiten et al., 2009).

McCroskey (1970) developed the Communication Apprehension Theory (CAT) to explain the anxiety individuals

experience when interacting with others. CA is a trait-based form of anxiety that influences an individual's tendency and capacity for oral communication. McCroskey identifies four distinct types of CA: trait-related, contextual, audience-related, and situational anxiety. Trait-related CA means that CA is influenced by an individual's personality and is rather stable across settings, situations and interactions (McCroskey, 1970). Individuals with high levels of trait-related CA experience ongoing anxiety in nearly all communication scenarios, both formal public speaking and informal conversations, and is not easy to overcome.

Unlike trait-related CA, contextual CA is associated with particular situations or settings, such as public speaking, one-on-one interactions, group discussions, meetings, and interpersonal conversations (McCroskey & Beatty, 1984). The level of contextual CA drops once an individual exits a particular situation. McCroskey (1984) considers contextual CA to be related to personality and rather stable in anxiety-triggering situations. A situation that often gives rise to higher contextual CA is public speaking.

Audience-related CA is triggered by interactions with specific individuals or groups, particularly audiences with high authority and expertise and a distant relationship to the speaker (Neuliep & McCroskey, 1997). The intensity of this anxiety fluctuates based on the audience, independent of the context. For instance, a person might be comfortable speaking in a familiar classroom but feel nervous when addressing an unfamiliar group.

Situational CA arises from specific conditions or factors within a communication setting, such as familiarity with the audience, perceived significance of the event, or time constraints (Beatty et al., 1998). Unlike trait, contextual, or audience-related CA, situational CA is temporary and fluctuates depending on the particular circumstances of the communication event. McCroskey (1997) posits that situational CA occurs at a specific point on the continuum of CA and represents anxiety experienced with a specific person or group, at a specific time, and in a specific setting. Situational CA typically occurs in stressful situations, such as being called into a professor's office on suspicion of cheating or having to testify in court, emphasising the impact of specific situational factors on CA.

Understanding the different types of CA—trait-related, contextual, audience-related, and situational—allows for a more comprehensive understanding of human communication. By recognising and addressing these different forms of CA, researchers and practitioners can develop more effective strategies to mitigate its effects.

CA also varies by type of communication. Public speaking anxiety involves increased nervousness when addressing an audience because of fear of being judged or making mistakes (Richmond & McCroskey, 1998). Interpersonal CA refers to anxiety during direct interactions with one or a few people, often due to fear of negative evaluation or conflict (Daly, 1978). Group CA arises during team meetings or joint endeavours

and is influenced by the evaluation of the group and nuances of engagement (Leary, 1983). Communication channel apprehension is the discomfort associated with certain communication media, such as written correspondence, telephone conversations, or digital platforms, such as email and social media (Spector & Jex, 1998).

The effects of increased oral CA extend to personal and professional domains, limiting career advancement and hindering academic outcomes that centre on oral discourse (McCroskey, 1984; Richmond & McCroskey, 2000). McCroskey (1984) identifies four typical characteristics of CA: internal discomfort, communication avoidance, communicative interference, and excessive communication. Ka-kan-dee and Al-Shaibani (2018) state that CA manifests as reticence, shyness, nervousness and discomfort when speaking. This broader view of CA highlights the different ways in which people experience and display anxiety in communicative situations, whether in public speaking or private contexts.

Studies have shown the importance of addressing CA in educational and professional contexts. Radzuan and Kaur (2016) examined the communication skills of engineering students and emphasised the need to address CA when teaching oral presentation skills. Mahoney et al. (2017) showed that blended learning methods can alleviate CA in public speaking. Naser and Isa (2021) found that even academically outstanding students struggle with increased public speaking anxiety. Valls-Ratés et al. (2022) emphasised the promising effect of virtual reality (VR) in combating CA and improving public speaking skills. Rimkeeratikul (2023) suggests that diagnosing CA in students allows teachers to provide appropriate support.

To summarise, oral CA occurs in both private and professional settings. Managing CA, especially in public speaking and presentations, is crucial for academic and professional success. Strategies ranging from cognitive techniques to innovative pedagogical methods show promise in mitigating the effects of CA and improving communication skills.

METHODOLOGY

The systematic literature review is guided by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) standards based on Zakaria et al.'s (2021) methodology. The current study used the Scopus index for data extraction and document collection, with 11 January 2023 as the reference date. The extensive inclusion of high-ranking journals from multiple disciplines has established Scopus as the preferred source for such analyses (Ahmi & Mohd, 2019; Kolle et al., 2018; Sweileh, 2018, cited in Lam & Habil, 2021). Figure 1 shows the steps followed to compile the corpus for the bibliometric analysis.

Criteria for Obtaining Articles

The inclusion criteria included articles published in 2013-2022 on CA in different contexts, such as public speaking, intercultural communication, and online

communication. The search focussed on articles where "CA" was present in the keywords, abstract or title. This approach was important to maintain the dataset's relevance and exclude tangentially related articles that do not directly contribute to the understanding of CA.

Validation Process

The validation process began with screening the initial search result (N = 204) based on titles and abstracts, and no articles were removed (n = 0). A thorough review of the full text of the selected articles (*n* = 204) was conducted to confirm their relevance to

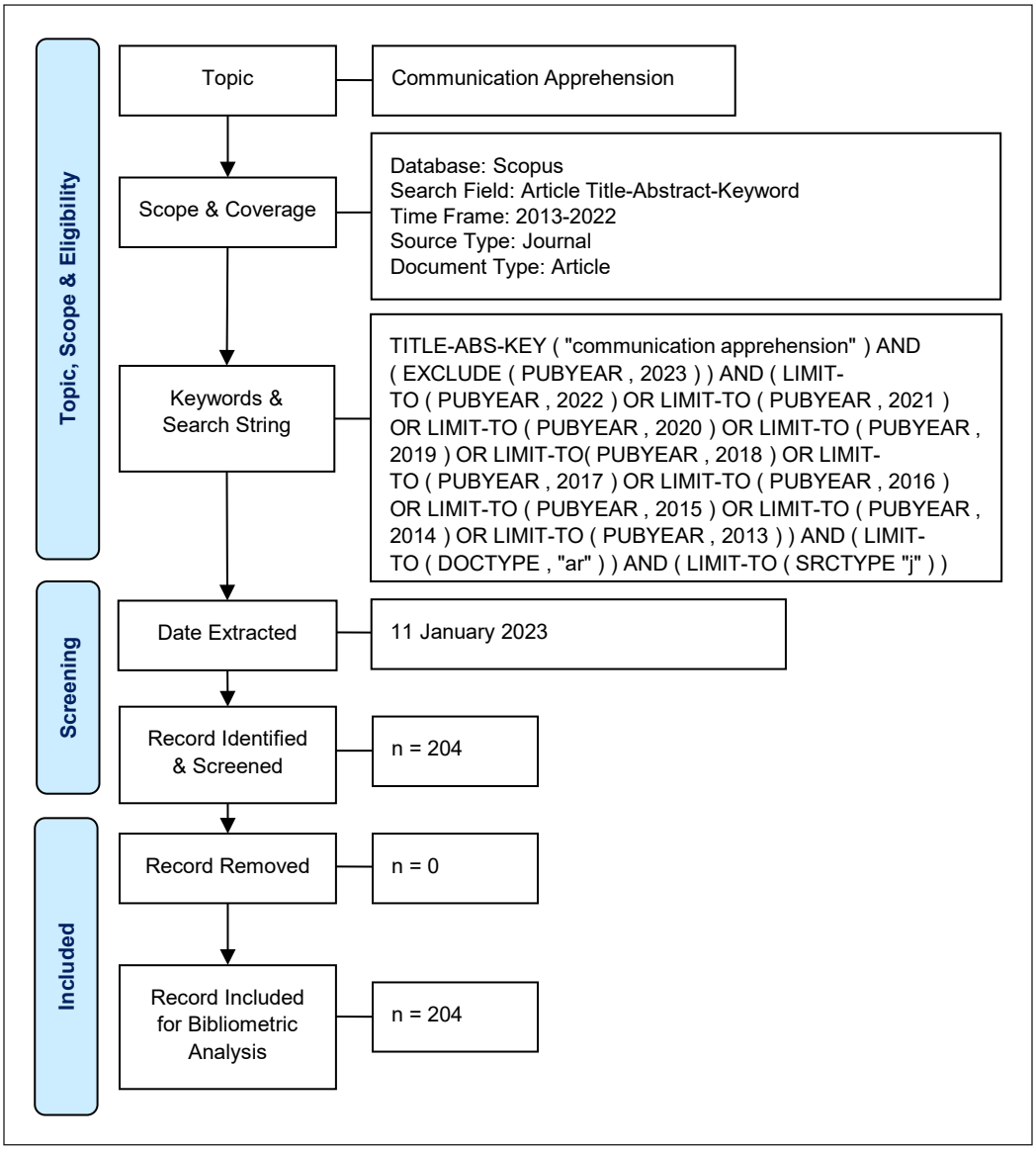

Figure 1. Steps followed to compile the corpus for the bibliometric analysis

CA research and to exclude those that, on closer inspection, did not fulfil the inclusion criteria. Several benchmarking methods were applied to the selected articles to ensure consistency and quality. Each article was assessed for its direct relevance to CA research, excluding articles with tangential references. Articles were categorised based on their research focus, including empirical studies, theoretical papers, reviews and case studies. This categorisation ensures a balanced representation of different research approaches within the dataset. Metadata such as author names, year of publication and journal names were correctly recorded. The selection and categorisation process was revisited and validated to ensure consistency and reduce potential bias. This step was critical to maintaining the integrity and objectivity of the selection process. The final data set was meticulously checked for accuracy. This involved ensuring that each article was correctly categorised and that this verification step was important to ensure the reliability and validity of the bibliometric analysis.

The data in the Excel files were exported using the Research Information Systems (RIS) and Comma-Separated Values (CSV) formats as dataset components. Harzing's Publish or Perish programme also calculated citation metrics and other rates. In addition, VOSviewer, an accessible tool for constructing and visualising these networks, was used to visually represent the bibliometric networks (Ahmi & Mohd, 2019). A mere count of publications does not adequately reflect their scholarly impact. Instead, the number of citations (a metric that reflects the usefulness of a publication to other researchers) is a more accurate measure of an author's research and global impact (Lam & Habil, 2021). The analysis included numerous dimensions when examining publications on CA, such as linguistic characteristics, thematic areas, annual research patterns, major nations, academic institutions, and scholarly journals. The data from the databases were mainly presented as percentages and frequencies. In addition, using VOSviewer enabled the application of sophisticated visualisation techniques that enhanced the understanding of the relationships between authors' keywords, citations by nation, co-authorship and co-citations.

RESULTS AND DISCUSSION

Development and Dissemination of Research on CA

Most publications on CA (96.57%) were in English (Table 1). The prevalence of English as the primary communication language in the academic sphere indicates that scholars are inclined to disseminate their research in English to enhance the accessibility and visibility of their work within the global research community. Table 1 presents the percentage of publications on CA across different languages. Carpenter et al. (2014) stated that compiling a list of the languages used in cited articles can disclose national and international influence.

Non-English CA publications, such as Chinese, Russian, Spanish, Bosnian, and Polish, suggest that researchers from non-

Table 1
Percentage of publications on CA in various languages (N = 206)

Language	Total Publications	Percentage (%)
English	197	96.57
Chinese	3	1.47
Russian	2	0.98
Spanish	2	0.98
Bosnian	1	0.49
Polish	1	0.49
Total	**206**	**100.00**

Note. One document was published in two languages, contributing to the total publication count

mainstream regions published their findings in local journals. They may lack the proficiency to publish in English language journals. Their findings may not be accessed and cited by other CA researchers, which means that their publications have little impact on the worldwide direction of research in the field of CA. This study underscores the significant collaborative efforts among academics from the United States, Malaysia, Turkey, Thailand, and Taiwan. The rationale behind these collaborations is geographic proximity, shared research focus areas, funding and resource sharing, and language and cultural factors. Geographic proximity enhances collaboration possibilities as researchers near each other can benefit from in-person gatherings, conferences, and joint initiatives. Shared research focus areas can lead to collaborative endeavours as they often exhibit a collective interest in specific facets of Computer-Mediated Communication (CMC), such as its impact on cross-cultural interactions or its implications for online discourse. International collaborations usually provide academics access to inaccessible financial options within their countries, facilitating information sharing and the development of more complete studies. Adopting collaborative research approaches that consider cultural and linguistic varieties and the consequences of cross-cultural communication can enhance global relevance and offer valuable insights for interventions and strategies to address cultural adaptation in multicultural and diverse settings.

Interest in CA has increased from 2021 onwards, and based on total publications (TP), it is likely to increase further (Figure 2). Nonetheless, as indicated by the orange line in Figure 2, there has been no corresponding increase in citations of the publications (TC) since 2017. Citations are slow in the field of CA.

Table 2 lists the frequency of CA research publications by year and shows that interest in CA research is growing. The total number of publications (TP) ranged from 10 to 31 per year. The total number of publications on CA in 2013 was 20, which decreased before stabilising to a total of 20 to 21 in 2017 to 2020. Since 2013, the most publications on CA are in

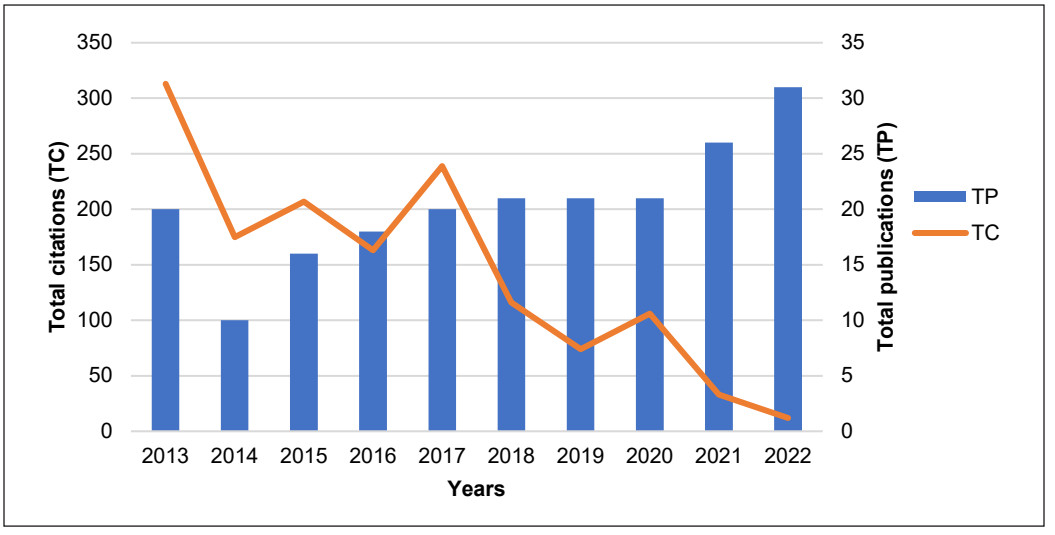

Figure 2. Citations and publications by year

Table 2
Frequency of publication (CA) by year (N = 204)

Year	TP	NCP	TC	PCP	CCP	*h*	*g*
2013	20	20	313	15.65	15.65	11	17
2014	10	8	175	17.50	21.88	7	10
2015	16	14	207	12.94	14.79	7	14
2016	18	16	163	9.06	10.19	7	12
2017	20	18	239	11.95	13.28	7	15
2018	21	19	116	5.52	6.11	7	9
2019	21	17	74	3.52	4.35	6	7
2020	21	19	106	5.05	5.58	6	9
2021	26	11	33	1.27	3.00	4	5
2022	31	7	12	0.39	1.71	2	2
Total	204						

Note. TP = total number of publications; NCP = number of cited publications; TC = total citations; PCP = proportion of cited publications; CCP = citations per cited publication; *h* = *h*-index; and *g* = g-index

2022 (31 publications), an increase from 26 in 2021. There is further evidence that citations in the field of CA are slow. The percentage of cited publications (PCP) and the number of citations per cited publication (CCP) declined from 2013 to 2022, which indicates that older publications in the field tend to gain more visibility and citations. CA articles published in 2014 have an exceptionally high PCP and CCP despite the small number of total publications because of the interest in Hammick and Lee's (2014) paper on whether shy people feel less CA online. However, the field of CA generally

has moderate research productivity and influence (g-index of 2–17).

Key Topic Areas in CA Research

Table 3 shows the citation networks of the subject areas where results on CA were published, where 72.06% are in social science journals, followed by arts and humanities (28.43%). The keyword co-occurrence analysis denotes that the scope of CA research primarily concerns teaching and learning. Notably, researchers from the sciences have also investigated CA, indicating the field's potential to benefit from multidisciplinary perspectives.

The bibliometric analysis of publications on CA between 2013 and 2022 shows that researchers study CA in online communication because technological advancements in the digital age, such as virtual reality (VR) and augmented reality (AR), have established new research domains. Educational transformations, such as the rise of online learning platforms and technology integration, have affected CA experienced by students. With increased cross-cultural connections facilitated by globalisation and international mobility, researchers are beginning to understand cultural differences in CA. Multidisciplinary

Table 3
The subject area of CA publications

Subject Area	Total Publications (TP)	Percentage (%)
Social Sciences	147	72.06
Arts and Humanities	58	28.43
Psychology	40	19.61
Business, Management, and Accounting	23	11.27
Medicine	21	10.29
Computer Science	15	7.35
Engineering	13	6.37
Economics, Econometrics, and Finance	9	4.41
Health Professions	8	3.92
Biochemistry, Genetics, and Molecular Biology	6	2.94
Nursing	6	2.94
Pharmacology, Toxicology, and Pharmaceutics	5	2.45
Agricultural and Biological Sciences	3	1.47
Environmental Science	3	1.47
Multidisciplinary	3	1.47
Neuroscience	3	1.47
Chemical Engineering	2	0.98
Energy	2	0.98
Mathematics	2	0.98
Decision Sciences	1	0.49
Veterinary	1	0.49

research on CA has also been conducted, integrating perspectives from numerous disciplines, namely psychology, education, linguistics, and cultural studies.

Figure 3 depicts the author's interpretation of a keyword network where each keyword occurred at least three times in the literature. Only 35 of the 587 keywords fulfilled the specified condition. Additionally, the magnitude of each circle corresponds to the number of publications from a particular country. CA is the largest node in the blue network, which is expected considering that "CA" was one of the search phrases used. The analysis suggested that CA is closely linked to anxiety (purple circle) and communication (red circle), which usually co-occur in publications. The distance of intercultural communication and foreign language apprehension from the CA node reflects less research in these areas. Nevertheless, these topics may develop in prominence due to the increasing international movement of students and workers, which raises communication across cultures. CA is an obstacle for language learners in gaining communicative competence.

Main Contributors to CA Research

The examination of academic collaboration within the CA domain primarily centred around several crucial aspects: (1) the identification of leading authors in publications based on their place of origin, (2) the determination of the most significant institutions involved in this area, (3) the assessment of the most actively utilised journals, (4) the study of citations, and (5) the evaluation of authorship patterns.

The network visualisation map in Figure 4 illustrates the co-occurrence of nations based on the authors' affiliation. All countries contributed to a minimum of three publications. The abovementioned requirement was satisfied by 11 countries, represented as nodes in the map. The patterns of nodes are established by the

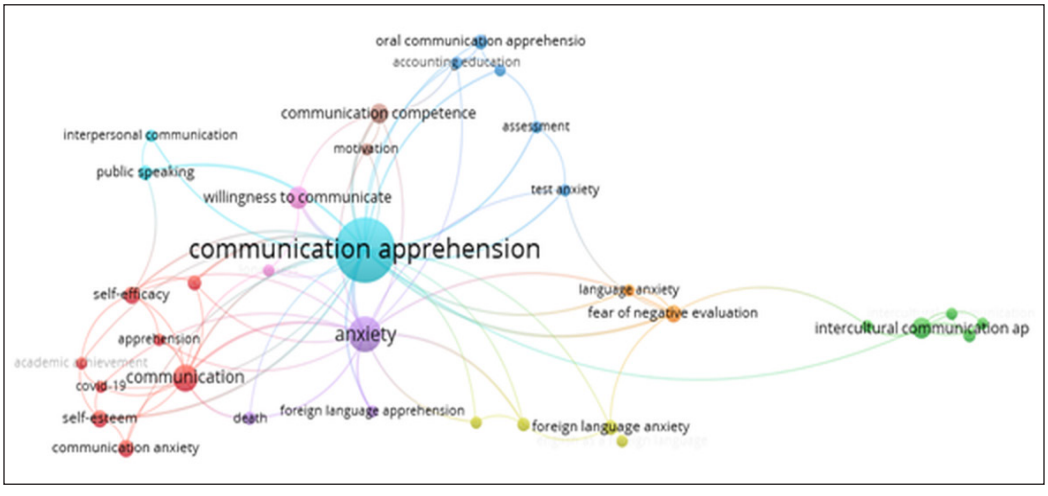

Figure 3. Network visualisation map based on author keyword

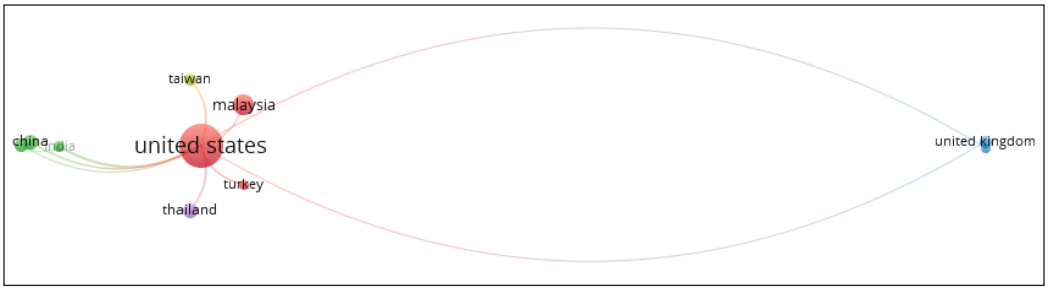

Figure 4. Network visualisation map of the citation based on different countries
Note. Minimum of five documents and five citations of an author

thickness of lines, circle and text size, and colour. MacDonald and Dressler (2018) suggested that a larger node size usually co-occurs with greater "total link strength" and more citations. The proximity of the nodes also indicates a significant correlation between the content of the articles.

The United States (red node) has the highest publications on CA. A considerable geographical separation exists between the United Kingdom and other nations, reflecting little collaboration of UK researchers with those from other countries. The geographical proximity of Malaysia, Turkey, Thailand, and Taiwan to the United States is probably because academics from these countries pursued postgraduate studies in the United States and continued to publish with their supervisors after they graduated.

Table 4 reveals that the highest CA contributions were from the United States (85 publications; *h*-index of 16; g-index of 25). Out of the 85 publications, 72 (9.96%) were cited 847 times (TC), with each paper being cited 12 times on average (CCP, 11.67). CA research in other countries has less influence on the field based on the frequency of citations. Although researchers in Malaysia have actively published on CA (19 publications), only 12 (or 2.79%) of the publications were cited 53 times (TC). Each paper was cited four times on average (CCP, 4.42). Malaysian researchers may not gain as much visibility by publishing with researchers in the United States (CCP of 11.76) compared to other countries. They may have low total publications (TP), but their papers are more highly cited than those from the United States: Australia (38.33), Turkey (18.33), Saudi Arabia (15), and Spain (13).

Further investigation of the main contributors to CA research identified the most influential institutions (Table 5). The evaluation took into account the number of publications cited, total citations, the proportion of publications cited, citations per publication cited, h-index, and g-index. Universiti Teknologi Malaysia has the most publications (TP of 6). Nonetheless, only two were cited. There were only three total citations (TC), while the CCP was 1.5. Researchers from three other universities produced four publications, each from 2013 to 2022, namely, Texas Tech University

Table 4
Top countries contributing to the publications

Country	TP	NCP	TC	PCP	CCP	*h*	*g*
USA	85	72	847	9.96	11.76	16	25
Malaysia	19	12	53	2.79	4.42	5	6
China	9	4	19	2.11	4.75	2	4
Thailand	9	6	36	4.00	6.00	2	6
Saudi Arabia	8	4	60	7.50	15.00	3	7
Taiwan	7	6	30	4.29	5.00	4	5
UK	7	6	54	7.71	9.00	4	7
India	6	4	14	2.33	3.50	2	3
Iran	6	3	10	1.67	3.33	2	3
Spain	5	5	65	13.00	13.00	4	5
Turkey	5	3	55	11.00	18.33	2	5
Canada	4	2	7	1.75	3.50	2	2
Finland	4	4	32	8.00	8.00	3	4
South Korea	4	3	7	1.75	2.33	2	2
Australia	3	3	115	38.33	38.33	3	3
Indonesia	3	1	6	2.00	6.00	1	2
Jordan	3	1	4	1.33	4.00	1	2
New Zealand	3	2	10	3.33	5.00	2	3
Poland	3	3	4	1.33	1.33	1	1
UAE	3	2	4	1.33	2.00	1	2

Note. Total number of publications (TP); Number of cited publications (NCP); Total citations (TC); Proportion of cited publications (PCP); Citations per cited publication (CCP); h-index (h); and g-index (h)

(United States), University of Jyväskylä (Finland), and Universidad de Sevilla (Spain).

All other institutions listed in Table 6 produced only three publications. Although Universiti Teknologi Malaysia produced more publications, the United States contributed the most to developments in CA, as demonstrated by the CCP exceeding 10 for Texas Tech University, SUNY New Paltz, The University of Tennessee, Knoxville, and West Virginia University. Universidad de Sevilla (Spain) and Sheffield Hallam University (United Kingdom) are also worth mentioning. A comparison with Table 5 reveals that although publications from Australia had high citations per cited publication (CCP of 38.33), no institution stood out as the centre of CA research.

The significant role of the United States in CA research is linked to historical and institutional circumstances, such as a well-developed academic infrastructure based on their esteemed universities, renowned research organisations, and accomplished researchers. James McCroskey coined the phrase "CA," and researchers widely used his scale for measuring CA. The academic setting in the United States also fosters a culture of collaboration and networking

Table 5
Top influential institutions

Affiliation	Country	TP	NCP	TC	PCP	CCP	*h*	*g*
Universiti Teknologi Malaysia	Malaysia	6	2	3	0.50	1.50	1	1
Texas Tech University	USA	4	4	69	17.25	17.25	3	4
University of Jyväskylä	Finland	4	4	32	8.00	8.00	3	4
Universidad de Sevilla	Spain	4	4	44	11.00	11.00	4	4
Birla Institute of Technology and Science, Pilani	India	3	2	2	0.67	1.00	1	1
SUNY New Paltz	USA	3	3	67	22.33	22.33	3	3
The University of Tennessee, Knoxville	USA	3	3	97	32.33	32.33	3	3
University of Kentucky	USA	3	1	2	0.67	2.00	1	1
University of Maryland, College Park	USA	3	3	23	7.67	7.67	2	3
West Virginia University	USA	3	2	42	14.00	21.00	2	3
The University of Alabama	USA	3	3	11	3.67	3.67	2	3
Michigan State University	USA	3	3	27	9.00	9.00	2	3
Sheffield Hallam University	UK	3	3	40	13.33	13.33	3	3
The University of Jordan	Jordan	3	1	4	1.33	4.00	1	2

Note. Total number of publications (TP); Number of cited publications (NCP); Total citations (TC); Proportion of cited publications (PCP); Citations per cited publication (CCP); h-index (h); and g-index (h)

(Scager et al., 2016; Valevskaya, 2019), which facilitates knowledge sharing and encourages multidisciplinary research, as Fan and Cai (2020) highlighted. Furthermore, numerous studies (Gaule & Piacentini, 2013; Hunt & Gauthier-Loiselle, 2010; Stuen et al., 2012) repeatedly emphasised that immigrants in the United States contributed disproportionately to research and innovation.

Researchers from Malaysia, Turkey, Thailand, and Taiwan to the United States often pursue higher education in the United States (Staddon, 2020), which promotes idea-sharing and fosters collaboration in CA research. They were subsequently published in English, strengthening the prevailing influence of the United States in academia (Shaw, 2013). The United Kingdom researchers are not prolific in CA research. They tend to concentrate on specific areas of inquiry, which creates varying study interests and specialised expertise (Corner, 2019).

Table 6 displays that the most active journal contributing to CA studies was *Communication Education,* published by Taylor & Francis (8 publications, cited 96 times, SJR 2021 of 0.693, SNIP 2021 of 1.665). The second most active contribution was the *Asian EFL Journal* (five publications cited 10 times, SJR 2021 of 0.27, SNIP 2021 of 0.365). Other source titles published only three papers each from 2013 to 2022.

Communication Education is a prominent publication because it focuses on disseminating research that contributes to comprehending the significance of

Table 6
Most active journals

Source Title	TP	TC	Publisher	Cite Score	SJR 2021	SNIP 2021
Communication Education	8	96	Taylor & Francis	3	0.693	1.665
Asian EFL Journal	5	10	Asian EFL Journal Press	1	0.27	0.365
Communication Research Reports	3	6	Taylor & Francis	2.5	0.598	0.83
Computers In Human Behaviour	3	154	Elsevier	14.9	2.174	3.234
Health Communication	3	12	Taylor & Francis	5.6	1.103	1.853
International Journal of Applied Linguistics and English Literature	3	5	Australian International Academic Centre PTY. LTD	0.2	0.121	0
International Journal of Instruction	3	9	Gate Association for Teaching and Education	3.4	0.5	1.394
Journal of Intercultural Communication	3	10	University of Goteborg	0.6	0.132	0.307
Journal of International and Intercultural Communication	3	24	Taylor & Francis	2.5	0.398	0.959
Omega United States	3	15	SAGE	2.8	0.469	1.269
Personality and Individual Differences	3	32	Elsevier	5.3	11.78	1.685
PLOS One	3	99	Public Library of Science	5.6	0.852	1.368

Note. Total number of publications (TP); Total citations (TC)

communication within communication, teaching, and learning areas. Several subjects of interest in education include the dynamics of student-teacher interactions, the qualities exhibited by students and teachers, the effects on student learning outcomes, and the wider topics of diversity, inclusion, and difference.

However, CA publications in Computers in Human Behaviour get more visibility, evident in the high citations (Elsevier; TC of 154; Cite Score of 14.9) and *PLOS One* (Public Library of Science; TC of 99; Cite Score of 5.6). *Computers in Human Behaviour* addresses human interactions with computers and is generally not a source title that researchers in education or communication would seek. Nevertheless, the journal is under the Elsevier group, contributing to its publications' visibility. Furthermore, Personality and Individual Differences (Elsevier) has a high TC of 32 despite publishing only three papers on CA from 2013 to 2022, with a cite score of 5.3.

Table 7 lists the 20 most cited articles on CA. The citation analysis shows that Hammick and Lee (2014) had the most significant impact on CA research (70 cites; 7.78 per year). Hammick and Lee (2014) were forerunners in examining the effect of virtual reality and personality characteristics on CA online, given that virtual reality was not a popular research topic yet in the 2010s. Articles 10, 14, and 15 in the list also concern CA, which excludes face-to-face situations.

Table 7
Top 20 highly cited articles on CA

No.	Authors	Title	Year	Cites	Cites per Year
1	J. K. Hammick, M. J. Lee	Do shy people feel less communication apprehension online? The effects of virtual reality on the relationship between personality characteristics and communication outcomes	2014	70	7.78
2	S. Erickson, S. Block	The social and communication impact of stuttering on adolescents and their families	2013	64	6.4
3	N. M. Punyanunt-Carter, J. J. De La Cruz, J. S. Wrench	Investigating the relationships among college students' satisfaction, addiction, needs, communication apprehension, motives, and uses and gratifications with Snapchat	2017	54	9
4	B. J. England, J. R. Brigati, E. E. Schussler	Student anxiety in introductory biology classrooms: Perceptions about active learning and persistence in the major	2017	52	8.67
5	F. Alrabai	The influence of teachers' anxiety-reducing strategies on learners' foreign language anxiety	2015	50	6.25
6	H. Öz, M. Demirezen, J. Pourfeiz	Willingness to communicate with EFL learners in a Turkish context	2015	49	6.13
7	S. D. Charlier, G. L. Stewart, L.M. Greco, C. J. Reeves	Emergent leadership in virtual teams: A multilevel investigation of individual communication and team dispersion antecedents	2016	47	6.71
8	C. T. Siew, T. G. Mazzucchelli, R. Rooney, S. Girdler	A specialist peer mentoring programme for university students on the autism spectrum: A pilot study	2017	46	7.67
9	E. A. Babin	An examination of predictors of nonverbal and verbal communication of pleasure during sex and sexual satisfaction	2013	40	4
10	A. Krishnan, D. Atkin	Individual differences in social networking site users: The interplay between antecedents and consequential effect on level of activity	2014	30	3.33
11	L. T. Fall, S. Kelly, P. MacDonald, C. Primm, W. Holmes	Intercultural Communication Apprehension and Emotional Intelligence in Higher Education: Preparing Business Students for Career Success	2013	29	2.9
12	R. S. Bernstein, M. Bulger, P. Salipante, J. Y. Weisinger	From Diversity to Inclusion to Equity: A Theory of Generative Interactions	2020	27	9
13	X. Shi, T. M. Brinthaupt, M. McCree	The relationship of self-talk frequency to communication apprehension and public speaking anxiety	2015	27	3.38
14	S. B. Brundage, A. B. Hancock	Real enough: Using virtual public speaking environments to evoke feelings and behaviours targeted in stuttering assessment and treatment	2015	25	3.13
15	A. M. Ledbetter, A. N. Finn	Teacher Technology Policies and Online Communication Apprehension as Predictors of Learner Empowerment	2013	25	2.5

Table 7 *(continue)*

No.	Authors	Title	Year	Cites	Cites per Year
16	C. Fortner-Wood, L. Armistead, A. Marchand, F. B. Morris	The Effects of Student Response Systems on Student Learning and Attitudes in Undergraduate Psychology Courses	2013	24	2.4
17	K. M. Hunter, J. N. Westwick, L. L. Haleta	Assessing Success: The Impacts of a Fundamentals of Speech Course on Decreasing Public Speaking Anxiety	2014	23	2.56
18	M. Amengual-Pizarro	Foreign language classroom anxiety among English for Specific Purposes (ESP) students	2018	21	4.2
19	S. M. Croucher	Communication Apprehension, Self-Perceived Communication Competence, and Willingness to Communicate: A French Analysis	2013	21	2.1
20	S. A. Coetzee, A. Schmulian, L. Kotze	Communication apprehension of South African accounting students: The effect of culture and language	2014	20	2.22

The top 20 highly cited articles on CA are about foreign language learners' anxiety (Numbers 5–6, 18) and CA during public speaking (Numbers 13, 14, 17). Nonetheless, investigations have been made beyond the language classroom (Numbers 7–9) and on the influence of cultural background (Numbers 11, 12, 19, 20). The citation analysis suggested that articles on CA online are cited more than those on the traditional core areas of CA in public speaking and foreign language learning classrooms.

The study utilised the VOSviewer software using the complete counting approach to generate visual representations of co-citation and co-authorship networks among multiple authors. As for co-citation analysis, the selection criteria for the unit analysis of cited authors entailed selecting writers with a minimum of 15 citations. Figure 5 shows that six clusters were formed from 70 authors' co-citation analysis, whereas McCroskey was the leading researcher in CA. McCroskey coined the term "CA" and published the first article in 1970. Various co-authors subsequently published it, as indicated by the numerous lines to other clusters.

McCroskey, MacIntyre, Daly, Beatty, Neuliep, and Martin were the authors with the most co-citations as denoted in the red (cluster 1), green (cluster 2), blue (cluster 3), yellow (cluster 4), purple (cluster 5), and turquoise (cluster 6) clusters. McHorwitz and McIntyre also impacted the field of CA (illustrated by the large red nodes). For example, Horwitz et al. (1986) garnered 199 citations (based on Google Scholar), showing the interest in anxiety experienced by foreign language learners. Nonetheless, the connecting lines between McCroskey and McHorwitz are long, which denotes less similarity in content.

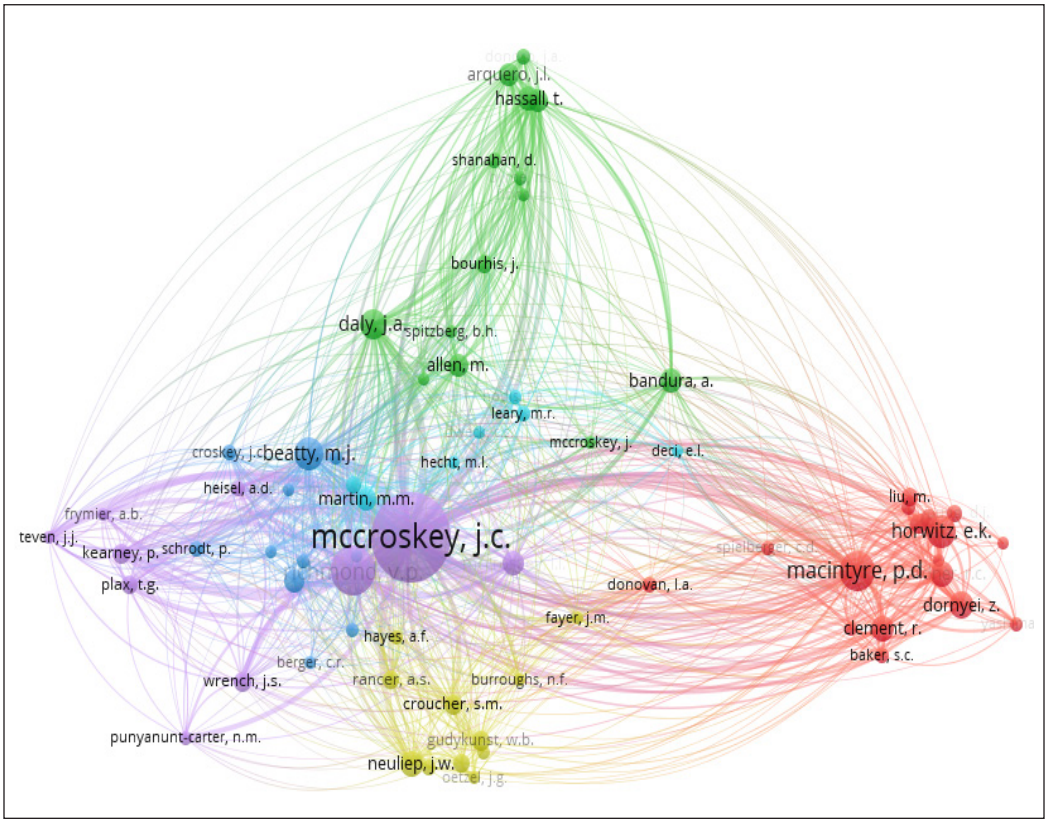

Figure 5. Network visualisation map for co-citation
Note. Unit of analysis = cited authors; counting method = full counting; minimum number of citations of an author = 15

Table 8 shows the number of authors per document among the 204 publications and shows collaboration. A total of 92 authors contributed to 204 publications on CA. One to three authors per publication are common (23.53%, 30.39%, and 26.47%, respectively). This finding is expected, as Ynalvez and Shrum (2011) reported, as it is common for authors to collaborate in communication research. Single-authored publications are valued in CA research and mostly on theoretical and conceptual work. Meanwhile, only one publication had 33 authors, which was an outlier.

Table 8
Number of author(s) per document

Author Count	Total Publications (TP)	Percentage (%)
1	48	23.53
2	62	30.39
3	54	26.47
4	21	10.29
5	10	4.90
6	4	1.96
7	1	0.49
8	1	0.49
9	2	0.98
33	1	0.49
Total	204	100.00%

CONCLUSION

The bibliometric analysis of CA research from 2013 to 2022 shows a period of stability from 2017 to 2020, followed by a considerable increase in publications starting in 2021. This trend suggests rising scholarly attention on CA, possibly linked to shifts in communication patterns, such as the growth of internet communication and the cross-cultural movement of academics and students. From conventional domains such as public speaking and foreign language, CA research is moving into online communication and cultural influences.

A total of 96.57% of the CA publications are in English, but there were contributions from publications in Chinese, Russian, Spanish, Bosnian, and Polish. Based on the number of publications and citations, the United States is widely recognised as one of the major players in research in the field of CA. Collaboration extends from the United States to Malaysia, Turkey, Thailand, and Taiwan. International collaboration enriches the range of views and approaches applied to the study of CA.

Citation analysis shows McCroskey's influence on CA research. He has published with 70 authors. Moreover, collaboration is a prevalent practice in CA research, as witnessed by most publications featuring one to three authors. Although the number of publications has significantly increased, there has been no comparable increase in citations over the last five years. In the field of CA research, publications take time to attain acknowledgement and influence within the academic domain. Monitoring and documenting these citations over an extended period is imperative to analyse their long-term impact appropriately.

The study has a limitation in scope, as it did not analyse the journals where researchers from a particular institution publish to understand the visibility of publications further. In the context of Malaysia, Universiti Teknologi Malaysia produced the most publications, but they are not highly cited. The bibliometric analysis reveals that publications in Computers in Human Behaviour are highly cited, and PLOS One publishes interdisciplinary research on CA. However, Communication Education is a primary source for research articles on Communication Apprehension Theory. Future research on CA research trends should focus on a longer timeframe and examine publication patterns from the conception of an influential theory or publication in the field, as McCroskey (1970) did in the case of CA research. Such bibliometric analyses map out the evolution of knowledge in CA, including predicting future trends.

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REFERENCES

Agrawal, S., & Krishna, S. M. (2021). Communication apprehension and psychological well-being of students in online learning. *Behavioral Sciences, 11*(11), Article 145. https://doi.org/10.3390/bs11110145

Ahmi, A., & Mohd, N. M. H. (2019). Examining the trend of the research on extensible business reporting language (XBRL): A bibliometric review. *International Journal of Innovation, Creativity and Change, 5*(2), 1145-1167.

Alrabai, F. (2015). The influence of teachers' anxiety-reducing strategies on learners' foreign language anxiety. *Innovation in Language Learning and Teaching, 9*(2), 163-190. https://doi.org/10.1080/17501229.2014.890203

Amengual-Pizarro, M. (2018). Foreign language classroom anxiety among English for specific purposes (ESP) students. *International Journal of English Studies, 18*(2), 145-159. https://doi.org/10.6018//ijes/2018/2/323311

Babin, E. A. (2013). An examination of predictors of nonverbal and verbal communication of pleasure during sex and sexual satisfaction. *Journal of Social and Personal Relationships, 30*(3), 270-292. https://doi.org/10.1177/0265407512454523

Barker, A. (2010). *Improve your communication skills* (Vol. 39). Kogan Page Publishers.

Beatty, M. J., & Gonzalez, A. M. (2020). Selected physiological dimensions of communication apprehension. In L. S. Aloia, A. Denes, & J. P. Crowley (Eds.), *The Oxford handbook of the physiology of interpersonal communication* (Online ed.). Oxford Academic. https://doi.org/10.1093/oxfordhb/9780190679446.013.6

Beatty, M. J., McCroskey, J. C., & Heisel, A. D. (1998). Communication apprehension as temperamental expression: A communibiological paradigm. *Communications Monographs, 65*(3), 197-219.

Bernstein, R. S., Bulger, M., Salipante, P., & Weisinger, J. Y. (2020). From diversity to inclusion to equity: A theory of generative interactions. *Journal of Business Ethics, 167*, 395-410. https://doi.org/10.1007/s10551-019-04180-1

Bhardwaj, K. (2008). *Professional communication*. IK International Pvt Ltd.

Blume, B. D., Baldwin, T. T., & Ryan, K. C. (2013). Communication apprehension: A barrier to students' leadership, adaptability, and multicultural appreciation. *Academy of Management Learning & Education, 12*(2), 158-172. https://doi.org/10.5465/amle.2011.0127

Brundage, S. B., & Hancock, A. B. (2015). Real enough: Using virtual public speaking environments to evoke feelings and behaviors targeted in stuttering assessment and treatment. *American Journal of Speech-Language Pathology, 24*(2), 139-149. https://doi.org/10.1044/2014_ajslp-14-0087

Campbell, J. (2012). Apprehension and communication. In N. M. Seel (Ed.), *Encyclopedia of the sciences of learning* (pp. 280-282). Springer. https://doi.org/10.1007/978-1-4419-1428-6_53

Carpenter, C. R., Cone, D. C., & Sarli, C. C. (2014). Using publication metrics to highlight academic productivity and research impact. *Academic Emergency Medicine, 21*(10), 1160-1172. https://doi.org/10.1111/acem.12482

Carr, C. T. (2020). CMC is dead, long live CMC!: Situating computer-mediated communication scholarship beyond the digital age. *Journal of Computer-Mediated Communication, 25*(1), 9-22. https://doi.org/10.1093/jcmc/zmz018

Cavanaugh, S. A. (2013). *Intercultural contact, communication apprehension, and social perspective taking* (Master's thesis, East Carolina University). ProQuest Dissertations & Theses Global. https://media.proquest.com/media/hms/

ORIG/2/cKWAH?_s=BFEfcgBfYYc8fBFaN2FDc7N4mmQ%3D

Charlier, S. D., Stewart, G. L., Greco, L. M., & Reeves, C. J. (2016). Emergent leadership in virtual teams: A multilevel investigation of individual communication and team dispersion antecedents. *The Leadership Quarterly, 27*(5), 745-764. https://doi.org/10.1016/j.leaqua.2016.05.002

Chen, M. (2019). The impact of expatriates' cross-cultural adjustment on work stress and job involvement in the high-tech industry. *Frontiers in Psychology, 10*, Article 2228. https://doi.org/10.3389/fpsyg.2019.02228

Coetzee, S. A., Schmulian, A., & Kotze, L. (2014). Communication apprehension of South African accounting students: The effect of culture and language. *Issues in Accounting Education, 29*(4), 505-525. https://doi.org/10.2308/iace-50850

Corner, J. (2019). Origins and transformations: Histories of communication study. *Media, Culture & Society, 41*(5), 727-737. https://doi.org/10.1177/0163443718820666

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

Daly, J. A. (1978). The assessment of social-communicative anxiety via self-reports: A comparison of measures. *Communication Monographs, 45*(3), 204-218. https://doi.org/10.1080/03637757809375966

de Oliveira, J., da Silva, F. F., Juliani, F., Barbosa, L. C. F. M., & Nunhes, T. V. (2019). Bibliometric method for mapping the state-of-the-art and identifying research gaps and trends in literature: An essential instrument to support the development of scientific projects. In S. Kunosic & E. Zerem (Eds.), *Scientometrics: Recent advances*. IntechOpen. https://doi.org/10.5772/intechopen.85856

England, B. J., Brigati, J. R., & Schussler, E. E. (2017). Student anxiety in introductory biology classrooms: Perceptions about active learning and persistence in the major. *PloS One, 12*(8), Article e0182506. https://doi.org/10.1371/journal.pone.0182506

Erickson, S., & Block, S. (2013). The social and communication impact of stuttering on adolescents and their families. *Journal of Fluency Disorders, 38*(4), 311-324. https://doi.org/10.1016/j.jfludis.2013.09.003

Fall, L. T., Kelly, S., MacDonald, P., Primm, C., & Holmes, W. (2013). Intercultural communication apprehension and emotional intelligence in higher education: Preparing business students for career success. *Business Communication Quarterly, 76*(4), 412-426. https://doi.org/10.1177/1080569913501861

Fan, M., & Cai, W. (2020, 4 August). How does a creative learning environment foster student creativity? An examination on multiple explanatory mechanisms. *Current Psychology, 41*(7), 4667-4676. https://doi.org/10.1007/s12144-020-00974-z

Fiske, J. (2002). *Introduction to communication studies* (2nd ed.). Routledge. https://doi.org/10.4324/9780203134313

Fortner-Wood, C., Armistead, L., Marchand, A., & Morris, F. B. (2013). The effects of student response systems on student learning and attitudes in undergraduate psychology courses. *Teaching of Psychology, 40*(1), 26-30. https://doi.org/10.1177/0098628312465860

Gumpenberger, C., Wieland, M., & Gorraiz, J. (2012). Bibliometric practices and activities at the University of Vienna. *Library Management, 33*(3), 174-183. https://doi.org/10.1108/01435121211217199

Hammick, J. K., & Lee, M. J. (2014). Do shy people feel less communication apprehension online? The effects of virtual reality on the relationship between personality characteristics and communication outcomes. *Computers in Human Behavior, 33*, 302-310. https://doi.org/10.1016/j.chb.2013.01.046

Hashemi, Z., Shokrpour, N., Valinejad, M., & Hadavi, M. (2020). Communication apprehension and level of anxiety in the medical students of Rafsanjan University of Medical Sciences. *Journal of Education and Health Promotion, 9*, p350. https://doi.org/10.4103/jehp.jehp_401_20

Heath, R. L., & Bryant, J. (2000). *Human communication theory and research: Concepts, contexts, and challenges* (2nd ed.). Lawrence Erlbaum Associates Publishers.

Hofmann, S. G., & Hinton, D. E. (2014). Cross-cultural aspects of anxiety disorders. *Current Psychiatry Reports, 16*, Article 450. https://doi.org/10.1007/s11920-014-0450-3

Horowitz, B. (2002). *Communication apprehension: Origins and management*. Singular Thomas Learning.

Horwitz, E. K., Horwitz, M. B., & Cope, J. (1986). Foreign language classroom anxiety. *The Modern Language Journal, 70*(2), 125-132. https://doi.org/10.2307/327317

Hsu, C. (2009). The relationships of trait anxiety, audience nonverbal feedback, and attributions to public speaking state anxiety. *Communication Research Reports, 26*(3), 237-246. https://doi.org/10.1080/08824090903074407

Hunt, J., & Gauthier-Loiselle, M. (2010). How much does immigration boost innovation? *American Economic Journal: Macroeconomics, 2*(2), 31-56. https://doi.org/10.1257/mac.2.2.31

Hunter, K. M., Westwick, J. N., & Haleta, L. L. (2014). Assessing success: The impacts of a fundamentals of speech course on decreasing public speaking anxiety. *Communication Education, 63*(2), 124-135. https://doi.org/10.1080/03634523.2013.875213

Ka-kan-dee, M., & Al-Shaibani, G. K. S. (2018). Tourism students' oral presentation anxiety: A case study. *Pertanika Journal of Social Sciences & Humanities, 26*(T), 231-256.

Krishnan, A., & Atkin, D. (2014). Individual differences in social networking site users: The interplay between antecedents and consequential effect on level of activity. *Computers in Human Behavior, 40*, 111-118. https://doi.org/10.1016/j.chb.2014.07.045

Lam, C. N. C., & Habil, H. (2021). Bibliometric analysis of research on peer feedback in teaching and learning. *Pertanika Journal of Social Sciences & Humanities, 29*(3), 1957-1980. https://doi.org/10.47836/pjssh.29.3.25

Leary, M. R. (1983). Social anxiousness: The construct and its measurement. *Journal of Personality Assessment, 47*(1), 66-75. https://doi.org/10.1207/s15327752jpa4701_8

Ledbetter, A. M., & Finn, A. N. (2013). Teacher technology policies and online communication apprehension as predictors of learner empowerment. *Communication Education, 62*(3), 301-317. https://doi.org/10.1080/03634523.2013.794386

Lim, N. (2016). Cultural differences in emotion: Differences in emotional arousal level between the East and the West. *Integrative Medicine Research, 5*(2), 105-109. https://doi.org/10.1016/j.imr.2016.03.004

Lindh, W. Q., Pooler, M., Tamparo, C., & Dahl, B. M. (2009). *Delmar's comprehensive medical assisting: Administrative and clinical competencies*. Cengage Learning.

MacDonald, K. I., & Dressler, V. (2018). Using citation analysis to identify research fronts: A case study with the Internet of Things. *Science*

& Technology Libraries, 37(2), 171-186. https://doi.org/10.1080/0194262x.2017.1415183

Mahoney, L. M., Lawton, B., & Foeman, A. (2017). Measuring the impact of course modality on student knowledge, performance and communication apprehension in public speaking pedagogy. *Media Watch, 8*(1), 7-19. https://doi.org/10.15655/mw/2017/v8i1/41272

Mardesich, A. (2023). *Techniques for reducing public speaking anxiety in adult English learners* [Master's dissertation, University of San Francisco]. Master's Projects and Capstones. https://repository.usfca.edu/capstone/1532

McCroskey, J. C. (1970). Special reports: 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). Oral communication apprehension: A reconceptualisation. *Annals of the International Communication Association, 6*(1), 136-170. https://doi.org/10.1080/23808985.1982.11678497

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. (1997). Willingness to communicate, communication apprehension, and self-perceived communication competence: Conceptualisations and perspectives. In J. A. Daly & J. C. McCroskey (Eds.), *Avoiding communication: Shyness, reticence, and communication apprehension* (pp. 191-216). Sage.

McCroskey, J. C. (2009). Communication apprehension: What have we learned in the last four decades. *Human Communication, 12*(2), 157-171.

McCroskey, J. C., & Andersen, J. F. (1976). The relationship between communication apprehension and academic achievement among college students. *Human Communication Research, 3*(1), 73-81. https://doi.org/10.1111/j.1468-2958.1976.tb00506.x

McCroskey, J. C., & Beatty, M. J. (1984). Communication apprehension and accumulated communication state anxiety experiences: A research note. *Communication Monographs, 51*(1), 79-84. https://doi.org/10.1080/03637758409390185

Naser, N. A. M., & Isa, I. A. M. (2021). Public speaking anxiety in oral presentation class among undergraduates. *International Journal of Academic Research in Business and Social Sciences, 11*(10), 877-889. https://doi.org/10.6007/IJARBSS/v11-i10/11456

Nelson, D. L. (2011). *ORGB*. Cengage Learning.

Neuliep, J. W., & McCroskey, J. C. (1997). The development of a US and generalised ethnocentrism scale. *Communication Research Reports, 14*(4), 385-398. https://doi.org/10.1080/08824099709388682

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

Punyanunt-Carter, N. M., De La Cruz, J. J., & Wrench, J. S. (2017). Investigating the relationships among college students' satisfaction, addiction, needs, communication apprehension, motives, and uses & gratifications with Snapchat. *Computers in Human Behavior, 75*, 870-875. https://doi.org/10.1016/j.chb.2017.06.034

Radzuan, N. R. M., & Kaur, S. (2016). Engineering students' communication apprehension and competence in technical oral presentations. In A. Normore, L. Long, & M. Javidi (Eds.), *Handbook of research on effective communication, leadership, and conflict resolution* (pp. 371-383). IGI Global. https://doi.org/10.4018/978-1-4666-9970-0.ch020

Richmond, V. P., & McCroskey, J. C. (1998). *Communication apprehension, avoidance, and effectiveness*. Allyn & Bacon.

Richmond, V. P., & McCroskey, J. C. (2000). The impact of supervisor and subordinate immediacy on relational and organisational outcomes. *Communications Monographs, 67*(1), 85-95. https://doi.org/10.1080/03637750009376496

Rimkeeratikul, S. (2023). Communication apprehension and intercultural communication apprehension among MA students at a public university in Bangkok. *LEARN Journal: Language Education and Acquisition Research Network, 16*(1), 429-447.

Sawyer, C. (2018). Communication apprehension. *Oxford Research Encyclopedia of Communication*. https://doi.org/10.1093/acrefore/9780190228613.013.764

Scager, K., Boonstra, J., Peeters, T., Vulperhorst, J., & Wiegant, F. (2016). Collaborative learning in higher education: Evoking positive interdependence. *CBE—Life Sciences Education, 15*(4), Article ar69. https://doi.org/10.1187/cbe.16-07-0219

Sellnow, D. D. (2005). *Confident public speaking*. Thomson/Wadsworth.

Shaw, C. (2013, February 13). Is English still the dominant language of higher education? – live chat. *The Guardian*. https://www.theguardian.com/higher-education-network/2013/feb/13/english-language-international-higher-education?CMP=share_btn_url

Shi, X., Brinthaupt, T. M., & McCree, M. (2015). The relationship of self-talk frequency to communication apprehension and public speaking anxiety. *Personality and Individual Differences, 75*, 125-129. https://doi.org/10.1016/j.paid.2014.11.023

Shimada, S., & Hideshima, E. (2023). The role of facilitators in online discussion in relation to communication apprehension and attitudes toward nonverbal communication. *2023 3rd International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME;* pp. 1-6). IEEE. https://doi.org/10.1109/ICECCME57830.2023.10252412

Siew, C. T., Mazzucchelli, T. G., Rooney, R., & Girdler, S. (2017). A specialist peer mentoring program for university students on the autism spectrum: A pilot study. *PloS One, 12*(7), Article e0180854. https://doi.org/10.1371/journal.pone.0180854

Spector, P. E., & Jex, S. M. (1998). Development of four self-report measures of job stressors and strain: Interpersonal conflict at work scale, organisational constraints scale, quantitative workload inventory, and physical symptoms inventory. *Journal of Occupational Health Psychology, 3*(4), 356-367. https://doi.org/10.1037/1076-8998.3.4.356

Staddon, J. (2020, June 24). Why do American universities lead the world in scientific research? *James G. Martin Center for Academic Renewal*. https://www.jamesgmartin.center/2020/06/why-do-american-universities-lead-the-world-in-scientific-research/

Stahrfisher, S. K. (2013). *An exploratory study of family characteristics as predictors of communication apprehension* [Master's dissertation, Texas Christian University]. TCU Master Thesis. https://repository.tcu.edu/handle/116099117/4504

Stuen, E. T., Mobarak, A. M., & Maskus, K. E. (2012). Skilled immigration and innovation: Evidence from enrollment fluctuations in US doctoral programmes. *The Economic Journal, 122*(565), 1143-1176. https://doi.org/10.1111/j.1468-0297.2012.02543.x

Tahir, H., Khor, J., Mozaka, G. M., Kayode, B. K., & Khan, T. M. (2017). Prevalence of communication apprehension among college and university students and its association with demographic factors: A systematic review and meta-analysis. *Archives of Pharmacy Practice, 8*(4), 87-104.

Valevskaya, N. (2019, April 11). US education system: Basic principles. *Forum Daily*. https://www.forumdaily.com/en/sistema-obrazovaniya-v-ssha-osnovnye-principy/

Valls-Ratés, Ï., Niebuhr, O., & Prieto, P. (2022). Unguided virtual-reality training can enhance the oral presentation skills of high-school students. *Frontiers in Communication, 7*, Article 910952. https://doi.org/10.3389/fcomm.2022.910952

Vogel, R. (2014). What happened to the public organisation? A bibliometric analysis of public administration and organisation studies. *The American Review of Public Administration, 44*(4), 383-408. https://doi.org/10.1177/0275074012470867

Weiten, W., Lloyd, M., Dunn, D., & Hammer, E. (2009). *Psychology applied to modern life: Adjustment in the 21st century*. Wadsworth Cengage Learning.

West, R., & Turner, L. H. (2008). *Pengantar teori komunikasi, analisis dan aplikasi* [Introduction to Communication Theory, Analysis, and Application]. Salemba Humanika.

Ynalvez, M. A., & Shrum, W. M. (2011). Professional networks, scientific collaboration, and publication productivity in resource-constrained research institutions in a developing country. *Research Policy, 40*(2), 204-216. https://doi.org/10.1016/j.respol.2010.10.004

Zakaria, R., Ahmi, A., Ahmad, A. H., & Othman, Z. (2021). Worldwide melatonin research: A bibliometric analysis of the published literature between 2015 and 2019. *Chronobiology International, 38*(1), 27-37. https://doi.org/10.1080/07420528.2020.1838534