

Volume 64

Number 1 2026

NATIONAL SOCIAL SCIENCE TECHNOLOGY JOURNAL

Official Journal of the National Social Science Association



Name of the Publication: **National Social Science Association Journal**
Issue: Volume 64 #1

Online Journals: <https://nssascholars.org/publications/>

The National Social Science Technology Journal is abstracted in Cabell's Directory, Eric Clearinghouse, EBSCO, Economic Abstracts, Historical Abstracts, Index to Periodical Articles, Social Science Source, Social Science Index, Sociological abstracts, the University Reference System.

We wish to thank all authors for the licensing of the articles. In addition, we want to thank all those who reviewed these articles for publication.

Editor: Dr. Benita Bruster, Austin Peay State University

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National Social Science Association Technology Journal

Volume 12 Issue #1

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A Summary Analysis of the D.A.R.E. Program's Effectiveness From 2010 to 2023

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Abstract

Background: Drug Abuse Resistance Education (D.A.R.E.) is a community prevention educational program taught in middle schools to educate children on the hazards of alcohol and drug use. Following the adoption of the D.A.R.E. program in 1983, research emerged continuously suggesting the ineffectiveness of the program in reducing juvenile delinquency, alcohol and drug use, and recidivism. These results led to a restructuring of the D.A.R.E. program, beginning in 1998. Methods: A summary and synthesis analysis of current empirical research (2010-2023) on the D.A.R.E. program's effectiveness was conducted to evaluate its impact on reducing juvenile delinquency and recidivism since the overhaul of the original curriculum. Results: Based on the available research, findings suggest the overall keepin' it REAL curriculum to be an improvement from the original D.A.R.E. program, as well as suggest a statistically significant effect in educating juvenile participants on social and emotional development and awareness in expressing and managing emotions appropriately. Conclusion: Revisions to the original D.A.R.E. program curriculum have resulted in an overall improvement in reducing the risk of alcohol or other drug use after shifting away from the traditional drug-laden education taught in the original curriculum to a social-emotional learning theoretical perspective.

Keywords: D.A.R.E., juvenile delinquency, substance abuse, keepin' it REAL, evidence-based curriculum

Introduction

During the 1980s, a drug epidemic swept across the United States. A new version of cocaine, which was twice as addictive at a partial cost, was introduced to neighborhoods across the United States, targeting minorities, children, and the socioeconomically disadvantaged. As a continuance of President Nixon's war on drugs, President Ronald Reagan continued to promote a more assertive anti-drug policy, most notably the Anti-Drug Abuse Act of 1986, which included the infamous mandatory minimum sentencing for drug offenses (Nordrum, 2014) and the zero-tolerance policy forwarded during the Nancy Regan "Just Say No" campaign (History.com,

2017). National hysteria regarding the so-called “war on drugs” provided the motivation for school-based anti-drug education, which became institutionalized in the form of the Drug Abuse Resistance Education (D.A.R.E.) program started in the Los Angeles School District in 1983 (D.A.R.E. America, n.d.-b). This paper will begin by reviewing the D.A.R.E. program in its initial implementation. Next, it will review the literature on program effectiveness for the original D.A.R.E. curriculum, describe the program revisions embodied in the newer keepin’ it REAL curriculum, and finally offer a meta-analysis of studies that have examined the effectiveness of the new curriculum since its inception in 2007. The purpose of this research is to examine the effectiveness of the keepin’ it REAL program in comparison to the original D.A.R.E. curriculum to determine if an improvement in the overall program has occurred since its revision.

Literature Review

D.A.R.E. America

D.A.R.E. was designed as a preventative or intervention resource focused on educating elementary school students on the dangers of alcohol and other drugs. Law enforcement officers taught the 17-week D.A.R.E. curriculum with the intended additional benefit of improving community-police relations (D.A.R.E. America, n.d.-b; Nordrum, 2014). The D.A.R.E. program quickly gained notoriety despite scientific research evaluating or showing any empirical evidence regarding its effectiveness in reducing alcohol or other drug use among children completing the program.

In the 1990s and early 2000s, scholars began investigating the effectiveness of the program. These studies demonstrated the ineffectiveness of the D.A.R.E. program in the reduction of children engaging in antisocial behavior, particularly alcohol or other drug use or drug abuse, following the completion of the D.A.R.E. program. This included the publication of a study by the American Psychological Association (APA) that highlighted the program’s failure to prevent or reduce alcohol or other drug use in juveniles (Lynam et al., 2009). These findings challenged the usefulness of the program. Efforts for program reform also began to address the continued evidence expressing the failure of the program curriculum

D.A.R.E. Program Effectiveness

DARE quickly gained widespread popularity without evidence supporting any positive effect in reducing drug use. However, studies of the effectiveness of the D.A.R.E. program

emerged in the 1990s, detailing a lack of change in the use of alcohol or other drugs. For example, Lynam et al. (2009) conducted a longitudinal study in 1999 measuring the effectiveness of the D.A.R.E. program on outcomes such as cigarette use, alcohol, marijuana, illicit drug use, peer pressure resistance, and self-esteem for respondents (N=1002) who completed the program approximately 10 years before the study. Findings from this study showed no statistically significant beneficial effect of the D.A.R.E. program on the outcomes targeted by the program. Moreover, the study found a negative association between program completion and overall. Lynam et al. (2009) noted no beneficial effects of the D.A.R.E. program on the above-listed variables over ten years. This study, along with numerous others (including Ennett et al., 1994; Hansen & McNeal, 1997; Rosenbaum et al., 1994), challenges the validity and efficacy of the program.

In the early 2000s, a meeting was held by the Departments of Education and the Department of Justice to converge and address the support and criticism of the D.A.R.E. program. This resulted in the Surgeon General classifying the D.A.R.E. program as ineffective (Rodgers et al., 2007). As a result, in February 2001, the D.A.R.E. curriculum was reviewed, and revisions to the program were considered. A new preventive D.A.R.E. curriculum called “Take Charge of Your Life” was developed for a randomized pilot study involving 7th and 9th-grade students (N=17,000+) (D.A.R.E. America, n.d.-b). However, these revisions were not adopted; in 2003, six long-term studies reviewed by the U.S. General Accounting Office showed no significant difference in alcohol or other drug use between students who received D.A.R.E. education versus students who had not received D.A.R.E. (Rodgers et al., 2007). Once again, the D.A.R.E. program considered revisions (Zong et al., 2005).

Research between 1983 and 2008 has demonstrated that the D.A.R.E. program was ineffective at reducing drug, violence, and gang activity. Therefore, the program is now experiencing significant criticism and has begun searching for an alternative and improved curriculum for reform. Pan and Bai (2009) began conducting a meta-analysis of all studies for the period effectiveness of D.A.R.E. from 1987 to 2003. Pan and Bai (2009) collected both quantitative and qualitative studies (n = 20) conducted from 1987 to 2003 that contained similar criteria and variables for analysis. Characteristics considered by Pan and Bai (2009) included the study, number of D.A.R.E. students evaluated, control group size, statistical method used in the study, D.A.R.E. year evaluated in the study, the time length before follow-up (if applicable) in

the study, the number of females considered in the study, the number of those respondents who were white, black or other ethnicity, the effect size of drug use found in the study, and the effect size of the psychosocial behavior found in the study.

Their meta-analysis found next to no effect in the respondents who completed the D.A.R.E. program on drug use compared to the control group. Overall, this meta-analysis by Pan and Bai (2009) showed little to no positive effect on the effectiveness of the D.A.R.E. program implemented nationwide between 1987 and 2003. Pan and Bai's meta-analysis has challenged the D.A.R.E. program and highlights the dire need to overhaul the curriculum or disband the program. In response to studies detailing the ineffectiveness of the current program, the D.A.R.E. curriculum changed to the current evidence-based curriculum, keepin' it REAL.

New D.A.R.E.: The keepin' it REAL Curriculum

The keepin' it REAL program adopted by D.A.R.E. emphasized a revision of the program's delivery method and incorporated a more interactive approach to facilitation. Traditionally, D.A.R.E. had been a 17-week lecture-based anti-drug curriculum consisting of sessions where D.A.R.E. officers delivered 45-minute lectures on the risks and dangers of alcohol and drug use. The keepin' it REAL curriculum replaced traditional drug-fact lectures with lessons that engaged students in group-based interactions designed to elicit and encourage group discussions on making more informed and intelligent choices regarding alcohol and drug use, as well as violence or gang involvement.

The keepin' it REAL curriculum is designed for elementary and middle-school students and utilizes the theoretical perspective of social-emotional learning (D.A.R.E. America, n.d.-a). The social-emotional learning theory, also known as socio-emotional learning theory or SEL), attempts to enhance emotional literacy and is for academic programs emphasizing social and emotional development. SEL theory identifies ways to improve social and emotional skills and competencies. This includes emotional awareness, expressing and managing emotions appropriately, making informed decisions or responsible choices, developing positive social relationships, and effectively addressing challenging interpersonal situations (Hoffman, 2009, p. 535). The curricula for this new evidence-based D.A.R.E. program utilize SEL theory to teach children methods and techniques to control their impulses and emotions and to consider the risks and consequences of their behaviors to promote "responsible, safe, and healthy choices" (D.A.R.E. America, n.d.-a). Moreover, this program focuses on strengthening children's ability

to understand and control their emotions as well as problem-solving and decision-making skills through social exercises, including teamwork and group work.

This shift from the former didactic lecture style curriculum to a small group-based and interactive learning style reduced the lecture time of the D.A.R.E. officer to approximately 10 minutes of lecture in each of the now 10-week programs. This gives students more time for hands-on learning in group work to improve problem-solving and communication skills. In the keepin' it REAL curriculum, the D.A.R.E. officer uses decision-making concepts to effectively address potentially high-risk situations and emphasizes informed decision-making over traditional lecture-based drug education (D.A.R.E. America, n.d.-b). This hands-on approach is believed to be a more effective teaching model in educating students on reducing future drug use. As a result of D.A.R.E.'s newly revised curriculum with emphasis on decision-making and resistance skills and delivered through an interactive learning style, Hecht et al. (2003) conducted a study of 6035 students, finding that students who completed keepin' it REAL had a 72% reduced rate of substance use compared to students in the control group.

The D.A.R.E. Decision-Making Model

The D.A.R.E. decision-making model utilizes the D.A.R.E. acronym to express a strategy for students to use when developing, articulating, and making an informed decision: Define, Assess, Respond, and Evaluate (Dare.org, n.d.). Defining the problem involves recognizing a challenge or opportunity. In this stage, the student must understand that there is a problem or opportunity and what that problem or opportunity is. Next, the student must assess the situation, including the risk and danger, to develop an informed determination of choices to consider. Following the assessment, the student must now respond using the results of the two previous strategies by making an informed decision. After action has been taken, and it is safe for the student to do so, they must review their decision and evaluate the choice made (i.e., what was good about it, what was bad about it, would the same decision be made again?)

Elementary school curriculum

The D.A.R.E. elementary school curriculum consists of 10 lessons aligned with the National Common Core standards for 5th and 6th-grade education, including reading, writing, speaking, and learning (D.A.R.E. America, n.d.-a). Furthermore, this program promotes active learning through a teaching style that incorporates group work and teamwork-based activities within the nine lessons. A tenth and final lesson is a special event recognizing individual and

group achievements. Furthermore, take-home activities and optional lessons (e.g., family talk and use of inhalants) are encouraged and available for students, but not required material or assignments (Singh et al., 2011). These lessons are within the SEL theoretical framework, promoting introductory lessons on responsible decision-making, self-awareness, and management of emotions, building and improving relationship and communication skills, as well as managing responsibilities and challenges (D.A.R.E. America, n.d.-a). More emphasis on the SEL decision-making from the keepin' it REAL core components are delivered in the middle school curriculum. There is also a D.A.R.E. program available for children between kindergarten and second grade, consisting of four comic book-style posters familiarizing children with emergency service workers such as police officers, firefighters, etc. Figure 1 (listed below) illustrates a breakdown of the goals and objectives of the elementary school D.A.R.E. curriculum.

Middle school curriculum

The middle school curriculum is the core of the keepin' it REAL curriculum of the D.A.R.E. program. This addition to D.A.R.E. America in 2006 emphasizes the “Refuse, Explain, Avoid, and Leave components of the SEL theoretical framework (D.A.R.E. America, n.d.-a; Singh, 2011). This program consists of 10 lessons delivered over the 10 weeks of the course. Each lesson is scheduled for approximately 40-45 minutes and is delivered in class by a certified D.A.R.E. officer. This teaching and delivery method is designed to promote interaction and communication between students and instructors as well as between students and peers. The lessons incorporate personal stories that may resonate with some students while incorporating “risk assessment, decision making, communication, and life skills” into the REAL strategies to resist drugs (D.A.R.E. America, n.d.-a; Singh, 2011). This is similar to the D.A.R.E. Decision-Making Model in the 5th and 6th-grade programs. Within each lesson, activities to engage the students, such as role-playing, group work, teamwork, and homework, are utilized to promote the children’s critical thinking and communication skills. Students are also encouraged to communicate with parents and other family members through “Family Talk” (Singh, 2011). Figure 2 illustrates a breakdown of the objectives and lesson plan of the middle school D.A.R.E. keepin' it REAL curriculum.

High school curriculum

The high school program is a brief, four-lesson curriculum designed to reinforce elementary and middle school concepts on decision-making and communication skills, encouraging the desistance from risk behavior through understanding risk behavior and making decisions that promote safety and health (D.A.R.E. America, n.d.-a). This program was designed for 9th or 10th graders to learn about “personal and social consequences of alcohol or other drug use, reinforce the D.A.R.E. Decision-Making Model, and resist peer pressure” (Singh, 2011, p. 93). Behavior and emotion management techniques without resorting to alcohol or other drugs are also emphasized in this program (D.A.R.E. America, n.d.-a; Singh, 2011). Figure 3 illustrates a breakdown of the objectives and lesson plan of the high school D.A.R.E. curriculum.

Day et al. (2017) conducted a preliminary evaluation of the keepin’ it REAL curriculum among 7th-grade students (N=943). The results of their analysis showed an overall improvement in outcomes such as resisting peer pressure, decision-making knowledge and skills, and confidence in articulating the refusal of cigarettes (Day et al., 2017). Their study suggests that D.A.R.E.’s keepin’ it REAL curriculum is highly effective in drug prevention among students who complete the program. The effectiveness of this new program is credited to its emphasis on making and communicating the right decisions, not drugs—but also applies to anti-drugs.

The research conducted by Pan and Bai (2009) and Singh et al. (2011) analyzed the effectiveness of the D.A.R.E. program through meta-analysis and synthesizing empirical evidence of a combined 27 studies, including more than 14,000 participants reviewed between 1991 and 2009. Pan and Bai (2009) empirically demonstrated the ineffectiveness of D.A.R.E. in 20 independent studies conducted between 1994 and 2003. However, Singh et al. (2011), using studies conducted between 2003 and 2009, find preliminary evidence of improvement in program effectiveness.

Methods

Our research utilizes a summary and synthesis approach to review studies examining the effectiveness of D.A.R.E. from 2010 to 2023. The methods of this analysis are similar to those of Pan and Bai (2009), applying the framework of their methods (e.g., literature search, study inclusion criteria, recorded variables, coding procedures, and statistical analysis).

This research seeks to address the central question: Have revisions to the D.A.R.E. curriculum with the integration of the keepin’ it REAL curriculum improved the overall program

effectiveness of D.A.R.E.? The alternative hypothesis (H_a) in this study is: There is greater effectiveness in D.A.R.E.'s keepin' it REAL curriculum than in studies pre-keepin' it REAL curriculum, concurrent with preliminary research between 2003 and 2009. The null hypothesis in this study is (H_0): There is no significant difference in the effectiveness of D.A.R.E.'s keepin' it REAL curriculum than in studies pre-keepin' it REAL curriculum, not concurrent with preliminary research between 2003 and 2009.

Literature Search

A search of literature was conducted utilizing the PsychINFO, MEDLINE, Sage Publications, Science Direct, and ProQuest databases, as well as the search engine Google Scholar for research published between January 2010 and December 2023. The search was conducted utilizing terms such as "D.A.R.E. program statistics," "D.A.R.E. program effectiveness," and "D.A.R.E. program concerns." This search produced 58 relevant studies published between January 2010 and December 2023. Of the 58 studies, eight were quantitative studies evaluating the effectiveness of the D.A.R.E. program. Of the eight studies, five that fit the criteria for inclusion were used in this meta-analysis.

Study Inclusion Criteria

The inclusion criteria for this summary and synthesis require selected studies to be quantitative studies on the effectiveness of the D.A.R.E. program between the years 2010 and 2022. The quantitative program information must include effectiveness criteria, such as drug use prevention and psychosocial behavior effects, which can be analyzed to identify the differences between the control and sample groups. Additionally, the program outcome of drug use and behavior needs to be included since the D.A.R.E. program emphasizes reducing drug use and risky behavior in adolescence. Experimental design is also considered, with comparisons and analysis between quantitative methods such as general linear, descriptive statistics, or multilevel models.

Recorded Variables

Outcome Measures

Similar to Pan and Bai (2009), the outcome measures of the studies included in our summary analysis focus on the effect size of both drug use and the behavior of the studies. Since preliminary studies show a minimal effect (either positive or negative), this study will measure

the effect size of these two variables to better determine the effectiveness of the revised, evidence-based D.A.R.E. curriculum.

Study Characteristics

Characteristics for analysis include the author and year of the publication, the sample size for both groups (control group and focus group), the statistical method used for the study, the year of the D.A.R.E. data collected, any ethnic groups, and gender information available (Pan & Bai, 2009). The publication year of the study and the data year may be different; therefore, it is relevant to distinguish between the two. The statistical method will identify which statistical method was used in each study. If available, basic demographic percentages such as gender and ethnicity. All relevant statistical data are presented in Table 1.

Findings

Empirical studies from the 1990s and 2000s indicated that the D.A.R.E. program's curriculum and teaching style were largely ineffective and had no statistical significance in the effect on drug use behaviors, as well as marginal effects on dissuading attitudes or beliefs towards drugs (Donnermeyer & Wurschmidt, 1997; Ennet et al., 1994; Gist, 1995; Hansen & McNeal, 1997; Hecht et al., 2003; Rosenbaum et al., 1994). After multiple revisions to the program, the keepin' it REAL curriculum delivered in 2007 shows early signs of success. However, additional research—including longitudinal studies—is recommended to increase the validity of the findings by Day et al. (2017).

Moreover, the literature between 2010 and 2022 was limited, exposing a significant gap that needs to be filled. However, the literature that was able to be found between 2010 and 2023 showed little to no effectiveness in adolescent drug prevention.

Recommendations

This program works, and since research suggests this curriculum is effective, it is recommended that this curriculum continue to be taught in classrooms. Furthermore, this research indicates that it works better when delivered exactly as designed. It should be emphasized to law enforcement officers undergoing the DARE training to ensure they do not deviate from this design. Since SROs have a significant influence on the children in their schools, including rapport, D.A.R.E. training may serve to strengthen the rapport with the children of their school, as well as obtain additional skills regarding interacting with the children and developing positive police perceptions with the children. Officers are regarded as role

models in schools and the community. SROs should take advantage of the opportunity to engage with their students by teaching the D.A.R.E. curriculum rather than outsourcing (if at all) to another agency or officer and policing their schools.

Conclusion

The original D.A.R.E. curriculum was shaped by L.A.P.D. officers and teachers from the L.A.U.S.D., not by prevention specialists or researchers. The initial intention of this program was to reduce alcohol and other drug use among teens while improving community-police relations through a partnership between police and schools in the L.A. region. Early success with the D.A.R.E. program led to widespread, nationwide implementation prior to any scientific review. The United States was in the midst of a nationwide drug scare for citizens and their children. The nonprofit D.A.R.E. America organization achieved nationwide notoriety at an accelerated rate due to the demand for drug and crime prevention programs implemented in public school systems. International notice from this program later emerged as the D.A.R.E. program, which was seen in other countries such as Brazil. However, early research regarding legitimacy and effectiveness concerns emerged and re-emerged throughout the 1990s.

The question regarding the ongoing federal funding and implementation of the D.A.R.E. program in schools nationwide was raised after ongoing research continued to suggest the curriculum was ineffective. Nonetheless, the D.A.R.E. program remains valuable and should be continued and improved due to its extensive network of schools and law enforcement agencies across the U.S. and other countries. This network of police, teachers, researchers, and other professionals is deeply embedded within the D.A.R.E. community and promotes a consensus model for strengthening positive relationships between youth and law enforcement. D.A.R.E. is synonymous with anti-drug education in the schools as well as community-police relations. Finally, the history that D.A.R.E. holds with police and social relationships, as well as the history of working together towards improving a healthy and safe environment for the children in our communities, including essential skills to increase confidence in effective communication and decision-making in risky or dangerous situations, is worth the continued struggle to achieve. Early research regarding this new curriculum shows more effective methods for middle school students empowered by communication and problem-solving skills useful and a greater application than just pressure from alcohol or other drugs, violence, and gang behavior, but also useful in deviating from others in risky or dangerous situations.

The D.A.R.E. program is designed to reduce or prevent alcohol or other drug use in juveniles, preventing juvenile delinquency or reducing recidivism. This research is a summary analysis intended to examine existing literature focused on the effectiveness of the program since its inception. This hands-on and discussion-based approach enables students to cohesively engage in a discussion about building positive social relationships to address challenging interpersonal relationships effectively through an informed decision-making process. This study covered the history of the D.A.R.E. and its inception with the L.A.P.D. and L.A.U.S.D., past studies on the D.A.R.E. program, and both support and criticisms of D.A.R.E. before reviewing the overall findings of the program's effectiveness. Preliminary evaluations of the revised curriculum show a positive impact on adolescents' confidence, knowledge, and decision-making skills in resisting peer pressures regarding alcohol or other drugs. However, further research remains essential in evaluating the longitudinal effectiveness of this revised program.

Ethical Statement

Ethical approval: This research is a summary of existing literature; there are no human subject issues, and IRB is not required. The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article. The authors did not receive support from any organization for the submitted work.

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Appendix

Table 1

Study characteristics and effectiveness of the 6 D.A.R.E. studies collected between 2010 and 2023

Study	N	DARE Years Covered	Key Outcomes Measured	Key Predictors Measured	Summary of Results
Vincus, et al. (2010)	2940	2007-2008	Alcohol, marijuana, tobacco use. Academic performance	Participation in the revised <i>kiR</i> program vs. control group	No statistically significant effects on substance use, mixed results on academic performance
Shamblen, et al. (2013)	3065	2003-2007	Alcohol, Marijuana, cocaine, stimulants, inhalants, prescription drugs. Antisocial Behavior. Attitudes toward Police.	Compared DARE group (updated curriculum) vs. Non-DARE group	No statistically significant evidence of changes in substance use. Marginally better refusal skills and fewer negative attitudes toward police.
Day, et al. (2018)	943	2014	Several variables related to the program learning outcomes, intent to smoke is the only direct substance abuse measure	Compared use of the DARE elementary <i>kiR</i> program to a control group	Positive effects on responsible decision-making, self-monitoring, etc. No effects for avoiding offers, peer pressure, etc.
Evans & Tseloni (2018)	1496	2015-2016	Measured UK Program learning	Compared 4 different	Significant change in communicatio

			outcomes directly: dealing with bullying and peer pressure, stress management, getting help from others, assessing risk and consequences, making safe choices	delivery methods; 100% DARE officer, 50/50 Officer and Teacher, Teacher-led plus officer, 100% Teacher-led	n and listening skills, getting help from others, making safe choices, knowledge about drugs and substance abuse
Hansen, et al. (2023)	3535	2019-2021	Substance use assessments, attitudes and intentions towards substance use, and the ease or difficulty in refusing offers for substances from peer groups	Analyzable pretest and post-test surveys of elementary students completing the <i>kiR</i> program	Statistically significant results suggesting deterrence in alcohol use and vaping
Hecht, et al. (2018)	2781	2009-2012	Substance Abuse Reduction (alcohol, marijuana, cigarettes, chew. Tobacco)	Delivery Quality, adapted vs. non-adapted curriculum, rural vs. urban location	Less cigarette use in adapted rural, Less marijuana use in adapted urban curriculum.

Figure 1

Goals and Objectives of the D.A.R.E. Elementary School Curriculum (D.A.R.E. America, n.d.;

Singh et al., 2010)

Lesson One: Purposes and Overview of The D.A.R.E. Program

This lesson aims to describe and explore the components and use of the D.A.R.E. Decision-Making Model through group and individual work. At the conclusion of this lesson, students should be able to articulate the theme of the D.A.R.E. program as well as identify steps in the D.A.R.E. Decision-Making Model. At the conclusion of this lesson, students will draft a personal reflection letter.

Lesson Two: Tobacco and You

This lesson aims to educate students on the reality of tobacco use and its harmful effects. Through group and individual work, students will utilize the D.A.R.E. Decision-Making Model on tobacco use. This includes negative bodily effects of tobacco use and identifying common beliefs and misconceptions about tobacco. This lesson will also examine reports from national surveys regarding tobacco use and the overall health risk of adolescent tobacco use. At the conclusion of this lesson, students will draft a personal reflection letter.

Lesson Three: Smoke Screen

This lesson aims to educate students on the advertisement rhetoric of tobacco use. This lesson will also begin developing basic knowledge regarding the harmful effects of marijuana as well as compare and contrast the harmful biological effects of marijuana and tobacco. Through individual work, pairs, teams, and large group work, students will understand the misinformation delivered through advertisement and marketing of tobacco products as well as practice applying the D.A.R.E. Decision-Making Model to situations involving tobacco use and marijuana use. At the conclusion of this lesson, students will draft a personal reflection letter.

Lesson Four: Alcohol and You

The goals of this lesson are for students to demonstrate knowledge of the harmful effects of alcohol use. This lesson will utilize the D.A.R.E. Decision-Making Model to identify the neurobiological effects of alcohol, the health benefits of desistence from alcohol use, and understating misconceptions regarding alcohol use. This lesson will also examine reports from national surveys regarding alcohol use and the overall health risk of adolescent alcohol use. At the conclusion of this lesson, students will draft a personal reflection letter.

Lesson Five: The Real Truth

Through individual work, pairs, teams, and large group work, students will understand the misinformation delivered through advertisement and marketing of alcohol as well as practice applying the D.A.R.E. Decision-Making Model to personal situations. The biological harm of inhalants is also discussed in this lesson, as well as consider alternative and healthy activities that do not involve alcohol or other drugs. At the conclusion of this lesson, students will draft a personal reflection letter.

Lesson Six: Friendship Foundations

The goals of this lesson are for students to demonstrate communication skills and the ability to build and maintain healthy relationships. This will be accomplished through team and group work, learning qualities of positive friendships and social support networks, as well as methods for identifying such. Students also learn to identify peer pressure and implement the

D.A.R.E. Decision-Making Model. At the conclusion of this lesson, students will draft a personal reflection letter.

Lesson Seven: Putting It Together

In this lesson, students further discuss personal situations and responses to peer pressure. Students will utilize role-playing to learn and demonstrate confident response styles to pressure situations through the “way to be in charge” technique. Finally, the D.A.R.E. Decision-Making Model is applied to peer pressure scenarios to bolster confidence and understanding. At the conclusion of this lesson, students will draft a personal reflection letter.

Lesson Eight: Personal Action

In this lesson, students discuss confidence and responsibility for recent personal situations involving alcohol or other drugs. A plan of action is also developed using healthy and wise decisions articulated in individual D.A.R.E. reports. At the conclusion of this lesson, students will draft a personal reflection letter.

Lesson Nine: Practice! Practice! Practice!

The goals of this lesson are for students to commit to being drug-free and demonstrate refusal skills and knowledge of the D.A.R.E. curriculum and the D.A.R.E. Decision-Making process. In this lesson, selected D.A.R.E. reports are presented to the class. Also, refusal and negotiation skills are reviewed and practiced as well as healthy methods to express needs, wants, and feelings. At the conclusion of this lesson, students will draft a personal reflection letter.

Lesson Ten: Special Event

The goals for this lesson are to provide a school-appropriate D.A.R.E. activity recognizing students' individual and group achievements and reinforce lessons learned throughout the curriculum. In this lesson, students will participate in the culminating activity recognizing individual and group achievements.

Figure 2

Objectives and lesson plan of the D.A.R.E. Middle School Curriculum (D.A.R.E. America, n.d.)

Lesson One: Options and Choices

Following this lesson, students will identify the Keepin it REAL resistance strategies (Refuse, Explain, Avoid, and Leave) as well as learn terms such as options, choices, and consequences. Students will also learn through scenarios how choices have consequences and the difference between preference and a wise choice. At the completion of the lesson, homework is explained and assigned to the students.

Lesson Two: Risks

Following this lesson, students learn about risk and how to identify potential harmful effects of risk and the influence risk has on choices through an interactive guessing game. At the completion of the lesson, homework is explained and assigned to the students

Lesson Three: Communication and Conflict

Following this lesson, students are able to (re)identify and (re)describe the D.A.R.E. Decision-Making Model. Through conflict stories, students are able to articulate the difference between agreeing and disagreeing. Students learn the behavioral differences between assertive, aggressive, and passive through an assertiveness activity. At the completion of the lesson, homework is explained and assigned to the students

Lesson Four: Refuse

Following this lesson, students have emphasized the “Refuse” strategy and are better able to express “No” in an articulate manner. Verbal and non-verbal assertiveness techniques are also learned through a series of activities, videos, and discussions. At the completion of the lesson, homework is explained and assigned to the students

Lesson Five: Explain

Following this lesson, students have emphasized the “Explain” strategy and are better able to articulate a rationale for their actions. Students are also able to communicate this strategy using “I statements” learned within the lesson activities. At the completion of the lesson, homework is explained and assigned to the students

Lesson Six: Avoid

Following this lesson, students have emphasized the “Avoid” strategy and are able to articulate a variety of methods to avoid a risky situation. At the completion of the lesson, homework is explained and assigned to the students

Lesson Seven: Leave

Following this lesson, students have emphasized the “Leave” strategy and are able to identify situational risks in which to implement the “Leave” strategy. At the completion of the lesson, homework is explained and assigned to the students

Lesson Eight: Norms

Following this lesson, students learned the difference between norms and peer norms and were able to identify drug use norms among their peers. Students are also able to explain the influence norms have on students’ decisions. At the completion of the lesson, homework is explained and assigned to the students

Lesson Nine: Feelings

Following this lesson, students are able to gain a level of empathetic emotional competence. Through discussion, activity, and role-playing scenarios, students are better

equipped to express the validity of their feelings and recognize other people have different methods for expressing the different emotions they may have. At the completion of the lesson, homework is explained and assigned to the students

Lesson Ten: Support Networks

Following this lesson, students are able to understand the concept and benefits of a support network. Develop strategies for utilizing resources for support and asking for help. Students are also better able to articulate the key concepts within the curriculum.

Figure 3

Objectives and lesson plan of the D.A.R.E. High School Curriculum (D.A.R.E. America, n.d.)

Lesson One: Your Community and Perceptions of Alcohol and Other Drug Use

Following this lesson, students will gain a deeper understanding of alcohol and other drug use's effects on their community. Students will gain a deeper understanding of the influence social norms possess in shaping their behavior. The students will also understand they play a significant role in their community and the importance of being a good community member. Finally, students will learn the majority of high school students do not use alcohol or other drugs.

Lesson Two: Consequences

Following this lesson, students learn about the neurological effects of alcohol or other drugs on the adolescent brain. Students are better equipped to articulate negative consequences associated with alcohol and other drug use. Finally, students gain a deeper understanding of the risk associated with alcohol or other drug use.

Lesson Three: Reasons for Use and Resisting Pressure

Following this lesson, students are able to possess a deeper understanding of why some people resort to alcohol or other drug use, as well as alternative behavioral or emotional management techniques used to avoid drug use. Students gain a deeper understanding of peer pressures, including the mechanisms and rationale for why some people might pressure others. Finally, develop techniques and a personal plan for handling peer pressure regarding risky situations, including alcohol or other drug use.

Lesson Four: Being an Upstander

Following this lesson, students will understand they serve an essential role in their high school community. Students also gain a deeper understanding of the pressures they face or those faced by their peers. Finally, students gain confidence in safely addressing a scenario involving risky behavior, including situations involving alcohol or other drugs.

The Weapons Priming Effect: A P-Curve Analysis

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Abstract

Although there is evidence that short-term exposure to weapons increases the accessibility of aggressive thoughts, even with publication bias considered (Benjamin et al., 2018), the extent to which questionable research practices, such as p-hacking, influence our understanding of the phenomenon has not been tested. The results of a p-curve analysis show that there is no tangible evidence of p-hacking. However, p-curve analysis cannot address other concerns, such as potential experimenter allegiance effects or publication bias. It is recommended that more efforts to independently replicate the findings of earlier research (e.g., Anderson et al., 1998) are conducted and reported to improve confidence that the effect is robust.

Key Words: Weapons Priming Effect, Aggressive Cognition, Aggression, Meta-Analysis, Psychology

Introduction

It has been nearly six decades since Berkowitz and LePage (1967) published their experiment demonstrating the possibility that short term exposure to weapons could increase aggression. In that experiment, Berkowitz and LePage (1967) demonstrated that highly provoked participants who had been exposed to weapons behaved more aggressively (i.e., gave more electric shocks) than highly provoked participants who had been exposed to neutral objects. At the time, the finding was controversial and led to a number of replication attempts with mixed success with some investigators successfully replicating the finding e.g., Caprara et al., 1984; Frodi, 1975) and others unable to replicate the finding. (e.g., Buss et al., 1972). Although the findings as reported in the published literature appeared to be mixed, a meta-analysis by Carlson et al. (1990) appeared to definitively declare that the weapons effect was robust under conditions of high provocation, thus appearing to settle the debate. Subsequent research on the weapons effect would shift from measuring aggressive behavior to examining underlying psychological processes such as cognition.

As the 1990s progressed, some researchers began to investigate the possibility that short term exposure to weapons and weapon images could semantically prime aggressive cognition

(Benjamin, 2021), utilizing techniques developed by cognitive psychologists and theoretical models developed by social psychologists influenced by cognitive theory. Berkowitz (2012) had postulated in his Cognitive Neoassociation Theory of Aggression that aggression-inducing stimuli could make aggressive thoughts stored in long-term memory more accessible, thus increasing the probability of an aggressive behavioral outcome. Similarly, Anderson and Bushman (2002) proposed in the General Aggression Model that stimuli such as weapons could prime aggressive cognition which was one of three routes to aggression (cognitive, affective, arousal). Some combination of these routes to aggression are considered to influence the probability of an aggressive behavioral outcome. For example, once aggressive thoughts (e.g., aggressive and violent behavioral scripts, schemas, or other aggression-related semantic or autobiographical memories) have been primed by weapons, the General Aggression Model postulates primary and secondary appraisals (e.g., threat detection) are triggered followed by aggressive verbal and non-verbal behavior. According to the General Aggression Model, unless aggressive cognition is primed by a weapon, there will be no increase in aggressive behavior. By the mid-1990s, the first published report demonstrating a potential link between weapon primes and aggressive cognition (Anderson et al., 1996) was published. Although a weapons priming effect was not the primary focus of that article, it paved the way for subsequent experiments. For the purpose of this article, a weapons priming effect refers to situations in which weapons prime aggressive cognition. In other words, aggressive thoughts will become more accessible once one has been exposed to a weapon or weapons, even for a brief period.

The first article purporting to establish a semantic priming effect of weapons on accessibility of aggressive cognition was published by Anderson and colleagues (1998). The authors reported two experiments in which either weapon words (Experiment 1) or weapon images (Experiment 2) were used to prime aggressive thoughts. In each experiment, participants were exposed to either a pair of words or a pair of words and images. The prime words or images were either weapons (guns, clubs, knives) or neutral objects (e.g., flowers) and the target words in each pair were aggressive or neutral. After viewing each prime word or image, participants read aloud the target word into a microphone connected to a computer which recorded the reaction time (the amount of time between presentation of the target word and when participants began to read the target word aloud) in milliseconds. The fastest reaction time in each of the two experiments was found for aggressive target words after viewing a weapon prime word or image.

The findings led to subsequent published replications (e.g., Bartholow & Hines, 2006; Benjamin & Crosby, 2019; Bushman, 2017; Lindsay & Anderson, 2000) utilizing a variety of cognitive techniques (e.g., lexical decision task; aggressive word completion task). A more recent meta-analysis (Benjamin et al., 2018) demonstrated that the average overall effect size for experiments in which weapons were used to prime aggressive cognition was small but apparently robust to potential publication bias effects, based on a combination of techniques used to detect potential publication bias. Although the scope of the meta-analysis by Benjamin and colleagues was far broader than merely examining cognitive outcomes, the analyses of cognitive priming effects in that meta-analysis offered support for the cognitive models that aggression researchers in social psychology rely upon (e.g., Anderson & Bushman, 2002; Berkowitz, 2012).

Although the meta-analysis by Benjamin and colleagues (2018) offered support for the weapons priming effect, the techniques used in their meta-analysis did not allow for the exploration of potential p-hacking, a questionable research practice in which authors achieve statistical significance by selectively removing data or otherwise manipulating the data until significance is achieved. P-curve analysis (Simonsohn et al., 2014) is a meta-analytic technique that has the potential to detect potential p-hacking within a body of research literature. The basic premise of p-curve analysis is simple: a right-skewed curve indicates that there is no evidence of p-hacking. In other words, the p-values of the included test-statistics are near $p = .00$. If there are numerous test statistics with p-values close to $p = .05$, there would be no right-skew curve, and that would call into question whether or not there were selective publication and p-hacking for the research question being examined. P-curve analysis also tests to detect if statistical power is 33% or greater. If the p-curve is right-skewed and the power analysis noticeably exceeds 33%, it can be concluded that the findings within a research literature are reliable, and that there is no evidence of potential p-hacking. For the purposes of this study, published articles in which the independent variable is short-term exposure to weapons and the dependent variable is accessibility of aggressive cognition will be examined.

Method

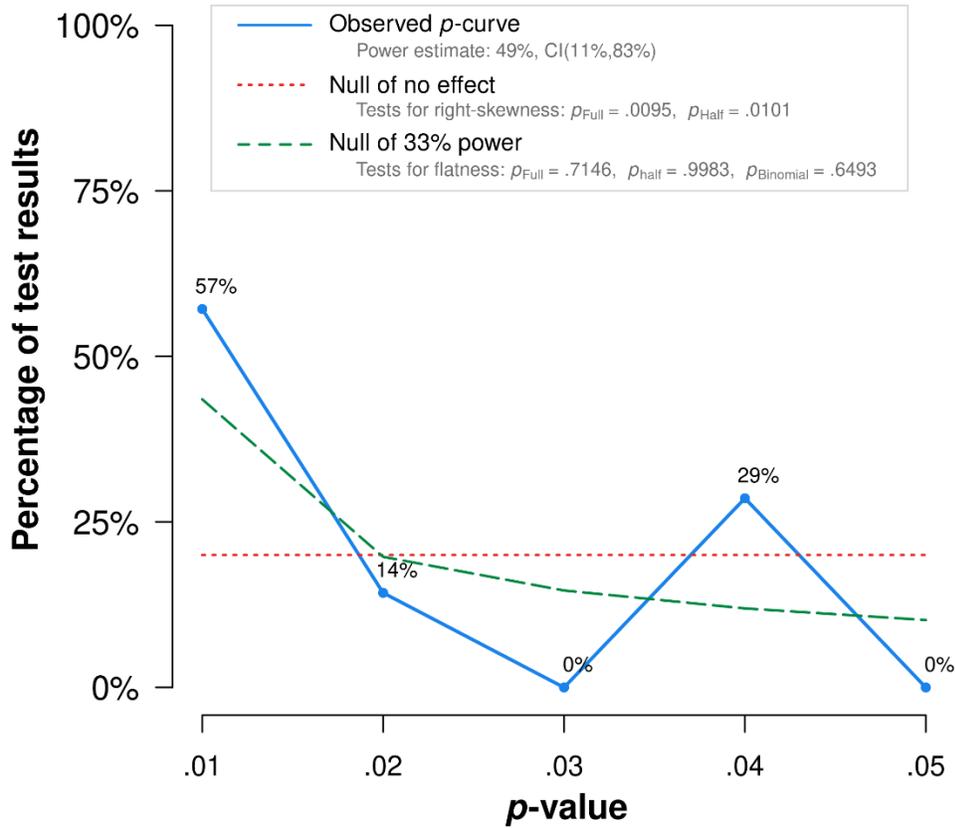
To search for relevant articles for this study, articles included in Benjamin et al. (2018) were re-read for potential inclusion. Citations of each article in Google Scholar were also read for potential inclusion. Articles were included if they included an independent variable of short-term exposure to weapons, weapon images, or weapon-related words (e.g., guns, knives)

and included a dependent variable using a recognized measure accessibility of aggressive cognition (e.g., lexical decision task, pronunciation task, Stroop task, Aggressive Word Completion Task, or a recall task). Studies were excluded if they were unpublished (e.g., Deuser, 1994; Korb, 2016). In addition, an article included in Benjamin et al. (2018) was excluded due to being retracted (Zhang et al., 2016). One study was excluded due to a failure to report a direct hypothesis test between weapon and neutral conditions (Bartholow et al., 2005). Finally, studies that used dependent variables that could serve as potential proxies for aggressive cognition, such as the Aggression Questionnaire (Buss & Perry, 1992; e.g., Gallina & Fass, 2014) were excluded from this analysis as such instruments were designed to measure some facet of personality, rather than purely cognition. In total, eight articles were included in this analysis. Relevant test statistics and degrees of freedom were uploaded to the p-curve app (v. 4.06). Each line in the p-curve all (v. 4.06) included the following information about a test statistic for a specific hypothesis test: the test statistic (e.g., t-test, F-test), the degrees of freedom for the test statistic, and the test statistic itself (the specific t-test value or F-test value). This process was repeated for each test statistic included for this analysis. Once all information was entered, the app generated a p-curve.

Results

Of the eight studies analyzed, the p-curve app removed one study due to a non-significant p-value (Lindsay & Anderson, 2000). Overall, the p-curve showed a significant right-skew, $Z = -2.35$, $p = .0095$. The null of a flat curve was rejected. The test of power less than 33% was nonsignificant, $Z = 0.057$, $p = .71$. Overall power for the included studies was 49% with confidence intervals ranging from 11% to 83%. The findings suggest that this body of research appears to be reliable. See Figure below.

Figure 1



Note: The observed p -curve includes 7 statistically significant ($p < .05$) results, of which 5 are $p < .025$. There was one additional result entered but excluded from p -curve because it was $p > .05$.

Discussion

The weapons priming effect literature in its current form appears to be relatively free of p -hacking, based on the above findings. In addition, these findings dovetail with the meta-analysis by Benjamin et al. (2018), suggesting that weapons reliably prime aggressive cognition. Overall, the p -curve was right-skewed, meaning that most p -values were closer to .00 as opposed to $p = .05$. The level of power in these studies was above 33%, although still arguably low relative to contemporary industry standards: most psychological researchers advocate for statistical power of at least 80%.

Although the findings from this analysis are promising, it is worth noting that this analysis has some limitations. First, the sample of studies included was relatively small. Since

research on the weapons priming effect is arguably an offshoot of media violence research, the fact that this niche area of research would yield a relatively small number of studies is not surprising. More concerning is the fact that with a single exception (e.g., Holbrook et al., 2014) the studies included were conducted by the same group of researchers who are connected to Craig Anderson either as colleagues or as former graduate students. Hence, we do not know if the weapons priming effect initially discovered by Anderson et al. (1998) can be reliably replicated by independent researchers and research teams. Nor can a p-curve analysis necessarily shed light on potential file-drawer or publication bias effects by itself.

The question of whether short-term exposure to weapons increases accessibility of aggressive cognition does have a tentative affirmative answer. It appears that the conclusions Benjamin and colleagues (2018) regarding the reliability of the influence of weapons on aggressive cognition are further supported by this p-curve analysis. It would be helpful if there were more independent replication attempts (regardless of success) were either published in peer-review journals or as preprints in order to have more confidence in the findings in this body of research. The relatively low power in this sample is not surprising given the small samples used in many of the included studies, especially when one considers that the raw effect size in this literature is fairly small but noticeable (Benjamin et al., 2018). Future research on the weapons priming effect should utilize strategies necessary to increase power to at least 80%, such as a multi-labs approach (Open Science Collaboration, 2015). A multi-labs or many labs approach (Klein et al., 2014) has been used successfully for other phenomena in social psychology either to support or debunk research claims (e.g., McCarthy et al., 2018) and is especially useful when conducting research on phenomena in which the effect might be small or subtle, enabling researchers to better assess the robustness of research claims by collecting a sufficiently sized sample at multiple sites independently while utilizing identical research protocols and analyses. Given that the weapons priming effect is one that appears to be small or subtle, a large sample that a multi-labs study directly replicating the experiments conducted by Anderson and colleagues (1998) would enable us to better determine if the effect is sufficiently reliable both as a theoretical matter and for potential practical applications.

In summary, this p-curve analysis supports some of the findings in Benjamin et al. (2018) regarding the influence of weapons as primes on aggressive cognition. Although the body of research is relatively modest, it appears to be robust and the published research appears to be

trustworthy. Larger samples and more independent research will enable aggression researchers and those who rely on aggression research to have more confidence in the validity of this line of research.

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Hidden in Stealth Mode: A Quantitative Content Analysis of Twice Exceptional Education Across Educational Fields

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Abstract

Twice-exceptional students, those who are both gifted and have disabilities, occupy a unique and often overlooked space in education. While the term “twice-exceptional” has gained traction within gifted education, its visibility across broader educational literature remains limited. This study used quantitative content analysis to examine how often and where the term appears in scholarly publications across gifted education, special education, and educational psychology from 2010 to 2022. A sample of 100 peer-reviewed sources was analyzed by field, publication type, geographic focus, and empirical status. Results revealed that the term “twice-exceptional” continues to operate in a kind of academic stealth mode, highly visible within gifted education but largely absent from special and general education discourse. These findings suggest that without wider visibility, the identification and support of 2e learners may remain fragmented. The study calls for greater interdisciplinary alignment and consistent terminology to bring twice-exceptionality out of the margins and into full view across educational research and practice.

Key Words: Twice-Exceptional (2e), Gifted Education, Special Education, Quantitative Content Analysis

From the early emergence of twice-exceptional education, the phenomenon of learner invisibility and masking, where abilities and disabilities conceal one another, has been recognized as a defining feature of the 2e experience. Baldwin and Vialle (1999) were among the first to describe how highly able children may "wear masks" with disabilities such as learning

disorders, emotional challenges, autism, or ADHD obscuring their advanced abilities and vice versa. These students often present as average achievers, making their giftedness invisible because of the co-existing barriers they face. The metaphor of "stealth mode" captures this dynamic, as either their gifts or challenges frequently go undetected by general education teachers and, at times, even their parents (Baum & Owen, 2004; Canada, 2017; Tobin, 2022).

Building on this insight, Baum et al. (2017) identified three categories of twice-exceptional learners: those recognized as gifted but not disabled, those identified for disability services but not gifted programs, and those not identified as either. They described the internal conflict experienced by these students as a "tug-of-war," where "abilities hid their disabilities, and the disabilities disguise their area of giftedness" (p. 46). This dissonance can lead to emotional distress, as illustrated by a student who described feeling "smart and dumb at the same time," a paradox found to be deeply frustrating by Mendaglio (1993). Foley-Nicpon et al. (2011) supported this view, noting that 2e students may "unintentionally mask their ability and/or disability and simultaneously experience confounding social difficulties" (p. 14). The masking effect not only conceals the abilities and disabilities of twice-exceptional learners, but it also often renders them invisible within educational systems. This invisibility extends beyond individual identification to the broader conceptual recognition of twice-exceptionality itself.

Twice-Exceptionality

Several definitions of twice-exceptionality have emerged over time. Reis et al. (2014) provided one operational definition, while another was developed by the 2e Community of Practice (Hughes et al., 2015; Baldwin et al., 2015). The Council for Exceptional Children-The Association for the Gifted (CEC-TAG, 2022) adapted the 2e Community of Practice definition. This adapted definition was used to guide this research because a collaborative team of scholars refined and operationalized it across the areas of identification, instruction and support services for the population. The CEC-TAG (2022) definition follows herein:

Twice-exceptional (2e) individuals evidence exceptional ability and disability, which results in a unique set of circumstances. Their exceptional ability may dominate, hiding their disability; their disability may dominate, hiding their exceptional ability; each may mask the other so that neither is recognized nor addressed.

Additionally, twice-exceptional individuals come from and are impacted by all forms of diversity.

CEC-TAG (2022) further specifies that 2e students may perform below, at, or above grade level and require tailored approaches in:

- Identification: Methods that consider interactions between exceptionality areas.
- Instruction: Opportunities that nurture strengths while addressing learning needs.
- Support Services: Accommodations and interventions for academic and emotional success (CEC-TAG, 2022).

While this definition offers a comprehensive framework, its adoption across educational domains remains inconsistent. Despite the existence of formal definitions, it remains unclear how widely the term “twice-exceptional” has been disseminated. Gifted education literature has had minimal impact beyond its field, aside from influencing differentiation and intelligence discourse (Warne, 2016). Foley-Nicpon et al. (2013) found that professionals in other fields often lack awareness of 2e students’ needs, contributing to service gaps.

It can be speculated that the term has struggled to gain traction outside of gifted education because of disciplinary silos, lack of adequate educator preparation, or competing frameworks in special education. Greater cross-field engagement and shared terminology are needed to support these learners effectively. The absence of consistent definitions and shared terminology contributes to fragmented identification and support models, leading to under-identification and inequitable outcomes, as well as hindering professional understanding and service delivery (McDonald et al., 2013). Without a common language and conceptual clarity, twice-exceptional learners risk being underserved by systems that fail to recognize their dual needs

The purpose of this study is to investigate the extent to which the concept of twice-exceptionality has gained visibility across written communication in and beyond educational research domains of educational literature, especially beyond the area of gifted education. Using the research methodology of quantitative content analysis, the study proposes to answer the following research questions:

1. To what extent has the term “twice-exceptional” appeared in written communication across educational and non-educational research literature outside the field of gifted education between 2010 and 2022?
2. In which academic disciplines is twice-exceptionality (2e) most frequently discussed or published (e.g., special education, educational psychology, general education, or others)?
3. What types of publications (e.g., peer-reviewed journals, dissertations, newsletters, conference proceedings) most frequently engage with the concept of twice-exceptionality, and how do these sources differ in the depth and scope of their coverage?
4. Who are the most frequently cited or contributing authors in the twice-exceptionality literature, and what patterns emerge from their recurring presence across publications?
5. What types of research are being conducted with, for, and about twice-exceptional learners and their education?
6. What populations of twice-exceptional subjects are being targeted for research studies, and where is such research occurring?

Literature Review

While several qualitative content analysis studies have been conducted in gifted education (Bayar & Çepni, 2022; Lockart et al., 2021; Maxwell, 2008; VanTassel-Baska & Brown, 2007), only one study was found that specifically addressed twice-exceptional learners (Bole, 2006). A comprehensive search of the EBSCOHOST and ProQuest databases revealed a notable gap in quantitative content analysis research within this domain.

Only one quantitative content analysis study was identified in the field of gifted education, and none were found that focused specifically on twice-exceptional learners. Gokaydin et al. (2017) conducted a quantitative content analysis of studies on language learning among gifted individuals, identifying publication trends and thematic focus areas. Their findings underscore the use of this method for mapping research landscapes and highlight the potential for applying similar approaches to twice-exceptionality. However, no quantitative content analysis studies were found that directly examine the use of the term “twice-exceptional” across educational disciplines, reinforcing the need for the present study.

Method

Rationale for Content Analysis

Quantitative content analysis is a widely used method for understanding communication and tracking trends across disciplines such as sociology, marketing, media studies, and psychology (Hassan, 2024). Public opinion in education is often shaped by biases and misinformation, which are boosted by gaps in the professional literature. Neuendorf (2017) defined the methodology of content analysis as a “systematic objective, quantitative analysis of written communication” (p. 1). The purposes of content analysis include a) "a description of the substance or characteristics of a message, b) description of the form of the message, c) inferences to the audience about such content, and d) the effect of content on the audience" (p. 41). Given the study’s focus on term frequency and disciplinary diffusion, quantitative content analysis offers a replicable and objective approach to mapping the presence of twice-exceptionality in scholarly discourse.

To achieve the research goal of determining the use of the term “twice exceptional” in other fields, quantitative content analysis was used in this study to assess the reach of written communication regarding twice exceptionality beyond and within scholarly books and journal articles in the field of gifted education. This approach enables a systematic archival description of messages, facilitating longitudinal analysis of written communication (Neuendorf, 2017). The methodology of content analysis is closely related to survey research; however, "instead of human beings as its units of data collection and analysis it uses messages" (p. 36). In this methodology there is no manipulation of variables and researchers read, view, tabulate, or otherwise decode the target content and record objective, careful observations.

Definition and Scope

Content analysis is a research method that involves systematically examining various forms of communication—such as written, visual, or spoken texts—to uncover recurring patterns, themes, or underlying meanings. Researchers may focus on manifest content, which includes clearly observable elements like words and images, or latent content, which involves interpreting deeper, implicit meanings embedded within the communication (Siegle, 2024). The quantitative content analysis research method consists of recording tabulations or counts to measure the observed frequency of

“pre-identified targets”, emerging from consumer research (Kleinheksel et al., 2020, p. 7113). In this study the pre-determined target is the term "twice-exceptional."

Quantitative content analysis was selected because it enables systematic, objective, and replicable quantification of written communication found in text-based sources (Neuendorf, 2017; Kleinheksel et al., 2020). Unlike literature reviews and qualitative content analysis which synthesize findings thematically, quantitative content analysis involves coding and tabulating predefined terms or variables within a dataset to determine measure the dissemination of concepts across fields over time.

There is a need to carefully examine what has been published in professional journals as these documents provide a "unique and significant influence" (Mastropieri et al., 2009, p. 96). By examining the presence and focus of the term across disciplines, this study offers insight into the reach of 2e written communication in professional literature and identifies gaps that may hinder interdisciplinary collaboration and student support. Building on this methodological foundation, the study applies quantitative content analysis to examine the visibility of twice-exceptionality across educational literature.

Application to the Current Study

The goal of this study was to determine how frequently and in what contexts the term twice-exceptional appears across various educational subfields and publication types between 2010 and 2022. The 2010–2023 range was selected to capture contemporary developments in twice-exceptionality research, reflecting shifts in educational policy, inclusive practices, and neurodiversity discourse. This period also aligns with increased digital access to publications and the emergence of 2e as a more widely recognized construct across disciplines. Earlier literature was reviewed for context but excluded from analysis to maintain relevance and consistency.

This methodological framework provides the foundation for analyzing the visibility and diffusion of twice-exceptionality across educational literature, as detailed in the following sections. Figure 1 presents the procedural flow of the content analysis methodology adapted from Neuendorf (2017), illustrating the progression from theoretical framing to data tabulation.

Figure 1.

Flowchart for Quantitative Content Analysis Research Design (Neuendorf, 2017) for Twice-Exceptional

Theory, rationale & Research Question:

- **Theoretical framework for this study:** *Content Analysis*
- **Rationale:** Educators in all fields need to know about twice exceptional
- **Research Question:** To what extent has the term “twice-exceptional” appeared in written communication across educational and non-educational research literature outside the field of gifted education between 2010 and 2022?



Conceptualizations: (Variables used in the study):

- “twice-exceptional” (with hyphen), OR “twice exceptional” (no hyphen) OR “2e AND gifted” (comparative citations)
- year of publication (2010 - 2021)
- focus of the entry
- field of publication: (gifted education, special education, psychology, general education, other)
- Type of publication: journal, newsletter, dissertation, conference proceeding, or book
 - Scientific nature of publication: Empirical or non-empirical;
 - Type of Research study: Quantitative or qualitative.
- Geographic regions of origin of the publication: United States, Americas without the US, Europe, Middle East, Asia, or Oceania
- Number of participants in empirical studies
- Demographic of population of publication
- Themes of publications in studies



Database used:

ProQuest Academic One Database: Searches a collection of 22+ databases; includes scholarly journals, books, eBooks, current news, working papers, magazines and trade journals, case studies, dissertations and theses, streaming video



Tabulation Scheme: Counts and groupings (See tabulation below)

2 counters were used; counting was done independently

Inter-rater reliability between the two counters was 98-100% on all measures



Sampling:

Used Online Random Number Generator to select database entries for review Inserted entries into spreadsheet; entries were numbered.



Training and pilot reliability

Inter-rater reliability between the two coders was 98-100% on all measures



Tabulation and reporting counts

- Twice exceptional as the focus of the entry vs. casual mention.
- Publication year
- Field of Publication
- Authorship
- Types of publication
 - Type of Research Study (quantitative, qualitative, mixed methods)
 - Population Demographic
 - Geographic Region of Origin

Data Source and Selection Criteria

Documents were retrieved from the ProQuest Academic OneFile database, which written communication from professional education sources (peer-reviewed journals, dissertations, books newsletters, and conference proceedings) and artifacts not typically included in scholarly databases (newspapers, public-service announcements, etc.). The contents of this database closely aligned with our research goal of uncovering the extent of the usage of the term "twice exceptional" in publications both within and beyond the field of gifted education

The search was limited to English-language publications from 2010 to 2022. The following search terms were used: a) “twice-exceptional,” b) “twice exceptional,” and “2e AND gifted.” Restricting the study to English-language publications is practical given the prominence of English in academic discourse, especially in education. While this ensures consistency and accessibility, it may limit the findings because of the exclusion of relevant research from non-English-speaking regions, slightly narrowing the global scope.

Boolean operators were used to exclude irrelevant instances of “2e” such as those found in chemistry or engineering contexts. From the 1,353 unique entries identified, a random sample of 132 records was selected using an online random number generator. After screening for relevance, 100 documents were retained for full coding and analysis.

Coding Framework

Once the sample was finalized, a coding framework was developed to systematically analyze the selected documents. Each document was coded for the following variables: a) field of publication (e.g., gifted education, special education, educational psychology, general education), b) type of publication (e.g., journal article, dissertation, newsletter, book), c) depth of reference of publication (focus, broad mention, or casual aside), d) research methodology of publication (qualitative, quantitative, mixed methods, non-empirical), e) types of research (empirical vs. non-empirical), g) geographic origin of publication (country of origin of the publication), h) population focus of publication (e.g., students, teachers, parents), i) focus of publication (e.g., identification, teacher experiences, social-emotional development).

Coding Process (Tabulation) and Reliability

Two researchers with doctoral expertise in gifted and special education independently tabulated each entry. The term “tabulation” is used in place of “coding” to reflect the quantitative nature of the study and distinguish it from interpretive qualitative approaches. Tabulation protocols were established a priori and refined after initial calibration. Inter-rater agreement across all variables ranged from 98% to 100%. This analysis aims to determine the extent to which the term ‘twice-exceptional’ has permeated educational scholarship beyond the boundaries of gifted education.

The following section presents the findings from this analysis, highlighting patterns in term usage, disciplinary representation, and focus. These frequency comparisons suggest that while terms related to disability and giftedness are widely represented in educational literature,

the specific construct of twice-exceptionality remains comparatively underrepresented. Descriptive statistics were used to summarize the frequency and distribution of 2e-related references across disciplines, publication types, and years. Patterns were identified to assess the depth and focus of 2e discourse in the literature. Tables (located in the Appendix) were used to present findings related to publication trends, disciplinary representation, and research themes.

Results

The results of this study provide insight into the emerging visibility of twice-exceptionality in the literature. This section presents findings that address each of the study's research questions, beginning with an analysis of how the term twice-exceptional has gained visibility across educational literature within and beyond the field of gifted education between 2010 and 2022.

Comparative Frequency of Twice-Exceptionality in Written Communication (2010-2022)

Results of database searches provide a comparative analysis of how frequently the term twice-exceptional (and related terms) appears in scholarly literature relative to other educational terms. The search was conducted across three major fields: gifted education, special education, and educational psychology using ProQuest databases. The search terms included both broad categories (e.g., *gifted students*, *learning disabilities*) and specific exceptionalities (e.g., *autism*, *visual impairment*) to contextualize the visibility of twice-exceptional learners. Table 1 in the Appendix provides this overall data related to the comparative frequency of the written communication of "twice-exceptional."

The search for "twice-exceptional" yielded 3,472 results, which was reduced to 1,353 unique entries after removing duplicates. A 10% random sample (n = 132) was selected for preliminary review, following Radziwill's (2017) recommendation for trend identification with statistical power. After excluding 32 irrelevant entries (e.g., advertisements, school listings), 100 substantive records remained for full analysis.

Research Question 1

To what extent has the term "twice-exceptional" appeared in written communication across educational and non-educational research literature outside the field of gifted education between 2010 and 2022?

Response to Research Question 1

Research question #1 can be answered by the data included in Table 2 Depth of Engagement in Journal Titles (2010–2022) and in Table 3 Years of Publication. Table 1 and 2 can be found in the Appendix.

Table 2 shows how 132 peer-reviewed articles engaged with the term *twice-exceptional*. Of these, 76% (n = 100) explicitly focused on the concept, indicating strong centrality in a core group of studies. Another 17% (n = 22) offered general references—such as definitions or brief mentions—while 8% (n = 10) mentioned the term only in passing. This distribution suggests that while twice-exceptionality is gaining traction in specialized academic discourse, its broader integration across educational fields remains limited. Expanding its presence beyond niche contexts is essential for fostering interdisciplinary collaboration and more equitable support for 2e learners.

Table 3 tracks annual references to “twice-exceptional” or *2e* in scholarly literature from 2010 to 2022. The data reveal an uneven but generally upward trend, with modest citation rates (4–13 per year) from 2010 to 2017. A notable spike occurred in 2018, with 21 references, possibly reflecting a catalytic publication, policy shift, or surge in advocacy. However, this momentum was not sustained: from 2019 to 2022, references declined sharply, fluctuating between 2 and 6 annually, with 2022 marking the lowest point. This pattern reflects both progress and volatility in the visibility of twice-exceptionality. While the term has gained some traction, its inconsistent presence suggests it remains a specialized topic rather than a mainstream research focus. Sustained integration into broader educational research, especially in special education, teacher preparation, and policy, is essential to prevent the field from fading back into stealth mode. Table 3 can be found in the Appendix.

Research Question 2

In which academic disciplines is twice-exceptionality (2e) most frequently discussed or published (e.g., special education, educational psychology, general education, or others)?

Response to Research Question 2

Data from Table 4 Fields of Publication of References can be used to answer research question 2. Table 4 can be found in the Appendix.

Table 4 categorizes 2e-related references by disciplinary field, revealing a concentration in specialized and emerging academic spaces. The highest number of references (n = 33)

appeared in sources solely focused on twice-exceptionality, such as newsletters and practitioner-oriented publications. Dissertations (n = 21) also made up a significant portion, reflecting strong interest among emerging scholars. Gifted education journals (n = 18) were the next most frequent outlet, reaffirming that 2e remains primarily situated within gifted studies. In contrast, general education (n = 11), psychology (n = 7), and special education (n = 4) showed far fewer references, despite being central to supporting students with disabilities. This distribution highlights a persistent disciplinary gap. Although 2e learners span multiple domains, the concept remains underrepresented in foundational fields like psychology and special education. Bridging this divide will require intentional cross-disciplinary collaboration and greater integration of 2e discourse into mainstream educational research, policy, and practice.

Research Question 3

What types of publications (e.g., peer-reviewed journals, dissertations, newsletters, conference proceedings) most frequently engage with the concept of twice-exceptionality, and how do these sources differ in the depth and scope of their coverage?

Response to Research Question 3

Table 4 categorizes 2e-related references by disciplinary field, revealing a concentration in specialized and emerging academic spaces. The highest number of references (n = 33) appeared in sources solely focused on twice-exceptionality, such as newsletters and practitioner-oriented publications. Dissertations (n = 21) also made up a significant portion, reflecting strong interest among emerging scholars. Gifted education journal (n = 18) were the next most frequent outlet, reaffirming that 2e remains primarily situated within gifted studies. In contrast, general education (n = 11), psychology (n = 7), and special education (n = 4) showed far fewer references despite being central to supporting students with disabilities. This distribution highlights a persistent disciplinary gap. Although 2e learners span multiple domains, the concept remains underrepresented in foundational fields like psychology and special education. Bridging the divide will require intentional cross-disciplinary collaboration and greater integration of 2e discourse into mainstream educational research, policy, and practice. Table 4 can be found in the Appendix.

Research Question 4

Who are the most frequently cited or contributing authors in the twice-exceptionality literature, and what patterns emerge from their recurring presence across publications?

Response to Research Question 4

Research question 4 can be answered by the data included in Table 5 Authors with Multiple References in the Sample. Table 5 can be found in the Appendix.

Table 5 lists authors who appeared multiple times in the reference set, highlighting a small but influential group shaping the discourse. Susan Baum leads with 4% of the references, followed by Megan Foley-Nicpon, Laura Neumann, Sylvia Rimm, and Bob Seney, each contributing 3%. Together, these five authors account for over 16% of the total sample, underscoring their central role in advancing twice-exceptionality research. Their repeated presence reflects a field still driven by a core group of scholars. Baum and Foley-Nicpon are especially notable for foundational and applied work cited across academic and practitioner literature. Neumann and Seney contribute through more accessible formats like newsletters, helping extend 2e awareness beyond traditional research venues. However, the limited number of recurring authors also signals a narrow researcher base. Expanding participation, particularly across disciplines, is essential to deepen, diversify, and sustain the field's growth.

Research Question #5

What types of research are being conducted with, for, and about twice-exceptional learners and their education?

Response to Research Question #5

Data from information in Table 6 Types of Publications, Table 7 Types of Research (Empirical vs. Non-Empirical), Table 10 Geographical Distribution of 2e Dissertation Research, and Table 11 Research Areas of Focus will provide answers to this research this research question. Table 6, 7, 10 and 11 can be found in the Appendix.

Table 6 categorizes the 100 selected sources by publication type, offering insight into how and where twice-exceptionality appears in educational discourse. Peer-reviewed journals (n = 37) were the most common, reflecting growing scholarly interest and the formalization of 2e as a research focus. Dissertations and newsletters (n = 21 each) show strong engagement from both early-career researchers and practitioner communities. The depth of coverage varies. Journals typically present empirical or theoretical work, while newsletters offer practical or anecdotal insights. Books (n = 8) and book chapters (n = 6) contribute to broader contextualization, often used in professional development. In contrast, newspapers (n = 5) and miscellaneous sources (n

= 2) highlight the limited mainstream visibility of 2e. Overall, the data suggest that while 2e is gaining traction in academic and practitioner spaces, its dissemination remains uneven, underscoring the need for broader outreach and interdisciplinary integration.

Table 7 categorized the 29 empirical studies by publication type and research methodology. The distribution shows a near-even split between dissertations (52%) and peer-reviewed journal articles (48%). Across both types, qualitative methods dominated. Eight of 15 dissertations and 9 of 14 journal articles used qualitative designs. This trend reflects a research landscape focused on exploratory, context-rich inquiry, likely due to the complexity of 2e populations and challenges in assembling large, representative samples. Dissertations often featured in-depth case studies and literature reviews, while journal articles presented more concise empirical findings. The absence of mixed-methods studies and the limited use of quantitative approaches highlight a gap in generalizable data that could inform policy and practice. Expanding methodological diversity and increasing journal-based publication will be essential to strengthening the empirical foundation of 2e research.

Table 10 shows the regional distribution of dissertations on twice-exceptionality. The United States accounts for 67% of the sample, highlighting its leading role in advancing 2e scholarship. Additional contributions came from Oceania (13%), the Middle East (13%), and Europe (7%). Notably, there were no dissertations from Asia, Africa, or South America, revealing a significant gap in global representation. This lack of geographic diversity limits understanding of how 2e learners are identified and supported in non-Western contexts, where definitions of giftedness and disability may differ or where inclusive education is still emerging.

Table 11 categorizes the main themes in 2e research, highlighting dominant areas of inquiry. The most frequent theme is teacher experiences (28%), reflecting strong interest in how educators perceive, identify, and support 2e learners, aligned with concerns about teacher preparation and inclusive instruction. Identification, characteristics, and academic performance each account for 20.5%, focusing on diagnostic profiles, cognitive traits, and achievement patterns—which are critical for improving screening and intervention. Family experiences and self-esteem (14%) and social-emotional skills (10%) point to growing attention to affective development, though these areas remain under explored. The least represented theme, lived experience (7%), underscores a need for more student-centered research capturing 2e learners' own perspectives. Overall, the field remains oriented toward professional and institutional views,

with limited focus on student voice and long-term outcomes. Future research should elevate qualitative work on identity, resilience, and cultural context to ensure 2e learners are understood through their lived realities, not just through labels and interventions.

Research Question 6

What populations of twice-exceptional subjects are being targeted for research studies, and where is such research occurring?

Response to Research Question #6 Data from Table 8 Population Focus and Sample Sizes in Twice-Exceptional Research *and* Table 9 Summary of Empirical Research by Number/Focus, Type, and Country will provide answers to research question 6. Table 8 and 9 can be found in the Appendix.

Table 8 summarizes the target populations and sample sizes in 29 empirical studies on twice-exceptionality. The majority (59%) focused on school-aged 2e students, typically using small to moderate samples (1–100 participants). Only two studies exceeded 100. This reflects the challenges of identifying and accessing this complex, low-incidence population. Educators were the second most studied group (24%), highlighting interest in teacher perceptions and preparedness. Parents accounted for 10%, while only 7% of studies focused on college-aged 2e students. This revealed a significant gap in postsecondary research. Across all groups, small sample sizes limit generalizability and underscore the need for collaborative, multi-site studies. Expanding research on postsecondary and adult populations is also critical to understanding long-term outcomes and transitions for 2e learners.

Table 9 outlines the methodological focus of 29 empirical studies on twice-exceptionality. Qualitative studies typically explored teacher or parent perceptions using small samples. Quantitative studies focused on cognitive and social-emotional variables in 2e students, often with moderately larger samples. Mixed-methods approaches were rare and appeared primarily in dissertations.

Discussion

The term "twice-exceptional" is under the radar and an analysis of its visibility and disciplinary silos was provided in this study. A quantitative content analysis of 100 relevant publications revealed that the term "twice-exceptional" was most frequently used in gifted education contexts, with limited representation in special education and general education literature. These results suggest that despite growing research interest, twice-exceptionality

remains a siloed concept largely confined to gifted education literature. This limited diffusion may contribute to gaps in identification and support for 2e learners in special and general education settings, echoing prior concerns about inconsistent terminology and awareness (Foley-Nicpon et al., 2013; McDonald et al., 2013). Establishing more unified language across disciplines may help reduce fragmentation in services and promote greater equity.

For comparative context, the term "learning disabilities" appeared 460 times more often in the same database search parameters than "twice-exceptional" and "autism and children" appeared 335 times more often. Although differences in population prevalence and historical advocacy efforts must be considered, the relative scarcity of twice-exceptional literature raises important questions about awareness and prioritization in broader educational research.

This study focused on frequency and distribution of the term "twice-exceptional," and did not analyze the conceptual depth or quality of discussion within each publication. As such, conclusions are limited to patterns of visibility rather than impact.

Future research should incorporate qualitative analysis to explore how 2e concepts are framed across disciplines. Twice-exceptional students differ meaningfully from both their gifted peers and those with disabilities, requiring uniquely tailored supports. The findings of this content analysis reveal not only a concentration of "twice-exceptional" scholarship within gifted education but also a noticeable gap in interdisciplinary dissemination. These patterns suggest several key implications for research, practice, and publication.

Implications

The findings from the content analysis reveal several important implications for educational research, practice, and policy. First, the predominance of the term *twice-exceptional* within gifted education literature suggests that the concept remains largely siloed, with limited integration into special education and general education discourse. This lack of interdisciplinary visibility may contribute to under-identification and inadequate support for twice-exceptional (2e) students in broader educational settings. When educators and researchers outside of gifted education are unfamiliar with the term or its implications, 2e learners risk being overlooked or mischaracterized.

Additionally, the fragmentation of terminology across disciplines presents a barrier to collaboration and consistency in service delivery. Without a unified language, professionals may struggle to communicate effectively about the needs of 2e students, leading to gaps in support

and missed opportunities for intervention. Establishing shared terminology could foster more cohesive practices and promote equity in educational access and outcomes.

The study also highlights a disparity in research prioritization. Compared to terms like *learning disabilities* and *autism and children*, which appeared hundreds of times more frequently, *twice-exceptional* remains relatively underrepresented. While differences in population prevalence and advocacy history must be considered, the scarcity of 2e literature raises questions about its visibility and importance within the broader educational research agenda. This imbalance may reflect a lack of funding, awareness, or institutional support for 2e-focused inquiry.

Additionally, because the study focused on term frequency rather than conceptual depth, it does not capture the quality or nuance of how 2e students are discussed. Future research should incorporate qualitative methods to explore how twice-exceptionality is framed across disciplines and whether publications offer meaningful insights into the unique needs of these learners. Twice-exceptional students differ significantly from both their gifted peers and those with disabilities, requiring tailored supports that address their dual exceptionalities.

Finally, the findings suggest a need for more intentional dissemination of 2e scholarship across educational domains. All authors (renowned scholars included) need to reach beyond gifted education journals to publish their research. Journals, academic institutions, and professional organizations could play a role in encouraging interdisciplinary research and promoting awareness of twice-exceptionality beyond the gifted education niche. Doing so would help ensure that 2e students receive the recognition and support they deserve across all educational settings.

Conclusion

In conclusion, while the term “twice-exceptional” is gaining visibility. Its limited reach across educational fields highlights the need for continued advocacy, collaboration, and scholarly production. This study provides a foundation for such efforts, underscoring both the progress made and the road ahead. This study provides quantitative evidence that the term “twice-exceptional” remains largely concentrated within the field of gifted education, with limited presence in special education and educational psychology literature. As a result, twice-exceptional education continues to function with a degree of stealth, its presence hovering below the radar of broader educational discourse. Like the learners it represents, the concept

itself is often masked by the boundaries of traditional disciplines, making it difficult to detect, define, or fully support. This lack of interdisciplinary diffusion hinders efforts to consistently identify and serve 2e learners, whose complex profiles are frequently overlooked in systems not attuned to both giftedness and disability.

To address this invisibility, future educational research and policy must prioritize the integration of 2e frameworks into teacher education, disability studies, and educational policy. In response to this need for interdisciplinary coherence, emerging models such as the Trellis & Blossom Framework (Hughes, Troxclair, & Behrens, 2025, in press) offer practical pathways for integrating gifted and special education strategies in service of twice-exceptional learners. Grounded in strengths-based, inclusive principles, this framework encourages educators to scaffold support (“trellis”) while cultivating individual potential (“blossom”), offering a unified language and instructional vision to address the complex profiles of 2e students. Incorporating such models into teacher preparation and educational policy may help dismantle disciplinary silos and foster more holistic, equitable responses to twice-exceptionality.

Twice-exceptional students are not fully aligned with either gifted or special education populations. As Baum (2019) noted, “It isn’t easy being ‘green,’” referencing how these learners live at the intersection of the “sunny yellow” of giftedness and the “somber blue” of special education. Van Gerven (2020) captured this paradox simply in a mathematical equation with the idea that a twice exceptional child is different from either a gifted learner or a learner with a disability. They are an entirely "new" child, so

“ $1 + 1 = 3!$ ” Until more is written, these “green” (Baum, 2019) or “3” learners will remain largely invisible in both scholarship and service systems.

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Appendix

Table 1

Comparative Frequency of "Twice-Exceptional" to Other Educational Terms in Written Communication across Educational and Non-educational Research Literature (2010-2022)

Search Terms	ProQuest References (2010-2022)
2e AND Gifted OR Twice-Exceptional or Twice-exceptional	3,472 (1,353 without duplicates)
Gifted Students OR Gifted Children	172,525
Learning Disabilities OR Learning Disabled	842,275
Autism AND Children	614,314
Visual Impairment AND Classroom	47,051

Table 2

Depth of Engagement with the Term "Twice-Exceptional" in Peer-Reviewed Articles (2010-2022)

Type of Article	Citations (n = 132)
Twice exceptional was the focus of the article	100
Broad information	22
Casual aside	10

Total sample

132

Table 3

Years of Publication of Twice-Exceptional References

Year	Number of References
2010	6
2011	13
2012	7
2013	7
2014	4
2015	7
2016	10
2017	9
2018	21
2019	4
2020	6
2021	4
2022	2

Table 4*Fields of Publication of References*

Field of Publication	Number of References
Twice-exceptional Specific	33
Dissertations	21
Gifted Education	18
General Education	11
Psychology	7
Special Education	4
Other	6

Table 5*Authors with Multiple References in the Sample*

Author	Number of References
Baum	4
Foley-Nicpon	3
Neumann	3
Rimm	3
Seney	3

Amend	2
Coleman	2
Owens	1

Table 6

Types of Publications

Type	Number
Journals	37
Dissertations	21
Newsletter	21
Books	8
Book Chapters	6
Newspapers	5
Other	2

Table 7

Empirical Research Description

Research Descriptor	Number	Percentage of 2e Empirical Research (n = 29)
Dissertations	15	52%

Quantitative Dissertations	7	
Qualitative Dissertations	8	
Journals	14	48%
Quantitative Journals	5	
Qualitative Journals	9	

Table 8

Population Focus of Study and Sample Sizes

Focus of Study/ Number of Studies (n = 29)	Number	% of Sample
Twice-Exceptional School-Aged Students	17	59%
1–3 participants	3	
4–10 participants	4	
11–25 participants	4	
26–100 participants	4	
More than 100	2	
Twice-Exceptional College-Aged Students	2	7%
4–10 participants	2	
Parents	3	10%
	65	

11–25 participants	2	
26–100 participants	1	
Teachers/School Professionals	7	24%

Table 9

Summary of Empirical Research by Number/Focus, Type, and Country

Author(s)	Number/Focus	Type of Literature	Country
Al-Hroub (2021)	30/800 identified 2e learners (24 boys, 16 girls)	Journal	Jordan
Aladsani (2021)	936 teachers (460 no training, 59 with special ed/gifted degrees, 417 minimal training)	Dissertation	US/Saudi Arabia
Best (2018)	372/11,200 2eGT students (grades 8–12)	Dissertation	US
Cadenas et al. (2020)	73 2e learners	Journal	The Netherlands
Demina & Trubinyna (2016)	Case study – 1 GT/ASD student	Journal	Russia
Foley-Nicpon et al. (2017)	16 potential 2e; 12 with and 9 without social skill intervention	Journal	US

Fosenburg (2018)	65 students (8 twice-exceptional)	Dissertation	US
Herbert (2014)	538 HFA patients (86 females, 453 males)	Dissertation	US
Hoffman (2014)	n=88 school psychologists, n=313 gen ed teachers, n=95 special ed teachers, n=13 gifted ed teachers	Dissertation	US
Hopwood (2019)	58 teachers (18% special ed, 12% gifted ed)	Dissertation	US
Kuo et al. (2010)	61 preschool children (11 twice-exceptional)	Journal	Taiwan
Langendijk (2015)	37 2e students and 37 dyslexic students	Thesis	Netherlands
Lummis (2016)	8 twice-exceptional postsecondary students	Conference Proceedings	Canada
Lyman (2016)	16 GT/SLD; 5 GT only; 12 SLD only; 5 average	Dissertation	US
Mayes & Moore (2016)	8 African American artistically gifted students with disabilities	Journal	US
Missett et al. (2016)	Case study of a third-grade teacher	Journal	Great Britain
Mollenkopf et al. (2015)	41 parents of 2e students; 102 parents of gifted students without disabilities	Journal	US

Ng et al. (2017)	54 teachers	Journal	New Zealand
Ronksley-Pavia (2016)	8 2e children (ages 9–16; 5 males, 3 females)	Dissertation	Australia
Schultz (2012)	12 parents, 12 teachers, 6 counselors, 6 college students	Journal	US
Sumida (2010)	86 children (43 2e) from urban primary schools in Japan	Journal	Japan
Tagtmeyer (2017)	5 college students, 5 advocates	Dissertation	US
Townend (2015)	3 secondary male students	Dissertation	Australia
Wang & Neihart (2015)	6 high-achieving 2e students	Journal	Singapore
Watar & Qadan (2020)	10 adults working in special education	Journal	Saudi Arabia
Wells (2018)	13 parents of 2e children (ages 6–32)	Dissertation	US
Whitlow-Spurlock (2019)	15 sets of families	Dissertation	US
Wright (2016)	242 early childhood teachers (case study)	Dissertation	US
Zheng (2021)	Case study of a 4th-grade gifted student with autism	Journal	China

Table 10*Geographical Distribution of 2e Dissertation Research (n=15)*

Country	Number of Studies	Percentage of Studies
US	10	67%
Asia	0	-
Oceania	2	13%

Table 11*Research Areas of Focus*

Theme	Number	Percentage (%)
Identification and Characteristics	6	20.5%
Teacher & Family Experiences	8	28%
Self-esteem	4	14%
Performance	6	20.5%
Social-emotional Skills	3	10%

Lived Experience	2	7%
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Supporting Teachers: A Collaborative Model of Multi-Tiered System of Supports

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Abstract

Meeting the diverse needs of all students requires more than individual teacher effort; it depends on a shared, schoolwide commitment to high standards and collective responsibility for student achievement. Establishing and sustaining a collaborative vision around instructional standards is foundational to an effective school climate. This presentation examines graduate students' experiences designing and facilitating professional development sessions focused on Multi-Tiered Systems of Support (MTSS) strategies. Using a qualitative research design, the study explores participants (n=150)' perceptions of how teachers should be supported to ensure

fidelity in implementing collaborative instructional practices at the campus level. Emerging themes underscore the importance of aligning professional development with teachers' instructional challenges, clarifying roles for instructional coaches and lead teachers, and cultivating strong principal–teacher partnerships. Findings suggest that when professional learning is framed as a collective endeavor rather than an external mandate. This is more likely to foster authentic engagement and sustainable instructional change. Graduate student perspectives further reveal the significance of positioning coaches and lead teachers not only as content experts but also as facilitators of collaborative problem-solving and trust-building across school teams. By bridging theory, preparation, and practice, this study illustrates how collaborative, schoolwide approaches to MTSS can strengthen instructional coherence, expand educator capacity, and advance equity and success for all students.

Key Words: Multi-Tiered System of Supports (MTSS), collaborative professional learning, instructional coaching, teacher support, schoolwide implementation

Introduction

Meeting the diverse needs of all students requires more than individual teacher effort; it depends on a shared, schoolwide commitment to high expectations and collective responsibility for student achievement. Establishing and sustaining a collaborative vision around instructional standards is foundational to cultivating a positive and effective school climate. Within this context, Multi-Tiered Systems of Support (MTSS) provide a structured framework for ensuring that all students receive appropriate academic and behavioral supports. However, successful implementation of MTSS hinges on teachers receiving the guidance, resources, and collaborative structures necessary to apply evidence-based practices with fidelity.

This study examined graduate students' experiences designing and facilitating professional development sessions centered on MTSS strategies as part of their principal preparation coursework. Using a qualitative research design, the study explores participants' perceptions of how teachers should be supported to implement collaborative instructional practices at the campus level effectively. The inquiry was guided by three research questions:

RQ1. How do principal certification students perceive the role of embedded, differentiated professional development in supporting teacher ownership and instructional practice within a collaborative MTSS framework?

RQ2. In what ways do collaborative data analysis and structured reflection within PLCs influence instructional responsiveness and Tier 1 fidelity according to principal preparation students?

RQ3. How do instructional coaching and peer collaboration contribute to building teacher capacity, confidence, and fidelity in implementing MTSS strategies, as perceived by future school leaders?

Emerging themes from the analysis of principal candidates' written reflections underscore the importance of aligning professional development with teachers' instructional challenges, clarifying the roles of instructional coaches and lead teachers, and cultivating strong principal–teacher partnerships. The findings suggest that professional learning is most impactful when it is presented as a collaborative, schoolwide effort that emphasizes shared responsibility and mutual growth, rather than being perceived as an externally imposed mandate. When teachers view professional development as part of a collective commitment to improving instruction, they are more likely to engage authentically and sustain meaningful instructional change. Graduate student perspectives further highlight the value of positioning coaches and lead teachers not simply as content experts, but as facilitators who guide collaborative problem-solving, encourage reflective dialogue, and build trust across school teams.

This study highlights key qualitative themes, discusses implications for leadership practice, and offers recommendations for replicating this model of graduate-led professional development in diverse educational settings. By bridging theory, preparation, and practice, the findings illustrate how collaborative, schoolwide approaches to MTSS can strengthen instructional coherence, expand educator capacity, and advance equity and success for all students.

Literature Review

Multi-Tiered System of Supports

The Multi-Tiered System of Supports (MTSS) is widely recognized as a comprehensive, prevention-oriented framework designed to integrate academic, behavioral, and social-emotional interventions through a continuum of supports. Grounded in data-driven decision-making and a shared commitment to equitable access, MTSS aims to proactively address students' diverse needs before difficulties intensify (Burns & Gibbons, 2012; McIntosh & Goodman, 2016). MTSS synthesizes the principles of Response to Intervention (RTI) and Positive Behavioral Interventions and Supports (PBIS), bringing academic and behavioral systems together into a

unified model (Fuchs & Fuchs, 2006; Horner & Sugai, 2015). Its three-tier structure—Tier 1 universal supports, Tier 2 targeted interventions, and Tier 3 intensive individualized supports—provides a scalable approach to meeting learner needs based on ongoing data (Texas Education Agency, 2020).

MTSS functions not only as an instructional model but also as an organizational framework that prioritizes collaboration, continuous improvement, and the implementation of evidence-based practices. Its flexible design supports integration of academic, behavioral, and social-emotional interventions, enabling schools to respond holistically to the needs of all learners (Sugai & Horner, 2019). A key component of MTSS is Data-Based Individualization (DBI), an iterative decision-making process that guides educators to analyze progress data, adjust instructional methods, and intensify supports for students needing additional assistance (National Center on Intensive Intervention, 2016). DBI reinforces MTSS as a responsive, evolving system rather than a fixed set of procedures.

Importance of High-Quality Tier 1 Instruction

High-quality Tier 1 instruction remains the foundation of an effective MTSS framework. A weak universal core leads to disproportionate numbers of students requiring more intensive interventions, undermining the preventive purpose of MTSS (American Institutes for Research, 2021; McIntosh & Goodman, 2016). Practices such as universal screening, ongoing progress monitoring, and structured data analysis ensure that Tier 1 instruction adapts to student needs (Fletcher et al., 2019). Research confirms that campus-wide fidelity to Tier 1 practices—supported by leadership structures and instructional coaching—improves both system integrity and student outcomes (Sugai, Horner, & Lewis, 2017).

The TEA (2020) further emphasizes that MTSS should be embraced as a collaborative, school-wide responsibility rather than a special education initiative. When implemented effectively, MTSS promotes coherence across classrooms, strengthens communication among staff and families, and builds a culture of early intervention and prevention.

Strengthening Tier 1 Instruction Through Evidence-Based Practices

The American Institutes for Research (2021) highlights several strategies for strengthening Tier 1 instruction: increasing instructional strength through high-quality materials, embedding small-group instruction within core teaching blocks, improving comprehensiveness

through explicit modeling and feedback, and integrating SEL supports to foster behavioral engagement. Research demonstrates that schools with strong Tier 1 foundations experience fewer Tier 2 referrals and better overall student performance (Wanzek et al., 2018; Vaughn & Roberts, 2019). Moreover, Tier 1 is inherently dynamic. Tier 1 must be continually refined through ongoing analysis of student data, instructional quality, and schoolwide outcomes (Hattie, 2015; Simonsen et al., 2020). This cyclical refinement ensures equitable access to high-quality instruction across classrooms.

Data-Based Individualization and Continuous Improvement

Data-Based Individualization (DBI) is essential for ensuring that MTSS remains responsive to students with persistent learning or behavioral challenges who do not make adequate progress with standard intervention protocols. As an evidence-based process, DBI operationalizes the principle of instructional responsiveness by embedding repeated cycles of assessment, analysis, adaptation, and progress monitoring into daily instructional decision-making (National Center on Intensive Intervention, 2016). Rather than relying on fixed intervention programs, DBI emphasizes systematic diagnostic inquiry, which allowing educators to determine not only whether students are progressing, but why they may be struggling and what type of adjustment is most likely to accelerate learning.

A key strength of DBI is its capacity to differentiate both the *intensity* and the *content* of intervention. Through ongoing problem analysis and hypothesis testing, teachers can modify variables such as group size, duration, frequency, scaffolding, and opportunities to respond, while also adapting instructional strategies to better match learner profiles (Fuchs & Fuchs, 2015). These iterative refinements ensure that intervention remains dynamic and tailored, particularly for students with complex academic or behavioral needs who may require more specialized, individualized support.

Research has demonstrated that schools implementing DBI with structured support, such as collaborative data teams, instructional coaching, and protected time for data review. This tends to exhibit stronger instructional precision and higher fidelity across MTSS tiers (Wanzek et al., 2018; Fixsen et al., 2005). Coaching plays a pivotal role in supporting teachers' analytic reasoning, helping them interpret progress monitoring data, evaluate intervention integrity, and design targeted adaptations that align with evidence-based practices. Likewise, collaborative data

meetings foster shared responsibility for student outcomes, encourage reflective practice, and strengthen coherence across grade levels and instructional teams.

DBI also contributes to a broader culture of continuous improvement by creating a feedback loop between classroom practice and student performance. As teachers engage in recursive cycles of planning, implementing, evaluating, and refining interventions, they build deeper expertise in data literacy, differentiated instruction, and adaptive decision-making. This iterative process not only enhances intervention effectiveness but also supports professional growth and collective efficacy among educators. When scaled across a school system, DBI encourages coherence, reduces fragmentation, and supports sustainable MTSS implementation, especially in environments where student needs are diverse and continually evolving.

Ultimately, DBI strengthens MTSS by ensuring that instructional decisions remain student-centered, data-informed, and responsive to real-time learning patterns. By integrating diagnostic assessment with targeted instructional adaptation, DBI maintains fidelity across tiers, ensures equitable access to increasingly intensive supports, and advances the overarching MTSS goals of prevention, responsiveness, and continuous improvement.

MTSS and Educational Equity

MTSS has increasingly been recognized as a model capable of promoting educational equity by addressing student needs early, systematically, and proactively. Because MTSS emphasizes universal screening, early intervention, and data-based decision-making, it functions as a prevention-oriented framework designed to mitigate disparities *before* they widen into long-term achievement gaps (McIntosh et al., 2020). However, inequities often persist when Tier 1 instruction is inconsistently implemented, insufficiently rigorous, or lacks cultural and linguistic responsiveness. When Tier 1 is weak, students from historically marginalized backgrounds are disproportionately referred for Tier 2 or Tier 3 supports, reinforcing patterns of over-identification and fragmented services (Sullivan & Van Norman, 2020).

Equitable MTSS implementation requires a culturally responsive approach to instruction, assessment, and intervention. This includes using screening tools validated for diverse populations, integrating students' cultural and linguistic backgrounds into instruction, and ensuring high expectations for all learners (Cartledge et al., 2016). Teacher expectations, curriculum relevance, and bias in decision-making processes can all influence which students are

provided early supports, making professional learning on equity essential within MTSS structures.

In early childhood contexts, MTSS must be adapted to emphasize developmentally appropriate practices, including play-based assessments, embedded social-emotional learning, and strong family engagement (Wackerle-Hollman et al., 2021; Hemmeter & Ostrosky, 2016). These adaptations acknowledge the unique developmental needs of young learners while supporting early behavioral regulation, literacy readiness, and foundational academic skills. Culturally responsive family partnerships are particularly important in early childhood MTSS, as caregivers play a central role in shaping children's language, behavior, and early learning environments (Buysse et al., 2016). When early childhood MTSS is implemented with cultural responsiveness and developmental appropriateness, it can help reduce long-term disparities in literacy achievement, school readiness, and behavioral outcomes. In these ways, MTSS serves not only as an instructional framework but also as a lever for advancing equity, access, and opportunity from the earliest years of schooling.

Professional Learning, Coaching, and Leadership for MTSS Fidelity

Teacher professional learning and coaching are critical to ensuring MTSS fidelity across classrooms and to maintaining consistent, high-quality Tier 1 instruction. Research emphasizes that sustained, job-embedded professional development, which is characterized by ongoing collaboration, practice opportunities, modeling, and follow-up coaching. This development produces far greater instructional transfer than one-time workshops or compliance-based training sessions (Desimone, 2009; Joyce & Showers, 2002). Effective MTSS implementation therefore depends on professional learning structures that help teachers build data literacy, strengthen differentiated instruction, and internalize the logic of tiered supports.

Tiered professional development structures, which mirror the MTSS model itself, can provide differentiated learning opportunities for educators at varying levels of readiness. Tier 1 PD may include schoolwide training on universal screening, core instruction, and progress monitoring, while Tier 2 might provide targeted coaching for teachers who need support implementing specific intervention protocols or data-analysis routines. Tier 3 professional learning often involves individualized mentoring focused on intensive intervention, diagnostic assessment, or adapting instruction for students with persistent needs (Bloomfield et al., 2024).

These layered supports ensure that professional learning is responsive to teacher skill development in the same way MTSS is responsive to student needs.

Leadership plays an equally pivotal role in sustaining MTSS fidelity. Principals, instructional coaches, and district leaders must cultivate a shared vision for MTSS, reinforcing that the framework is not an isolated initiative but a schoolwide commitment to prevention, collaboration, and continuous improvement (Fixsen et al., 2005). Effective leaders allocate protected time for collaborative inquiry, ensure access to high-quality instructional materials, and monitor implementation fidelity using supportive, which is not punitive but feedback structures (Wong et al., 2024). They also foster cross-role collaboration among teachers, interventionists, and specialists, helping to break down silos and create shared ownership of student outcomes. Furthermore, leadership practices that emphasize relational trust, psychological safety, and shared decision-making contribute to teachers' willingness to engage deeply in MTSS implementation. When educators feel supported, they are more likely to engage in reflective practice, use data transparently, and adopt new instructional strategies. Ultimately, MTSS fidelity is most sustainable in school environments where professional learning is ongoing, coaching is collaborative, and leadership is instructional rather than managerial.

Role of Collaboration and Professional Culture

An emerging body of literature emphasizes that MTSS success depends not only on technical structures but also on the strength of professional culture within schools. Effective MTSS systems rely on teachers who possess not only the technical skills to deliver evidence-based interventions but also a shared sense of ownership for student outcomes, a collective commitment to continuous improvement, and a willingness to engage in collaborative problem-solving. This professional culture is characterized by trust, mutual respect, open communication, and a shared understanding of both the goals and processes of MTSS (McIntosh & Goodman, 2016).

Professional learning communities (PLCs) serve as a critical mechanism for cultivating this culture. In PLCs, teachers meet regularly to analyze student data, share instructional strategies, and collaboratively design interventions, creating an environment in which reflective practice and continuous skill development are normalized (DuFour & Reeves, 2016). Coaching cycles further support MTSS implementation by providing structured, individualized guidance, enabling teachers to refine their instructional practices, interpret data effectively, and implement

tiered supports with fidelity. These cycles often involve observation, feedback, modeling, and co-planning, which help translate professional learning into classroom practice (Knight, 2018).

Graduate-led professional development initiatives and peer-led workshops also contribute to strengthening professional culture by fostering leadership skills, cross-role collaboration, and opportunities for teachers to engage as both learners and facilitators. Research has shown that when teachers participate in collaborative professional development, they are more likely to adopt data-driven decision-making, differentiate instruction effectively, and engage in reflective practice, all of which enhance the responsiveness and efficacy of MTSS (American Institutes for Research, 2021).

Schools that frame MTSS as a collective, collaborative endeavor rather than a compliance-driven mandate tend to foster deeper teacher engagement, stronger inter-professional relationships, and more sustainable instructional change. In such environments, decision-making is shared, successes and challenges are discussed openly, and teachers collectively problem-solve around student needs. This collaborative culture also mitigates common implementation barriers, such as inconsistent use of interventions, siloed decision-making, and uneven fidelity across classrooms, by embedding shared accountability and continuous improvement into the school's operational ethos.

Ultimately, the cultivation of a professional culture that values collaboration, reflective practice, and shared ownership is as essential to MTSS effectiveness as technical frameworks or intervention strategies. Without such a culture, even well-designed MTSS structures may fail to produce the intended improvements in student outcomes, highlighting that successful MTSS implementation is fundamentally both a technical and relational enterprise.

In sum, MTSS effectiveness depends on the integration of high-quality Tier 1 instruction, data-driven refinement, sustained professional learning, and a collaborative school culture. The present study contributes to this literature by demonstrating how graduate-led professional development can bridge theory, preparation, and practice. By engaging in structured collaboration, principal preparation students gain insight into how MTSS can be implemented with fidelity while simultaneously empowering teachers to strengthen instructional coherence and improve outcomes for all students.

Methodology

Research Design

This study employed a qualitative research design to explore the perspectives of graduate students enrolled in a principal preparation program. The primary aim was to understand how aspiring school leaders conceptualize and operationalize teacher support within a collaborative Multi-Tiered System of Supports (MTSS) framework. Qualitative methods were selected because they are well-suited to capturing the depth, complexity, and context-specific insights of participants' reflections, particularly in response to a practice-based assignment focused on professional development and instructional collaboration (Creswell & Poth, 2018).

The study adopted an interpretive approach, emphasizing participants' subjective experiences, perceptions, and reasoning about the processes and challenges involved in supporting teachers through MTSS structures. Data collection focused on written reflections, assignment artifacts, and, in some cases, follow-up discussions, allowing for triangulation of perspectives and a richer understanding of the participants' conceptualizations. This approach also facilitated exploration of emerging themes related to collaboration, professional learning, equity considerations, and leadership strategies, providing insights that extend beyond procedural descriptions to illuminate the cognitive and affective dimensions of instructional leadership (Merriam & Tisdell, 2016).

Participants and Context

Participants included 150 graduate students ($n = 150$) enrolled in a master's degree program in educational leadership at a large, primarily online principal preparation program. The cohort represented a diverse range of school contexts, including urban, suburban, and rural districts, as well as elementary, middle, and high school settings. Participants were predominantly practicing educators, many of whom held teaching or administrative roles, providing a rich experiential base from which to draw reflections on MTSS and professional development practices.

All students were enrolled in a curriculum management course designed to prepare aspiring principals to lead instructional improvement initiatives within their schools. As part of the course requirements, each participant developed a professional development session intended for implementation in a Professional Learning Community (PLC) at their respective school site. These sessions were explicitly designed to strengthen Response to Intervention (RTI) components within the broader MTSS framework, fostering collaborative engagement among

campus teachers to address instructional differentiation, data-based decision-making, and early identification of student needs.

The course structure emphasized both theoretical grounding and practical application. Students were required to integrate evidence-based MTSS strategies with contextual knowledge of their school sites, considering factors such as teacher readiness, school culture, and existing support systems. Assignments were scaffolded to encourage reflection on the alignment between MTSS principles and instructional leadership practices, highlighting the interplay between policy, leadership, and classroom implementation. This design enabled participants to articulate their understanding of collaborative, equitable, and data-informed teacher support, while simultaneously engaging in authentic practice that mirrored real-world leadership responsibilities.

Data Collection

Following the implementation of their professional development sessions, graduate students submitted detailed written reflections describing their experiences, insights, and challenges. These reflections served as the primary data source for the study, providing rich, first-hand accounts of participants' thinking about supporting teachers within a collaborative Multi-Tiered System of Supports (MTSS) framework. The reflections included descriptions of how students designed and facilitated professional development, interactions with teachers, perceived successes, and obstacles encountered during implementation.

Because the reflections were originally collected as part of a course assignment and later analyzed for research purposes, they were treated as archived data. This approach allowed for the examination of authentic, practice-based experiences without introducing additional interventions that might influence participants' natural responses. To ensure ethical research practices and maintain confidentiality, all identifying information, such as school names, teacher names, and district-specific details, which was removed prior to analysis. Institutional Review Board (IRB) protocols were followed, including the secure storage of digital files and restricted access to the research team. Participants were informed that their course reflections might be used for research purposes in a de-identified format, ensuring informed consent and voluntary participation.

Additional contextual information, such as participants' grade-level focus, teaching experience, and school settings, was recorded when provided. This background information

enabled the research team to explore potential patterns in responses related to context or prior experience, enriching the interpretive depth of the analysis.

Data Analytic Techniques

The written reflections were analyzed using thematic coding procedures aligned with qualitative content analysis. A manual coding approach was employed to identify recurring patterns, categories, and emergent themes across the dataset. This method allowed the research team to capture both explicit statements and underlying conceptualizations of instructional leadership, teacher support, and collaborative practices within MTSS.

The coding process involved multiple iterative rounds to enhance reliability and depth of interpretation. In the first round, the research team conducted open coding to generate preliminary codes that captured key ideas, experiences, and perceptions articulated by participants. In the second round, codes were grouped into broader categories, refined for clarity, and compared across reflections to identify commonalities and divergences. A third round involved axial coding to examine relationships among categories, revealing overarching themes related to teacher ownership, instructional fidelity, professional collaboration, and leadership practices.

Throughout the analysis, the research team engaged in reflexive discussions to address potential biases, verify interpretations, and ensure consistency in coding decisions. Member checking was considered through iterative review of anonymized reflection excerpts, confirming that identified themes accurately represented participants' perspectives. By employing rigorous qualitative procedures, the study aimed to produce a rich, nuanced understanding of how future school leaders conceptualize and operationalize support for teachers within MTSS, highlighting both practical strategies and contextual influences.

Findings

Qualitative Analysis of Student Reflections on Collaborative MTSS Model

Analysis of the graduate students' reflections revealed three interconnected themes regarding the implementation of collaborative Multi-Tiered Systems of Support (MTSS). These themes highlight how aspiring school leaders conceptualize teacher support, professional collaboration, and data-driven instructional improvement as essential components of MTSS fidelity and equitable student outcomes (Table 1).

Table 1

Qualitative Analysis of Student Reflections on Collaborative MTSS Model

Theme	Supporting Quotes from Reflections
1. Embedded, Differentiated Support Enhances Teacher Ownership and Practice	<ul style="list-style-type: none">- <i>“Collaborative action Plans create immediate ownership and move theory into practice.”</i>- <i>“Teachers prefer to choose support options from a differentiated learning menu.”</i>- <i>“Support should be relevant, flexible, and sustainable using embedded structures.”</i>
2. Collaborative Data Use and Reflection Drive Instructional Responsiveness	<ul style="list-style-type: none">- <i>“Teachers enjoy analyzing student data to form instructional groups and adjust plans.”</i>- <i>“PLC meetings should include time for reflection and instructional adjustment.”</i>- <i>“Sharing and discussing formative assessments guide collaborative strategy refinement and flag concerns early.”</i>
3. Coaching and Peer Collaboration Build Capacity, Confidence, and Fidelity	<ul style="list-style-type: none">- <i>“Instructional coaches should model lessons and offer feedback cycles.”</i>- <i>“Peer observation and collaborative co-planning deepen practice in a collegial environment.”</i>- <i>“Mentor teachers and peer walkthroughs ensure new staff feel supported and capable.”</i>

Theme 1: Embedded, Differentiated Support Enhances Teacher Ownership and Practice

A prominent theme in participants’ reflections centered on the importance of embedding support directly into teachers’ instructional practice and tailoring it to individual needs. Students consistently emphasized that professional development should not be delivered as isolated

workshops but integrated into daily classroom routines, allowing teachers to immediately apply strategies and reflect on outcomes. As one participant noted, “Collaborative action plans create immediate ownership and move theory into practice,” illustrating the perceived impact of actionable, context-specific professional learning.

Participants also highlighted the importance of offering differentiated support to meet teachers where they are in their instructional development. Reflections described “choice menus” of professional learning opportunities, enabling teachers to select support aligned with their needs, prior knowledge, and classroom contexts: “Teachers prefer to choose support options from a differentiated learning menu.” Many students emphasized that relevance, flexibility, and sustainability were key to creating professional learning structures that teachers value and adopt over time: “Support should be relevant, flexible, and sustainable using embedded structures.”

Subthemes emerged related to teacher agency and self-efficacy. Graduate students noted that when support is embedded and differentiated, teachers feel a sense of ownership over their growth, are more willing to experiment with instructional strategies, and demonstrate increased confidence in implementing MTSS interventions. This perspective underscores the belief among future school leaders that teacher engagement is closely tied to professional autonomy, contextual relevance, and continuous, job-embedded support.

Theme 2: Collaborative Data Use and Reflection Drive Instructional Responsiveness

The second theme highlighted the centrality of collaborative data analysis and structured reflection within Professional Learning Communities (PLCs). Participants consistently reported that data-driven discussions enable teachers to identify student needs, adjust instruction, and strengthen Tier 1 fidelity. One reflection summarized this idea: “Teachers enjoy analyzing student data to form instructional groups and adjust plans.” Reflections suggested that collaborative analysis of formative assessments not only informs instructional decisions but also encourages shared problem-solving and collective accountability: “Sharing and discussing formative assessments guide collaborative strategy refinement and flag concerns early.”

Structured reflection emerged as a key mechanism supporting instructional responsiveness. Participants observed that PLC meetings which incorporate time for guided reflection allow teachers to critically examine the effectiveness of their strategies, celebrate successes, and modify approaches based on evidence: “PLC meetings should include time for reflection and instructional adjustment.” Students noted that repeated cycles of data review and

reflection create a feedback loop that enhances teacher responsiveness and ensures early interventions for struggling students.

Subthemes included transparency and shared accountability. Graduate students described how collaborative data discussions foster a professional culture in which teachers feel responsible not only for their individual classrooms but also for the collective success of all students. This reinforces the MTSS principle that equitable outcomes require coordinated efforts across staff and roles.

Theme 3: Coaching and Peer Collaboration Build Capacity, Confidence, and Fidelity

The third theme emphasized the role of instructional coaching and peer collaboration in strengthening teacher capacity and fidelity in implementing MTSS strategies. Participants frequently cited the importance of modeling, observation, feedback, and mentoring. For example, one reflection stated, “Instructional coaches should model lessons and offer feedback cycles,” highlighting the belief that guided practice with support leads to more effective implementation.

Peer collaboration, including co-planning, peer observations, and mentor-mentee interactions, was described as reinforcing professional growth while fostering collegiality: “Peer observation and collaborative co-planning deepen practice in a collegial environment.” Students noted that these practices create safe learning spaces for teachers to experiment, reflect, and improve without fear of judgment, promoting both confidence and instructional risk-taking. Another reflection highlighted the importance of supporting new or less experienced teachers: “Mentor teachers and peer walkthroughs ensure new staff feel supported and capable.”

Subthemes included the development of professional trust and sustainability of MTSS practices. Reflections suggested that coaching and peer collaboration help establish a culture in which teachers collectively take responsibility for student learning, share expertise, and maintain fidelity to evidence-based interventions. Participants perceived these collaborative structures as essential for ensuring that MTSS strategies are implemented consistently and that instructional improvements are sustained over time.

Cross-Theme Insights and Integration

Across all themes, reflections revealed that participants view MTSS as a holistic, interconnected framework rather than a set of isolated interventions. Embedded, differentiated support enhances teacher ownership; collaborative data use drives instructional responsiveness; and coaching and peer collaboration build capacity, confidence, and fidelity.

Students' reflections suggest that aspiring leaders recognize the interplay between these components. For example, embedded professional development is most effective when paired with collaborative reflection and coaching, creating a cycle of continuous improvement. Moreover, participants consistently linked these processes to equitable student outcomes, noting that systematic support and collaborative decision-making help prevent gaps in instruction and ensure all students have access to high-quality learning experiences.

Ultimately, the findings highlight that future school leaders conceptualize MTSS not merely as a technical framework but as a relational and collaborative enterprise. Leadership practices that foster trust, shared responsibility, and structured support are viewed as essential to achieving both high-fidelity MTSS implementation and meaningful improvements in teaching and learning.

Discussion of Themes

Support Enhances Teacher Ownership

The findings suggest that embedding professional learning within teachers' daily routines significantly enhances both ownership and relevance. Graduate students highlighted that when support is integrated into the flow of school work, rather than delivered as isolated workshops, teachers are more likely to internalize strategies and apply them immediately in their classrooms. Tools such as Tier 1 Instructional Action Plans and Teacher Learning Menus allowed educators to select strategies aligned with their instructional context and receive guidance through peer coaching, modeling, or collaborative planning. This approach reinforces the principle that effective professional development is context-specific, responsive to teacher needs, and sustained over time (Darling-Hammond et al., 2017).

Reflections underscored that providing choice and differentiation in professional learning fosters teacher agency, autonomy, and intrinsic motivation. One participant reflected, "Collaborative action plans create immediate ownership and move theory into practice," emphasizing how actionable supports translate professional learning into tangible classroom improvements. Another noted, "Teachers prefer to choose support options from a differentiated learning menu," highlighting the value of flexibility and personalization. Additionally, participants recognized that support must be not only relevant and flexible but also sustainable, ensuring ongoing teacher engagement and long-term instructional improvement: "Support should be relevant, flexible, and sustainable using embedded structures."

This theme aligns with research on adult learning theory and MTSS implementation, which emphasizes that teachers are more likely to adopt and sustain new practices when professional learning is embedded, collaborative, and responsive to their immediate instructional context (Guskey, 2002). Embedded, differentiated support also reinforces equitable teaching practices by allowing teachers to tailor strategies to diverse student needs while maintaining high expectations across classrooms.

Collaborative Data Use

The second theme highlights the critical role of structured data use and reflective practices in maintaining responsive, student-centered instruction. Graduate students reported that PLCs provide essential time and space for teachers to analyze formative assessment data, identify instructional gaps, and adjust Tier 1 instruction accordingly. This cyclical process of reflection, adjustment, and refinement ensures that instruction remains dynamic and aligned with student needs.

Participants emphasized that collaborative data analysis fosters shared responsibility for student outcomes and strengthens instructional fidelity. For example, one participant stated, “Teachers enjoy analyzing student data to form instructional groups and adjust plans,” illustrating that data engagement can be motivating and empowering for teachers. Another reflection noted, “PLC meetings should include time for reflection and instructional adjustment,” reinforcing that structured opportunities for dialogue are necessary to translate data insights into actionable strategies. Sharing and discussing formative assessments also allows teachers to anticipate challenges and implement timely interventions: “Sharing and discussing formative assessments guide collaborative strategy refinement and flag concerns early.”

This theme aligns with MTSS principles and evidence on data-driven decision-making, which indicate that collaborative analysis enhances teacher capacity, improves responsiveness to student learning needs, and promotes early identification of students requiring additional support (Hamilton et al., 2009). Moreover, structured reflection within PLCs cultivates a culture of continuous improvement, encouraging teachers to evaluate instructional effectiveness, refine strategies, and collectively solve challenges.

Coaching and Peer Collaboration

The third theme underscores the importance of coaching and peer collaboration in building teacher capacity, confidence, and fidelity in implementing MTSS strategies. Participants

consistently noted that modeling, co-teaching, and non-evaluative feedback cycles allow teachers to refine Tier 1 practices while fostering a collaborative professional culture. One student observed, “Instructional coaches should model lessons and offer feedback cycles,” highlighting the value of guided support. Peer observation and co-planning were similarly recognized as mechanisms for deepening practice and reinforcing collegial learning: “Peer observation and collaborative co-planning deepen practice in a collegial environment.”

Reflections further indicated that structured mentorship supports new or less experienced teachers, helping them integrate MTSS strategies effectively and develop instructional confidence: “Mentor teachers and peer walkthroughs ensure new staff feel supported and capable.” These collaborative practices not only strengthen instructional fidelity but also promote relational trust, professional learning communities, and shared accountability—core components of sustainable MTSS implementation (Knight, 2018).

By connecting instructional coaching and peer collaboration with teacher self-efficacy and fidelity, participants demonstrated an understanding of MTSS as both a technical framework and a relational, capacity-building enterprise. Leaders who prioritize coaching, mentorship, and collaborative learning cultivate a school culture in which teachers feel supported, empowered, and accountable for student success.

Integrated Insights

Taken together, these themes illustrate that effective MTSS implementation relies on a combination of embedded support, collaborative reflection, and capacity-building through coaching and peer collaboration. Graduate students’ reflections suggest that teacher engagement, instructional responsiveness, and fidelity are mutually reinforcing outcomes of these practices. Embedded, differentiated support fosters ownership; structured data use ensures responsiveness; and coaching and peer collaboration strengthen both confidence and practice.

These findings also underscore the critical role of school leadership in cultivating a professional culture that prioritizes collaboration, continuous improvement, and equitable access to instructional supports. By embedding differentiated support, creating structured opportunities for reflection, and fostering coaching relationships, school leaders can promote sustainable MTSS practices that enhance both teacher growth and student outcomes.

Implications

Implications for Practice

The findings from this study underscore that successful implementation of a Multi-Tiered System of Supports (MTSS) is not solely dependent on technical frameworks or intervention protocols, but critically relies on cultivating a schoolwide culture characterized by collaboration, differentiated support, and data-informed reflection. Effective school leaders recognize that instructional coherence and equitable outcomes emerge when professional learning is embedded into the existing rhythms of the school day, such as Professional Learning Communities (PLCs) and Curriculum Team Collaboration (CTC) meetings. By integrating professional development into these familiar structures, teachers are more likely to engage meaningfully and apply strategies in their classrooms.

Additionally, the study highlights the importance of offering flexible, teacher-driven learning opportunities that align with individual instructional needs. Providing a “menu” of support options allows educators to select the professional learning experiences most relevant to their practice, fostering ownership, motivation, and sustained growth. Regularly scheduled, structured opportunities for collaborative data analysis and reflection further reinforce instructional responsiveness, enabling teams to make timely adjustments to Tier 1 instruction and respond proactively to student learning needs.

Instructional coaches and mentor teachers emerge as key facilitators in this ecosystem, serving as guides, models, and sources of trust for teachers. When supported effectively, these roles not only strengthen instructional fidelity but also foster a professional culture in which teachers feel confident, supported, and accountable for student outcomes. Together, these practices contribute to instructional coherence across classrooms while promoting equity by ensuring that all students have access to responsive, high-quality instruction.

Suggestions for Principal and Teacher Leadership Preparation Programs

To prepare future school leaders for the complexities of MTSS implementation, principal and teacher leadership preparation programs should intentionally design experiences that reflect the realities of leading collaborative, data-informed schools. Four key strategies can guide this preparation.

Integrating Application-Level/Practice-Based Assignments

Programs should provide students with opportunities to design and facilitate professional development sessions that emphasize collaboration, data use, and instructional coaching. These practice-based assignments allow aspiring principals to actively engage with the processes of

supporting teachers, analyzing data, and implementing MTSS strategies. By moving beyond theory into application, students develop practical skills in facilitating teacher growth and instructional improvement.

Modeling Collaborative Leadership

Preparation programs should model collaborative leadership through case studies, simulations, and scenario-based exercises that demonstrate the principal's role in fostering schoolwide instructional coherence and shared accountability. These experiences help students understand how to guide teacher teams, cultivate trust, and build professional learning communities, highlighting both the relational and organizational aspects of effective leadership.

Emphasizing Reflective Practice

Structured reflection should be embedded in coursework to prompt students to analyze their leadership decisions, identify challenges, and articulate areas for growth. Reflective assignments cultivate self-awareness and metacognition, encouraging aspiring principals to continually evaluate and refine their leadership approaches in dynamic school contexts.

Embedding Collaboration Across Coursework

Collaboration should be threaded throughout the curriculum rather than treated as a standalone topic. By integrating collaborative principles across multiple courses, programs reinforce the importance of collective problem-solving, peer support, and mentoring as central components of effective school leadership. Students gain a holistic understanding of how collaboration underpins instructional coherence, MTSS implementation, and equitable student outcomes.

By incorporating these four strategies: 1) practice-based application, 2) collaborative leadership modeling, 3) reflective practice, and 4) curriculum-wide collaboration, the principal and teacher leadership preparation programs can equip aspiring leaders to guide schools with clarity, strategic vision, and the relational skills necessary to implement MTSS successfully. This approach ensures that future principals are prepared to foster professional cultures that support both teachers and students, creating sustainable, equitable learning environments.

Conclusion

This study explored the perspectives of graduate students in a principal preparation program regarding the implementation of a collaborative Multi-Tiered System of Supports (MTSS). Analysis of their reflections highlighted the interrelated roles of embedded professional

development, collaborative data use, and coaching in fostering teacher ownership, instructional responsiveness, and fidelity to MTSS practices. Across the data, it became clear that effective MTSS implementation is not simply a matter of following protocols or delivering interventions, which depends on cultivating a schoolwide culture of collaboration, trust, and shared responsibility for student outcomes.

Embedded and differentiated professional learning was found to enhance teacher agency and engagement, particularly when it is aligned with classroom realities and sustained over time. Collaborative data analysis and structured reflection within PLCs emerged as vital mechanisms for ensuring instruction remains responsive to student needs and for promoting shared accountability among educators. Coaching and peer collaboration were identified as critical for building teacher capacity and confidence while reinforcing high-fidelity implementation of MTSS strategies. Together, these elements form a holistic framework in which teacher growth, leadership practices, and student outcomes are mutually reinforced.

The findings carry clear implications for both practice and principal preparation. School leaders should prioritize integrating professional learning into existing structures, offering flexible, teacher-driven supports, facilitating collaborative data analysis, and supporting coaching relationships to strengthen instructional coherence and equity. For principal preparation programs, the study underscores the importance of practice-based assignments, modeling collaborative leadership, emphasizing reflective practice, and embedding collaboration across coursework. Aligning preparation with these realities equips aspiring principals with the skills, mindset, and strategic vision needed to lead schools effectively within an MTSS framework.

Overall, this research reinforces that successful MTSS implementation is as much about relational and cultural conditions as it is about technical procedures. By fostering collaboration, reflection, and capacity-building, school leaders can create environments in which both teachers and students thrive, advancing equity and instructional excellence from the earliest stages of schooling onward.

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Unveiling the Experiences and Unmet Needs: A Qualitative Exploration of Undocumented Immigrants Residing in Kansas

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Abstract

Undocumented immigrants in the United States (US) face numerous barriers to accessing services such as healthcare, employment, and social services due to their status. While media and immigration policy focus on the U.S. border states, significant populations of undocumented immigrants exist throughout the U.S. Using qualitative analysis of 20 personal accounts, this study examines their experiences in a Midwestern state through utilizing a strengths-perspective, which emphasizes individual and community assets. Recurrent experiential themes included problems with persistent racism, discrimination, housing, employment, health care, and mental health challenges, while undocumented immigrants demonstrate remarkable resilience. These findings suggest that they can benefit from social workers utilizing a strengths-based approach in their practice to address these unique circumstances of UI clients. Further research and advocacy are needed to strengthen support systems while recognizing individual resilience.

Key Words: Undocumented Immigrants, U.S., needs, experiences, discrimination, Kansas, resilience, strengths perspective.

Introduction

For generations, the United States (U.S.) has served as a beacon of hope for millions of undocumented immigrants. While the U.S. represents just five percent of the global population, it leads the world in hosting international immigrants. Immigrants make up 13.9 percent of the U.S. population, with approximately 20 percent of the total world's immigrants residing in the country (Batalova, 2024). Inclusive of refugees, people have come across the border to the U.S. for reasons as diverse as their countries of origin. It is estimated that an average of 22.1 million undocumented immigrants reside in the U.S. (Fazel-Zarandi et al., 2018), and while Mexico remains the country of birth origin most associated with undocumented immigrants (Passel & Krogstad, 2024), individuals from different countries and regions also migrate to the U.S. (Martuscelli, 2020).

Migration Policy (2023) identifies the prominent countries of origin for migrants to the U.S. as Mexico, El Salvador, Guatemala, India, and Honduras. While Mexican-border states such as Texas, California, Arizona and New Mexico receive the most media and federal policy attention, the Midwest region of the U.S. is no stranger to immigrants. In the state of Kansas, one in 14 individuals (more than 7% of the state's population) is an immigrant (American Immigration Council, 2024). In Kansas, the prominent countries of origin for immigrants are similar to the overall U.S. in that these include Mexico, (41%) and Guatemala (4%), and also India (9%), Vietnam (6%), and China (4%) (American Immigration Council, 2024).

Although undocumented immigrants' original plans are usually to return to their country of origin, once they settle their families in the U.S., the probability of them returning to their

home country diminishes (Garcini et al., 2021). As time passes and undocumented immigrants continue to live in the U.S., their vulnerability to experiencing negative health outcomes increases due to the ongoing and persistent stressors they encounter daily (Ornelas et al., 2020). These stressors consist of a wide range of challenges, including socioeconomic disadvantages, difficult living conditions, demanding work schedules, stigmatization, discrimination, constant fear of deportation, and limited access to healthcare. These factors and numerous others that contribute to their diverse experiences heighten the risks to their overall well-being (Garcini et al., 2021; Ornelas et al., 2020).

Prior studies have shown that the social and political landscape in the U.S. has witnessed a rise in anti-immigration rhetoric, policies, and actions in recent years, including those in which the Trump Administration set immigration policy, amplifying feelings of distress, fear, and distrust among undocumented immigrants (Cox et al., 2023; Garcini et al., 2020). It is important to note that during that same time, at which COVID-19 was also a focus of policy, undocumented immigrants access to healthcare was significantly diminished due to their legal status (Gómez et al., 2022).

Beyond limited access to healthcare, undocumented immigrants in the U.S. have continued to face harsh barriers for many years, including economic hardship, psychological stress, emotional distress, and physical challenges (Garcini et al., 2021; Rangel Gómez et al., 2021; Ornelas et al., 2020). Despite the barriers faced, the undocumented immigrant population and their families continue to show resilience (Sanchez et al., 2022). Embracing a strengths-perspective acknowledges the capacities, talents and possibilities within these individuals and their communities, emphasizing the importance of recognizing and harnessing existing resources to navigate adversity and foster well-being (Garcini et al., 2022; Sánchez et al., 2022).

Saleebey (1996) proposed the strengths perspective as a powerful framework for understanding and supporting individuals, including undocumented immigrants, amidst various challenges. Viewing undocumented immigrants' resilience through a strengths-based lens recognizes their capacities, talents, competencies, and aspirations, regardless of the challenges, oppression, or trauma they may face. By adopting this lens, practitioners can help undocumented immigrants recognize the inherent strengths within themselves and their communities.

Another way to utilize a strengths-perspective would be to compile a roster of resources within and around undocumented immigrants, their families, and communities (Saleebey, 1996). This process enables undocumented immigrants to identify supportive systems that contribute to their resilience and well-being. When undocumented immigrants can leverage these supportive resources, it can help individuals develop self-awareness, recognizing their unique strengths and qualities. Integrating a strengths-based approach into interventions with undocumented immigrants can empower them to build upon their resilience and agency, enabling them to effectively navigate the challenges they encounter.

Literature Review

Undocumented Immigration in the United States vs. Kansas

Undocumented immigration in the U.S. sparks heated debates, reflecting the complex impact on society, the economy, and political landscape. The U.S. is home to more international migrants than any other country in the world, with 20 percent of global migrants residing in the U.S. (Batalova, 2024; Batalova & Ward, 2023). Sheer numbers of undocumented immigrants indicate the prevalence – there were approximately 46.2 million immigrants residing in the U.S. in 2022, and from those, approximately 22.1 million are undocumented immigrants from all over the world (Fazel-Zarandi et al., 2018). Additionally, studies have shown that there is a high number of migrant children in the United States, most of whom are boys between the ages of 14-17 years of age who often travel unaccompanied from different countries across the globe (Menjívar & Perreira, 2017).

Immigrants are important to the U.S. in that they are likely to participate in the labor force (Batalova et al., 2024), enabling them to contribute to the economy not only as consumers but also as taxpayers. It can be inferred that approximately 75,000 immigrants in the state of Kansas (American Immigration Council, 2020) are contributors to the taxbase. Their contributions help fund essential social services and programs, such as Medicare and Social Security. In 2022, undocumented immigrants in Kansas contributed approximately \$107.6 million in state and local taxes. (American Immigration Council, 2024). Nationally, undocumented immigrants contributed \$96.7 billion in federal, state, and local taxes in 2022. Of this, \$37.3 billion went to state and local governments. For every 1 million undocumented immigrants who reside in the country, public services receive \$8.9 billion in additional tax

revenue. In 2022, undocumented immigrants in the United States paid \$96.7 billion in federal, state, and local taxes. This includes:

- Federal taxes: \$46.8 billion
- State and local taxes: \$29.3 billion
- Social Security taxes: \$25.7 billion
- Medicare taxes: \$6.4 billion
- Unemployment insurance: \$1.8 billion

Recent Trends in Immigration

According to Camarota & Zeigler (2021), the immigration population in the U.S. [documented and undocumented] grew dramatically by 1.6 million between September 2020 and September 2021, after a 1.1 million decline between September 2019 and September 2020 due to COVID-19 restrictions. Common reasons why individuals migrate from Central America are food insecurity, violence, political insecurity, lack of economic opportunity, or a combination of all these factors (Huber, 2023). It is estimated that 3.4 million Central Americans live in the U.S., and approximately 85% of them are from El Salvador, Guatemala, and Honduras combined (Huber, 2023). It is important to note that all the participants in this study are undocumented, and some were self-identified as refugees. A study conducted by Camarota & Zeigler (2021) found that most refugees were from the Democratic Republic of Congo, followed by Syria, Myanmar, Sudan, Afghanistan, Ukraine, Guatemala, El Salvador, Moldova, and Iraq, their findings are concurrent with the findings in this study. According to the American Immigration Council-Immigrants in Kansas (2024):

Kansas has a sizable immigrant community. About 7.1 percent of the state's residents are foreign-born, and 4.5 percent of its U.S.-born residents live with at least one immigrant parent. Immigrants make up 9.0 percent of Kansas's labor force and support the state's economy in many ways. They account for 8.1 percent of entrepreneurs, 11.8 percent of STEM workers, and 14.1 percent of the manufacturing workforce in the state. As neighbors, business owners, taxpayers, and workers, immigrants are an integral part of Kansas's diverse and thriving communities and make extensive contributions that benefit all. (p.1).

Undocumented Immigrant Experiences

Undocumented immigrants, including refugees, face a myriad of challenges and stressors upon their arrival and settlement in the U.S. These stressors, which can increase their vulnerability to negative health outcomes, include socioeconomic disadvantages, difficult living conditions, demanding work schedules, stigmatization, discrimination, constant fear of deportation, and limited access to healthcare (Cox et al., 2023; Ellis, 2021; Hintermeier et al., 2024; Schumacher et al., 2023). Additionally, the social and political landscape in the U.S. witnessed an increase in anti-immigration rhetoric, policies, and actions, exacerbating feelings of distress, fear, and distrust among UIs (Cox et al., 2023; Garcini et al., 2020). Furthermore, the COVID-19 pandemic amplified the challenges faced by undocumented immigrants, exacerbating their lack of healthcare access due to their undocumented status and posing emotional and economic strains (Hintermeier et al., 2024). As UIs navigate these barriers, their resilience emerges as a prominent theme, reflecting their ability to confront adversity and persevere despite the harsh realities they encounter (Ellis, 2021).

Undocumented Immigrants and Strengths Perspective

The strengths perspective, introduced by Saleebey (1996), provides a valuable framework for recognizing the inherent capacities and talents of undocumented immigrants, emphasizing their potential despite the challenges they face. This approach shifts the focus from deficits and vulnerabilities to the strengths they possess, both internally and in the context of their contributions to destination communities. Undocumented immigrants exemplify the strengths perspective by demonstrating remarkable inner strength in making the difficult decision to leave their home countries. This decision requires immense courage, often driven by the desire for a better life for themselves and their families, despite the uncertainty and risks associated with migration (Saleebey, 1996).

Internal Strengths

Upon arrival in a new country, undocumented immigrants face substantial barriers, including language and cultural differences, discrimination, and economic hardship. Yet, research consistently highlights their resilience in navigating these obstacles. Garcini et al. (2021) examine the protective factors to the well-being of undocumented Latinx immigrants in the United States, identifying their ability to develop strategies to manage distress amid adversity. Their resilience is shaped by a combination of personal strengths, such as perseverance, adaptability, and resourcefulness, enabling them to survive and thrive despite

systemic challenges. Furthermore, undocumented immigrants possess the strength to forge new identities, often cultivating strong community bonds as a way of coping with the isolation and uncertainty of their situation. Lieberman et al., (2019) demonstrate how resilience-building programs enable Latino immigrants to recognize their inherent strengths, empowering them to navigate the hardships associated with undocumented status. By fostering self-awareness and developing coping mechanisms, undocumented immigrants draw on their internal reserves of strength to adapt to life in new environments.

Strengths Brought to Destination Communities

In addition to their internal strengths, undocumented immigrants contribute significantly to the economic, social, and cultural fabric of destination communities. Economically, undocumented immigrants often fill essential roles in sectors such as agriculture, construction, and service industries, playing a crucial role in local economies, especially in rural areas where labor shortages are common. Research by Batalova et al. (2024) highlights the critical role that undocumented workers play in the U.S. labor market, contributing to industries that sustain both urban and rural communities. Findings indicate:

Immigrant-origin persons contributed more to the growth of the civilian labor force (102 percent) than to the growth of the overall U.S. population (62 percent). This is in part due to their higher labor force participation rates, with particularly high participation rates among immigrant men and rising rates among immigrant women. (p. 1)

Socially, undocumented immigrants strengthen the communities they reside in by fostering diversity and building strong social networks. Their community-oriented nature is an asset, as they often create mutual aid networks or community cohesion to support one another, particularly in areas where formal resources are limited (Ellis et al., 2022; Garcini et al., 2021). These networks not only offer practical assistance but also contribute to the social cohesion of the broader community.

Culturally, undocumented immigrants bring rich traditions, languages, and perspectives that enhance the diversity of destination communities. Their presence enriches cultural life through the introduction of new customs, foods, and artistic expressions, helping to build more inclusive and vibrant communities. Saleebey's strengths perspective urges us to acknowledge these contributions and recognize undocumented immigrants not just for their resilience but for the positive impact they have on their communities. The strengths perspective provides a

powerful lens for understanding undocumented immigrants, both in terms of the inner resources they harness to overcome challenges and the valuable contributions they make to the communities they settle in. This research underscores the importance of recognizing these strengths to better support undocumented immigrants in their journeys and to highlight the ways in which they enrich the social, economic, and cultural fabric of their destination communities.

Purpose of this Study

The purpose of this study is to increase understanding of experiences of undocumented immigrants residing in Kansas, U.S. Additionally, what obstacles do undocumented immigrants encounter in Kansas, U.S.? And what are the key needs and difficulties faced by undocumented immigrants in Kansas, U.S.? This is done so to address the primary research question: Are there unique challenges and barriers among the undocumented immigrants in rural Kansas that differentiate from those identified in the literature from Mexican/U.S. border states? This is done so using a latent content analysis (LCA) qualitative analytical framework. Answering these questions may help identify the specific experiences, needs, and challenges undocumented immigrants face when residing in Kansas, particularly in rural areas of the state as well as increase cultural competency for practitioners who encounter or serve this population.

Methods

This qualitative study employed a latent content analysis (LCA) framework to explore the lived experiences of 20 undocumented immigrants residing in Kansas. The study aimed to uncover the unique challenges and needs of this vulnerable population through an in-depth analysis of participant narratives. Participants represented a range of genders and national backgrounds, with some self-identifying as refugees who were undocumented due to legal or procedural barriers, such as missed court dates resulting from transportation challenges. The use of LCA allowed the researchers to examine underlying themes and implicit meanings within these complex experiences.

Data Collection

Participants were recruited through snowball sampling, beginning with trusted contacts identified via relationships with local immigrant advocacy organizations. These organizations had established credibility within the undocumented community and supported the research team in connecting with initial participants. Recruitment continued as participants referred others from their social circles, which was essential given the hidden and high-risk nature of the population.

Semi-structured interviews were conducted in Spanish by the bilingual principal investigator, either in person or by phone, based on participants' preferences. The interview protocol invited participants to share their needs, challenges, and lived experiences in Kansas. Interviews were transcribed manually by the principal investigator during the sessions to capture emotional tone, pauses, and contextual details. Informed consent was obtained from all participants, and all study procedures were approved by the Institutional Review Board at Pittsburg State University.

Data Analysis

Data analysis followed the principles of latent content analysis to identify underlying patterns and themes in participant responses. The process began with axial coding, in which each transcript was examined for recurring ideas and concepts. Two additional researchers independently conducted inductive coding to refine the themes and enhance the credibility of the findings through investigator triangulation. Theme frequencies were calculated to allow for a basic quantitative comparison, adding structure and depth to the qualitative analysis (Lietz & Zayas, 2010).

Demographics

Table 1. Gender and Age Range of Subjects

Age Range	n	Male	Female	Refugee
18-24	6	1	5	5
25-30	3	1	2	3
31-35	5	3	3	2
36+	6	1	4	4
Total	20	6	14	14

Table 2. Country of Origin

Country	n
Mexico	6
Ecuador	3
Guatemala	4
Marshall Islands	1

El Salvador	4
Honduras	2
Total	20

Table 3. Children of Undocumented Immigrants

Child Status	n
Undocumented children	14
Citizen children	12
Children still living in the country of origin	5
Total	36

Results

This study uncovered a range of challenges faced by undocumented immigrants in Kansas, shedding light on their experiences with racism, fear of deportation, mental health struggles, and barriers to employment, housing, and transportation. Despite these significant obstacles, participants demonstrated resilience and a determination to navigate the hardships associated with their undocumented status. The following section outlines the key findings related to the pervasive issues of discrimination, the impact of deportation fears on mental health, and the systemic barriers to resources while also highlighting the perseverance and strength that participants displayed in overcoming these adversities.

Experiencing Racism and Discrimination

Participants in the study reported significant experiences of racism and discrimination, primarily in the workplace from co-workers and employers. Additionally reported were experiences of racism and discrimination via law enforcement officers and within healthcare settings. One participant stated, *“as a housekeeper at a hotel, I have faced more discrimination than racism, not so much by my employer, but by the guests.”* Over 40% of participants stated they held low-wage jobs that required little formal education, such as manual labor or construction. One participant stated, *“when I worked at a local fast-food restaurant, I was not allowed to speak my native language [Spanish] and I was paid less because of my undocumented*

status, which resulted in even less pay after taxes were taken out.” Despite working these jobs, they paid taxes through Individual Taxpayer Identification Numbers (TIN) but were not eligible for social services or education benefits. These experiences of discrimination were frequently tied to misconceptions about their tax contributions, with many participants noting that they contribute to welfare programs they cannot access.

Fear of Deportation

All participants expressed fear of deportation, which extended to their children. This fear contributed to anxiety, stress, and feelings of vulnerability, significantly impacting their overall well-being. Participants reported that the constant fear of deportation resulted in mental health struggles and limited their social and civic participation. One participant reported:

...the fear of being deported sets in every time I leave my house, which has caused a lot of anxiety and depression. But at the same time, I thank God for allowing me to provide for my family and that gives me the strength to keep going.

Over 80% of the participants in this study reported fear of deportation. Another participant stated:

...the uncertainty of which way immigration policies will go has caused a lot of stress and anxiety among my family, especially when [Donald] Trump was in office...so much changed during the Trump administration and not in favor of immigrants and he still talks about mass deportations, which caused a lot of fear within my family and the undocumented community.

Throughout the study the vast majority of participants had similar stories about their fear of deportation.

Mental Health Issues

Over 60% of participants disclosed mental health concerns, including anxiety, PTSD, and depression. Many of these issues were tied to experiences of family separation, fear of deportation, and difficulties in accessing mental health services. One participant shared a personal account of enduring abuse, immigration challenges, and difficulties accessing needed mental health care after arriving in Kansas. The participant stated:

I lost my parents at a young age [10] in Guatemala and I was left under the care of my older sister who sold me to an older man who then took me to Mexico. I endured many years of abuse and had two daughters with him. When my daughters were pre-teens, I

feared he might do to them what he did to me... I escaped with my two children and used a coyote[smuggler] to get into the USA and that is how I ended up in Kansas. However, approximately two years after arriving, I was sexually assaulted by a man who kept me captive for days where he sexually assaulted me multiple times. After the assault, my past trauma was triggered and I decided to seek therapy.

Despite needing therapy, financial constraints led to her being discharged from services.

The participants openly shared their experiences and the various sources of trauma they faced. While most recalled a positive childhood, poverty and violence in their home countries were the primary factors driving their decision to move to the United States in search of a better life. However, many also experienced further trauma at the hands of smugglers during their journey. For example, one participant stated their smuggler guide who are known as “mules” would leave others behind to die if they could not keep up with the rest of the group. This participant reported:

You build a bond with the people in your group while trying to cross the border, and seeing their health decline day by day as we struggled through the desert with barely any food or water was so hard. But what was even harder was watching them die and having to leave them behind, most of them were so young... sometimes if they were too weak, the guides would leave them behind to die. Those memories have stayed alive in my mind for many years.

Participants also shared their personal experiences of being abused by the smugglers and witnessing others being abused. One participant reported:

...women and young girls are often sexually assaulted, and sadly, I had to witness them being abused. I couldn't do or say anything because if I did, the smugglers would kill me or anyone who would try to intervene. It was horrifying and heartbreaking and something I will live with for the rest of my life...I know I need therapy, but I can't afford it, instead, I go to church every weekend.

Unfortunately, this is the reality of what many immigrants go through in their pursuit of a better life in the United States.

Barriers to Employment, Housing, and Transportation

Participants also reported significant challenges in securing stable employment, housing, and transportation. Their undocumented status restricted access to many social services and

posed significant barriers to achieving financial stability. Many were left to seek alternative or informal work arrangements while struggling to find affordable housing or reliable transportation.

Employment Barriers

A significant portion of participants (87.5%) reported challenges in obtaining employment due to their undocumented status, often resulting in low-paying, unskilled jobs. One participant shared:

...being undocumented and finding employment is extremely difficult which often leads to many of us undocumented immigrants settling for low-paying jobs. After paying into programs, we are not eligible for such as social security and Medicaid, my take home pay is below minimum wage. Although I do not qualify for these programs, my children who are born in the United States qualify and I am thankful for that

Participants mentioned working in sectors such as hospitality, restaurants, factories, and landscaping. Many shared experiences of economic instability, including wage theft, where employers refused to pay for work completed. Another participant stated:

People take advantage of the fact that I am undocumented. I remodel homes for a living and many times clients don't pay me for the simple fact that I do not have legal status, but that is the risk I must take in order to take care of my family.

Some participants had to take on informal jobs, such as selling food within their communities, to make ends meet. For example, a female participant reported:

I couldn't survive on a minimum wage job after paying taxes and had to figure out other means to make money, I quit my housekeeping job at a hotel and started selling food to the Hispanic community in order to be able to pay my bills.

Many participants had similar stories of the challenges they face when seeking employment.

Housing Barriers

Participants reported difficulties in securing stable housing upon arrival in Kansas, leading many to live in overcrowded, substandard conditions. A participant who had recently arrived in Kansas from El Salvador stated he lived in a home with “*ten other people in a three bedroom home.*” Many participants implemented these strategies to manage their rent and bills. This overcrowding was exacerbated by participants' responsibility to send financial support to

family members in their home countries. While some participants had family in the U.S., others struggled with isolation. Despite these challenges, many participants expressed that their living conditions in Kansas were an improvement compared to their countries of origin.

Barriers to Obtaining a Driver's License

A common barrier identified by participants was the inability to obtain a driver's license in Kansas due to their undocumented status. This limited their mobility, making it difficult to attend immigration court hearings, get to work, or transport their children to school. One participant reported:

I was granted asylum entry into the United States and one of the requirements was to attend immigration court. However, I could not make it to my appointment in Kansas City, MO due to not having a DL or anyone willing to give me a ride so far away, which is two hours from where I live. Therefore, I missed the opportunity of obtaining legal status.

Another participant shared:

Not having a DL as a parent is really tough. I usually can't make it to their events, and when I need to take them to doctor's appointments, they end up missing the whole day of school. That's even led to truancy court for our family.

Many were forced to drive without a license, risking fines and potential deportation.

Resilience and Perseverance

Despite these challenges, the participants demonstrated notable resilience. They continued to seek employment, pay taxes, and navigate the limitations of their status. Many participants expressed a desire to return home but persisted in adapting to their new environment despite ongoing discrimination, isolation, and limited resources. Faith in God and hope for their children's futures were recurring themes. Participants expressed optimism that their children would enjoy better opportunities than they had. One participant stated, *"I know that the taxes I pay fund programs I do not qualify for, but I don't mind because I know my US born children qualify if they ever need the help and I am thankful for that."* Another participant stated, *"I am so thankful that my children will have a better life than the one I had and that brings me joy and peace."* Many other participants had similar stories as well as their deep faith in God, stating *"I thank God every day for giving me the ability to work another day and feed my family...when you have God and health, you have everything...God has been my protector, and I am thankful*

for another day on this earth.” Many of the participants expressed their deep connection to their faith.

Law Enforcement Interactions

Participants’ experiences with law enforcement were mixed. While 39% of participants had no contact with law enforcement, 22% reported minimal non-criminal encounters, most of which were positive. However, 39% of participants had been stopped by law enforcement for driving without a license. Participants expressed frustration with law enforcement officers (LEO) and other community members who did not understand their inability to legally obtain a license. Many participants who were pulled over reported that a few LEOs understood participants couldn't get a DL due to their undocumented status. However, many other LEOs told participants to go to the Department of Motor Vehicles (DMV) to get one, showing a lack of understanding about the ineligibility of undocumented immigrants to obtain a license.

Some participants reported being repeatedly targeted by the same officers. For instance, one participant reported:

I was pulled over by the same officer twice for not having a driver’s license. But I had to drive to get to work. This officer actually found out where I lived and would park near my house, just waiting for me to leave so he could pull me over again, which led to me having to pay thousands of dollars in legal fees and time in jail.

Other participants described being told to “just get a driver’s license” despite their inability to do so due to their undocumented status.

Lack of Healthcare Access and Education

The study revealed that adult undocumented immigrants faced significant barriers to healthcare access. Participants recounted instances of needing surgery but being unable to afford the procedure, leaving them in chronic pain. One participant sustained injuries while crossing the border but could not pay for the surgery needed to treat their ankle and back. Another individual with a heart condition reported that the \$700 out-of-pocket cost for prescribed medication was beyond their financial means, preventing treatment. Participants also shared harrowing experiences of dehydration and injury while crossing the desert into the United States, underscoring the physical toll of undocumented migration. Two younger participants expressed their aspirations for higher education in the U.S.—one wished to become an attorney, and the other desired a career in medicine. However, both cited their undocumented status as a major

barrier to pursuing these goals due to the high costs of international tuition and ineligibility for financial aid or scholarships.

Lack of Support

A lack of community support was a major theme. Participants predominantly relied on two local Catholic churches with large Latinx congregations. While 44% reported receiving some support through these networks, 56% disclosed having no external support. In one case, a married couple with three young children was evicted and found temporary shelter through the support of another undocumented immigrant. The couple reported “*back in February we were found homeless with three children in a park by another undocumented immigrant who was very kind and gave us shelter.*” The undocumented community emerged as the primary support system, with participants noting that their status often left them vulnerable to exploitation. Instances of this include employers who refused to pay for completed work, leveraging participants undocumented status against them. One participant reported:

I recently completed a remodeling job for a well-known businessman in the community who refused to pay me when he found out I was undocumented. The job was worth approximately \$5,000. Thankfully, I met a Mexican American woman who had knowledge about the legal system and a passion for helping immigrants. She informed me that I had rights as an undocumented immigrant, and she was able to help me take this individual to court where he was ordered to pay me for the job. I had no idea I could take someone to court.

Most participants were unaware of their legal rights as undocumented immigrants, including the right to payment for work performed and access to a safe work environment.

Discussion and Implications

The findings of this study, grounded in a strength’s perspective, underscore the resilience, perseverance, and resourcefulness of undocumented immigrants in Kansas despite facing systemic barriers such as racism, discrimination, fear of deportation, and limited access to essential resources. By focusing on the strengths and capabilities of this population, social workers can better understand how they navigate these challenges and identify ways to enhance support through policy and community interventions.

Addressing Racism and Discrimination

One prominent theme that emerged was the pervasive experience of racism and discrimination, particularly in employment, healthcare, and interactions with law enforcement. These findings align with previous research, including studies by Ornelas et al. (2020) and Cobb et al. (2019), which document widespread discrimination against undocumented immigrants. However, through a strengths-based lens, this study also highlights the remarkable ways in which participants persevere despite these challenges, relying on informal networks and personal determination to seek employment and access services. This resilience serves as a foundation for advocacy efforts aimed at dismantling systemic discrimination while empowering undocumented immigrants to continue thriving in hostile environments.

Managing Fear of Deportation

The profound fear of deportation, another recurring theme, exacerbates mental health challenges such as anxiety, depression, and PTSD. Studies like those of Ballard (2023) and Garcini et al. (2016) confirm the widespread psychological distress linked to deportation fears. While this fear undoubtedly causes harm, the strengths perspective encourages a focus on how undocumented immigrants manage this anxiety. Participants demonstrated a strong sense of adaptability, finding ways to build stable lives for their families despite living in a constant state of uncertainty. Culturally sensitive mental health services that build on this adaptability and resilience can further support the mental well-being of undocumented immigrants.

Overcoming Employment and Housing Barriers

Barriers to employment and housing also emerged as significant challenges, with participants describing systemic exclusion from well-paying jobs and stable housing. While this economic exclusion mirrors findings from studies such as Huber (2023) and Bazzoli and Probst (2022), the strengths perspective reveals how undocumented immigrants leverage their resourcefulness and work ethic to overcome these barriers. Many participants found ways to secure employment in industries such as hospitality and construction, contributing to the economy through their labor and tax payments despite low wages and exploitative conditions. Recognizing and fostering this resourcefulness is critical in developing policies that provide undocumented workers with better protections and opportunities.

Enhancing Mobility and Access

A key barrier that participants faced was the inability to obtain a driver's license, particularly in Kansas, which limits their mobility and access to basic needs. Previous research

by Cheong (2021) highlights the severe limitations this projects onto undocumented immigrants. Yet, participants' ability to navigate these constraints—through reliance on public transportation, community networks, or carpooling—illustrates their resilience. Expanding access to driver's licenses would not only support this resourcefulness but also further empower undocumented individuals to contribute more fully to their communities.

Building Trust with Law Enforcement

Participants' interactions with law enforcement revealed both positive and negative experiences. While some felt targeted due to their undocumented status, others reported more supportive encounters. Regardless of these varying experiences, the strength's perspective sheds light on how undocumented immigrants maintain a cautious optimism about their ability to navigate these interactions. This optimism reflects their broader resilience and the potential for law enforcement to build trust by understanding the unique challenges they face, particularly around legal restrictions such as driving without a license. Furthermore, law enforcement can benefit from receiving training on the unique challenges faced by undocumented immigrants and exercising discretion in cases involving traffic violations and driver's license issues.

Fostering Community and Support Networks

Despite limited access to healthcare, housing, and education, participants demonstrated remarkable resilience and a deep sense of community. This reflects the findings of Garcini et al. (2021) and others, which emphasize the strength of undocumented immigrants in fostering informal networks of support and collaboration within their communities. By recognizing and building upon these strengths, policymakers and service providers can create programs that not only address barriers but also leverage the inherent capabilities of undocumented immigrants. Healthcare providers and support organizations should develop culturally sensitive mental health services to address the psychological challenges faced by undocumented immigrants and their families.

Policy Recommendations

This study's findings, consistent with the strengths perspective, call for policy changes that not only address the challenges faced by undocumented immigrants but also build on their resilience, determination, and contributions to society. For instance, expanding access to healthcare and education while providing pathways to legal employment would allow undocumented individuals to thrive further. Similarly, community organizations and

policymakers can support the strengths of undocumented immigrants by offering resources that align with their existing networks and strategies for survival. Policymakers must prioritize comprehensive immigration reform that provides an easier and less expensive pathway to legal status for undocumented immigrants. This would address the fear of deportation, reduce discrimination, and allow individuals to fully participate in society without the constant threat of being undocumented. Additionally, policymakers should work towards providing equitable access to healthcare services and inclusive education policies for undocumented immigrants.

Conclusion

The purpose of this research was to identify and analyze the overall experiences of undocumented immigrants residing in Kansas, U.S. Specifically, what obstacles do undocumented immigrants encounter in Kansas, U.S.? Moreover, to identify key needs and difficulties faced by undocumented immigrants in Kansas, U.S. Results from the latent content analysis have addressed the primary research question: Are there unique challenges and barriers among the UI's in rural Kansas that differentiate from those identified in the literature from Mexican/U.S. border states?

While undocumented immigrants in Kansas face significant barriers, they also exhibit extraordinary resilience, resourcefulness, and determination. Recognizing these strengths is crucial for developing more effective and inclusive policies. By supporting the undocumented population through culturally competent mental health services, expanded access to driver's licenses, and educational opportunities, we can empower these individuals to continue contributing positively to their communities. A strengths-based approach not only acknowledges their struggles but also celebrates their perseverance, which is essential for fostering a more inclusive and compassionate society.

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Integrating Emotional Intelligence and Cultural Intelligence in K-12 Teacher Professional Development: A Web-Based Training Approach

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Abstract

Teachers working with multilingual learners (MLs) require both emotional intelligence (EQ) and cultural intelligence (CQ) competencies, yet few professional development programs systematically integrate these complementary intelligences. This article presents the systematic design of a web-based professional development module that bridges EQ and CQ for K-12 teachers of multilingual learners. Grounded in the Dick and Carey (2022) instructional design model, the self-paced module delivered via Canvas LMS progresses through three performance objectives, achieving 80% accuracy. Specifically, they: identify distinct EQ and CQ characteristics, categorize classroom scenarios by required intelligence dimensions, and develop integrated response strategies. The five-anchor conceptual framework synthesizes emotional intelligence theory, cultural intelligence theory, experiential learning, community of inquiry, and educative mentoring principles to address a critical gap in teacher preparation programs. Many of these programs omit EQ and CQ training, and resource-limited districts are unable to provide mentoring in these competencies. This paper demonstrates that systematic instructional design can create scalable, accessible online learning experiences that develop human-centered competencies traditionally associated with face-to-face mentoring. Further implications of this work extend across multiple levels of teacher preparation and practice. First, integrating emotional and cultural intelligence into pre-service teacher education ensures that future educators enter classrooms equipped with human-centered competencies alongside pedagogical knowledge. Second, adopting systematic approaches to professional development design provides a coherent framework for cultivating these skills in practicing teachers. Finally, organizational support is essential to translate individual competency growth into meaningful classroom practice, fostering school cultures that value and reinforce emotionally attuned and culturally responsive teaching.

Key Words: Emotional Intelligence, Cultural Intelligence, Professional Development, Teacher Preparation, Instructional Design, Multilingual Learners

Introduction

American K-12 classrooms have experienced significant demographic shifts over the past several decades. Teachers today face the complex challenge of educating different student

populations, particularly multilingual learners who bring varied cultural backgrounds, linguistic repertoires, and educational experiences to the classroom. Although teacher preparation programs traditionally emphasize pedagogical content knowledge and instructional strategies, the human dimensions of teaching, specifically emotional intelligence (EQ) and cultural intelligence (CQ), have received comparatively less attention in professional development contexts.

Working with multilingual learners (MLs) requires teachers to navigate complex intersections of language, emotion, and varied student backgrounds. Mainstream teachers experience difficulties in developing the competencies needed to serve these student populations effectively (Kutsyuruba et al., 2017). While research demonstrates that emotional intelligence positively influences classroom practices, teachers may struggle to integrate emotional awareness with responsiveness to students' varied backgrounds and experiences (Dewaele et al., 2018). This challenge is particularly critical for novice teachers, who require structured support in balancing emotional attunement with sensitivity to students' linguistic and experiential differences when working with English language learners (Hayden & Gratteau-Zinnel, 2019). These persistent challenges point to a critical gap in teacher professional development. Teachers need to be skilled in systematic, evidence-based approaches that integrate emotional intelligence and cultural responsiveness across varied student backgrounds. Web-based professional development offers promising opportunities to address this gap. Online platforms provide the flexibility, scalability, and accessibility that traditional face-to-face professional development often cannot match. Moreover, many teacher preparation programs do not systematically include training in emotional intelligence and cultural intelligence, and resource-constrained school districts often struggle to provide access to experienced mentors who can support teachers in developing these competencies. Web-based professional development can help address these systemic barriers by making high-quality training accessible to teachers across varied contexts and resource levels. However, the effectiveness of online professional development depends on thoughtful instructional design that considers both the unique affordances of digital environments and the specific learning needs of adult professionals. The challenge lies in creating web-based experiences that develop complex, human-centered competencies, such as emotional and cultural intelligence, through systematic, evidence-based approaches.

This article addresses the challenge by presenting a systematic approach to integrating emotional intelligence and cultural intelligence in web-based professional development for K-12

teachers of multilingual learners. Using the Dick and Carey (2022) instructional design model as our framework, we illustrate the development of a self-paced online module that explicitly bridges EQ and CQ competencies. Our work contributes to the growing literature on technology-enhanced professional development by demonstrating how systematic instructional design can create learning experiences that develop the reflective, empathetic, and culturally responsive capacities essential for effective teaching in diverse classrooms.

Literature Review

Emotional and Cultural Intelligence in Teacher Development

Emotional intelligence and cultural intelligence represent complementary, trainable intelligences essential for effective teaching in diverse classrooms. Goleman (1998) established emotional intelligence as encompassing the ability to perceive, understand, use, and manage emotions, including self-awareness, empathy, and emotional regulation. Cultural intelligence, as conceptualized by Ang and Van Dyne (2015), comprises four dimensions: metacognitive (awareness of cultural influences), cognitive (knowledge of cultural systems), motivational (interest in cultural engagement), and behavioral (ability to adapt behavior across cultures). Both frameworks emphasize that these intelligences are not fixed traits but rather capacities that can be developed and cultivated through intentional learning experiences.

Research demonstrates that teachers with high emotional and social intelligence build emotionally safe, engaging classrooms that enhance student motivation and learning (Dewaele et al., 2018; Gkonou & Mercer, 2017). Dolev and Leshem (2017) and Hen and Sharabi-Nov (2014) found that emotional intelligence can be developed through reflective and experiential professional development, improving teachers' empathy and self-awareness. The development of these competencies appears particularly important for teachers working with multilingual learners, who must navigate complex linguistic, cultural, and emotional dynamics in their classrooms.

Cultural intelligence research emphasizes moving beyond surface-level cultural awareness to deeper cultural pedagogy and reflexivity. Watkins and Noble (2016) and Kidwell (2019) argue for critical, reflective approaches to cultural intelligence that help teachers move from recognition of difference to meaningful pedagogical adaptation. This progression from awareness to action parallels developments in emotional intelligence, where teachers move from recognizing emotions to effectively regulating and channeling them toward productive ends. The

integration of EQ and CQ represents a holistic approach to developing the human capacities necessary for culturally responsive, emotionally attuned teaching.

Educative Mentoring and Professional Learning

The concept of educative mentoring provides important theoretical grounding for integrating EQ and CQ development. Feiman-Nemser (2001) described educative mentoring as a form of professional support that fosters reflection, empathy, and cultural adaptation, essentially, emotional and cultural intelligence in action. Hayden and Gratteau-Zinnel (2019) demonstrated that structured mentoring experiences help novice teachers balance emotional awareness and cultural sensitivity when working with English language learners. O'Hara et al. (2020) found that mentoring enhanced teachers' linguistic and cultural responsiveness, particularly in developing empathy toward multilingual students.

Professional development integrating EQ and CQ should incorporate mentoring principles: structured reflection, guided practice, and supportive feedback. However, traditional mentoring relationships can be resource-intensive and difficult to scale. This tension between the documented effectiveness of personalized, relational professional learning and the practical need for scalable solutions points to the potential value of well-designed web-based professional development that incorporates mentoring principles.

Web-Based Professional Development for EQ and CQ Growth

Recent research demonstrates that web-based professional development can effectively support the development of emotional and cultural intelligence when designed with appropriate pedagogical principles. Elliott (2017) and Smith (2014) established that the Community of Inquiry framework, emphasizing social, cognitive, and teaching presence, provides a practical foundation for online professional development built on empathy and reflection. This framework aligns well with the goals of EQ and CQ development, which require social engagement, cognitive processing, and guided facilitation.

Kowalski et al. (2017) and Bragg et al. (2019) identified key features of effective online professional development: interaction, collaboration, reflection, flexibility, and usability. These features create conditions that nurture EQ and CQ development. Kirste and Holtbrügge (2019) provided empirical evidence that online experiential learning can effectively increase cultural intelligence scores in digital settings. Pozo-Rico et al. (2023) demonstrated that emotional intelligence training via digital professional development improves teacher well-being,

resilience, and innovation. He and Bagwell (2022) found that online professional development integrating emotional reflection with cultural pedagogy boosts empathy and readiness to work with English language learners.

However, Gu et al. (2025) cautioned that equitable online professional development requires contextual design and teacher agency because access alone is insufficient. Teachers must have meaningful control over their learning experiences and opportunities to connect professional development content to their specific teaching contexts. This finding underscores the importance of thoughtful instructional design that balances structure with flexibility and expert guidance with learner autonomy.

Conceptual Framework

Our approach to integrating emotional and cultural intelligence in web-based professional development rests on five theoretical anchors that work synergistically to support teacher learning. These anchors synthesize insights from intelligence research, learning theory, and professional development scholarship to create a framework for design and implementation.

First Anchor: Emotional Intelligence

Drawing on Goleman (1998) and Mayer et al. (2000), we conceptualize emotional intelligence as the capacity to perceive, understand, use, and manage emotions effectively. In educational contexts, this includes teacher self-awareness (recognizing one's own emotional states and their impact on teaching), empathy (understanding students' emotional experiences), and emotional regulation (managing emotions productively in complex classroom situations). Emotional intelligence provides the intrapersonal and interpersonal foundation necessary for responsive teaching, particularly in diverse classrooms where emotional dynamics may be complex and culturally mediated.

Second Anchor: Cultural Intelligence

Following Ang and Van Dyne (2015), Watkins and Noble (2016), and Kidwell (2019), we adopt a multidimensional view of cultural intelligence encompassing four key dimensions. Metacognitive CQ involves awareness of one's own cultural assumptions and the ability to plan for multicultural interactions. Cognitive CQ encompasses knowledge of cultural systems, practices, and norms. Motivational CQ refers to the intrinsic interest in and confidence to function effectively in culturally diverse settings. Behavioral CQ involves the capability to adapt verbal and nonverbal behavior appropriately across cultures. Together, these dimensions support

teachers in moving beyond superficial multiculturalism toward meaningful culturally responsive pedagogy.

Third Anchor: Experiential Learning

Kolb's experiential learning theory, as applied to teacher professional development by Dolev and Leshem (2017), emphasizes that deep learning occurs through a cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation. For EQ and CQ development, this means that professional development must go beyond information transmission to include opportunities for teachers to engage with authentic scenarios, reflect on their responses, develop conceptual understanding, and practice new approaches. The integration of reflection and practice creates conditions for deeper personal growth, which is essential to the development of emotional and cultural intelligence.

Fourth Anchor: Community of Inquiry

The Community of Inquiry framework (Elliott, 2017; Smith, 2014; Bragg et al., 2019) emphasizes three interdependent elements in effective online learning: social presence (ability to project oneself and establish relationships), cognitive presence (ability to construct meaning through sustained reflection and discourse), and teaching presence (design, facilitation, and direction of learning experiences). In the context of EQ and CQ professional development, social presence enables the relational trust needed to examine assumptions and biases. Cognitive presence supports the critical reflection essential for developing metacognitive and cognitive intelligence. Teaching presence provides the structure and guidance that helps teachers translate insight into practice.

Fifth Anchor: Educative Mentoring

Educative mentoring (Feiman-Nemser, 2001; Hayden & Gratteau-Zinnel, 2019; O'Hara et al., 2020) provides a relational model for supporting teacher growth. Rather than focusing solely on technical competence, educative mentoring aims to develop reflective practitioners who can learn from their practice. In web-based professional development, educative mentoring principles can be operationalized through carefully scaffolded activities, authentic scenario analysis, and opportunities for guided reflection. The goal is to create digital learning experiences that provide the supportive challenge characteristic of effective mentoring relationships.

Methodology: The Dick and Carey Instructional Design Approach

The Dick and Carey model (Dick et al., 2022) is a systematic instructional design framework that focuses on the interrelationships among context, content, learning, and instruction. As a procedural model, it outlines a series of steps from identifying instructional goals through final evaluation. The model is particularly well-suited for web-based training development because of its systematic, iterative nature, providing a structured framework to ensure that online courses are well-designed, practical, and aligned with specific learning objectives.

We selected the Dick and Carey model for several reasons. First, its systematic approach ensures alignment between learning objectives, assessments, and instructional strategies: a critical consideration when developing complex competencies like EQ and CQ. Second, the model's emphasis on learner analysis ensures that professional development is designed for the specific needs and contexts of practicing teachers. Third, the iterative development and formative evaluation processes built into the model support continuous improvement based on empirical data. Finally, the model's emphasis on the interrelationships among instructional components aligns well with our goal of integrating multiple theoretical perspectives into a coherent whole.

Key Design Steps

Following the Dick and Carey model, our design process proceeded through nine key steps: (1) Identify instructional goals that determine what learners should be able to do after instruction; (2) Conduct instructional analysis-breaking down the goal into smaller skills and identifying prerequisites; (3) Analyze learners and contexts by identifying the characteristics of the target audience and the learning environment; (4) Write performance objectives that create specific, measurable, and observable statements of learning outcomes; (5) Develop criterion-referenced tests by designing evaluations that measure achievement of objectives; (6) Develop instructional strategy by choosing methods and media for delivering instruction; (7) Develop and select instructional materials by creating or finding appropriate content and resources; (8) Design and conduct formative evaluation by making changes based on pilot testing; and (9) Revise instruction by implementing a summative evaluation of the complete instructional package.

For our web-based module integrating EQ and CQ, we established the following instructional goal: Using classroom scenarios involving multicultural student interactions, K-12

teachers of multilingual learners will correctly identify whether situations require an EQ-based or CQ-based response and demonstrate appropriate combined EQ/CQ strategies with 80 percent accuracy. This goal reflects our integration of both intelligences while maintaining focus on practical application in authentic teaching contexts.

Performance Objectives and Learning Environment

We developed three specific performance objectives that build progressively from foundational knowledge to integrated application.

Objective 1: focuses on conceptual understanding: Teachers will identify the distinct characteristics of EQ and CQ through matching exercises that demonstrate comprehension of core concepts.

Objective 2: addresses analytical skills: Teachers will categorize classroom scenarios as primarily requiring EQ- or CQ-based responses with 80 percent accuracy, demonstrating the ability to recognize the dimensions of intelligence relevant to specific situations.

Objective 3: targets synthesis and application: Teachers will develop integrated EQ/CQ response strategies using a provided rubric, demonstrating their ability to combine both intelligences to address complex classroom situations.

The module's learning environment reflects contemporary realities of teacher professional development. The module is delivered online through the Canvas learning management system, allowing teachers to access content from the classroom or home. It is designed for self-paced independent study, recognizing that teachers have varying schedules and learning preferences. The module incorporates structured reflection opportunities throughout, consistent with our experiential learning framework. The focus is on immediate application, with scenarios and activities designed to connect directly to teachers' current classroom practices.

Module Design and Implementation

Module Structure and Delivery

The web-based module was developed in Adobe Captivate. This professional eLearning authoring tool supports interactive multimedia content and is delivered through Canvas LMS for accessibility and ease of use. The module follows a four-stage progression:

- Learn (introduce EQ and CQ concepts and their distinctions),
- Practice (analyze scenarios to identify which intelligence is primary),
- Apply (develop combined strategies for complex situations), and

- Evaluate (assess response effectiveness using a rubric).

This progression aligns with experiential learning theory's cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation.

Participants are provided with unlimited time for scenario assessments, recognizing that thoughtful reflection cannot be rushed, and we again recognize that teachers have varying schedules and professional responsibilities. The self-guided nature of the module supports teacher agency and autonomy while maintaining a clear structure that guides learning. Interactive elements throughout the module provide immediate feedback, supporting the iterative practice essential for competency development.

Integration of EQ and CQ: A Holistic Approach

The central design principle of the module is the explicit integration of emotional and cultural intelligence. Rather than treating EQ and CQ as separate competency domains, the module demonstrates how they work together in professional practice. Teachers first learn to distinguish between situations that primarily require emotional intelligence (such as recognizing and responding to student anxiety) and those that primarily require cultural intelligence (such as understanding culturally specific communication patterns). However, the module then recognizes that most authentic teaching situations require both intelligences simultaneously.

For example, a scenario involving a parent-teacher conference with a multilingual family requires teachers to draw on: (1) sociocultural competence (understanding appropriate interaction patterns and register), (2) strategic planning (preparing for potential misunderstandings or conflicts), (3) discourse awareness (following educational genre conventions), (4) linguistic precision (using clear, accessible language and appropriate hedging), (5) formulaic competence (having ready phrases for everyday situations), and (6) interactional skill (reading nonverbal cues and adjusting in real time). This scenario demonstrates how EQ and CQ are not merely parallel competencies but deeply intertwined dimensions of culturally responsive teaching.

Assessment and Feedback

The module's assessment is designed to be both formative and summative, supporting learning while measuring achievement. The matching exercise for Objective 1 provides immediate feedback on conceptual understanding with opportunities for review and retry. Scenario categorization for Objective 2 uses an 80 percent accuracy criterion, requiring teachers

to demonstrate consistent recognition of EQ and CQ dimensions across diverse situations. The integrated response strategy development for Objective 3 employs a rubric that evaluates both the appropriateness of the proposed strategy and the quality of the justification, emphasizing metacognitive awareness alongside practical application.

Feedback throughout the module is designed to be educative rather than merely evaluative. When teachers make errors in scenario categorization, for example, the feedback explains why a different response might be more appropriate, highlighting the specific features of the situation that call for particular EQ or CQ dimensions. This approach reflects our commitment to educative mentoring principles, providing the kind of supportive feedback characteristic of effective mentoring relationships.

Discussion and Implications

Theoretical Contributions

This work contributes to theory in several ways. First, it demonstrates how systematic instructional design can be applied to develop complex human competencies, such as emotional and cultural intelligence. While much instructional design literature focuses on knowledge and skill acquisition in technical domains, our work shows that the Dick and Carey model can effectively guide the development of reflective, humanistic professional learning. The key is to pay careful attention to learning objectives, authentic scenarios, and structured reflection, the primary elements that transform information delivery into transformative learning.

Second, our five-anchor conceptual framework provides a model for integrating multiple theoretical perspectives in professional development design. Rather than selecting a single theoretical lens, we demonstrate how EQ theory, CQ theory, experiential learning, community of inquiry, and educative mentoring can work synergistically to create a more comprehensive and robust approach than any single framework could provide. This integration addresses the reality that effective teaching in diverse contexts requires multiple, interconnected competencies.

Third, our work contributes to understanding how web-based professional development can develop competencies traditionally associated with face-to-face, relationship-based learning. The thoughtful application of educative mentoring principles in digital environments, through scaffolded scenarios, reflective prompts, and formative feedback, suggests that well-designed online experiences can provide some of the supportive challenge characteristic of effective mentoring, even without direct human interaction.

Practical Implications for Teacher Professional Development

For teacher education programs, our work suggests several practical applications. Pre-service teacher education could incorporate EQ and CQ development more systematically, using web-based modules to supplement field experiences. The modules could help teacher candidates develop conceptual frameworks for understanding emotional and cultural dynamics before entering classrooms, while field experiences provide opportunities for application and refinement. Induction programs could use similar modules to support new teachers' ongoing development of these critical competencies during their challenging first years.

For professional development designers, our work demonstrates the value of systematic instructional design in creating compelling online learning experiences. The Dick and Carey model's emphasis on alignment among objectives, assessments, and instructional strategies helps ensure that professional development is purposeful and coherent rather than a collection of loosely related activities. The integration of experiential learning principles, particularly the emphasis on reflection and practice, is essential for developing complex competencies that go beyond information recall.

For school leadership, our work highlights the importance of supporting both individual teacher development and organizational culture. While web-based modules can develop individual teacher competencies, school leaders must create environments that value, model, and reinforce emotional and cultural intelligence. This includes establishing norms for empathetic communication, creating opportunities for intercultural dialogue, and recognizing teachers who demonstrate culturally responsive practice. Without organizational support, individual competency development may have a limited impact on actual classroom practice.

Scalability and Accessibility

A significant advantage of web-based professional development is its potential for scale. Once developed and refined, online modules can reach large numbers of teachers across diverse geographic and institutional contexts without the resource constraints of face-to-face professional development. This scalability is significant for EQ and CQ development, given the large and growing population of teachers working with multilingual learners. However, scalability must be balanced with quality and relevance. One-size-fits-all professional development is unlikely to be

effective regardless of delivery mode. The challenge is to design scalable web-based experiences that remain responsive to diverse teacher contexts and needs.

Our approach addresses this challenge through several design features. The use of multiple, varied scenarios allows teachers to select situations most relevant to their contexts. The emphasis on developing general frameworks (understanding the EQ and CQ dimensions) rather than on prescriptive responses allows teachers to adapt the principles to their specific situations. The incorporation of reflection opportunities encourages teachers to make explicit connections between module content and their own practice. These features support both scale and contextual relevance.

Future Directions

This work represents an initial step in a broader research agenda. Our immediate next step is to conduct a pilot study to test the module design and assess its feasibility and initial effectiveness. Pilot data will inform refinements to the module structure, activities, and reflection prompts. We are particularly interested in understanding how teachers experience the integration of EQ and CQ concepts and whether the framework is comprehensible and useful for their practice.

Based on pilot findings, we will refine the module and expand supplementary resources. This revision includes curating additional digital materials and developing more extensive case studies that illustrate the integration of EQ and CQ across diverse teaching contexts. We envision creating a suite of modules addressing different aspects of culturally responsive teaching, with the current module serving as a foundational introduction to EQ and CQ concepts.

Longer term, we plan to scale and disseminate the approach more broadly. This step will involve a formal dissertation study examining the effectiveness of the professional development approach in developing teacher EQ and CQ competencies and, ultimately, in impacting classroom practice and student outcomes. We are particularly interested in whether and how online professional development translates into changed teaching practice. This is a critical question for all professional development research.

We also envision expanding the research to examine how EQ and CQ development differ across teacher career stages, subject areas, and institutional contexts. Do early-career teachers need different kinds of support than experienced teachers? Do secondary teachers face different EQ and CQ challenges than elementary teachers? How do resource-constrained schools support

ongoing professional development? These questions will help refine and adapt our approach for diverse populations and contexts.

Conclusion

Teachers who work with multilingual learners (MLs) in K-12 classrooms require professional development that develops both methodological competence and human capacities for empathy, reflection, and cultural responsiveness. Emotional intelligence and cultural intelligence represent complementary dimensions of these human capacities. Together, they support teachers in creating learning environments that are emotionally safe, culturally affirming, and academically challenging for all students.

Web-based professional development offers promising opportunities to develop these capacities at scale. However, effectiveness depends on thoughtful instructional design that honors the complexity of what teachers need to learn. Our work demonstrates how systematic application of the Dick and Carey instructional design model, grounded in a comprehensive conceptual framework integrating EQ, CQ, experiential learning, community of inquiry, and educative mentoring, can create online learning experiences that develop reflective, empathetic, and culturally responsive educators.

The integration of emotional and cultural intelligence in teacher professional development is not just an academic exercise. This incorporation addresses practical needs in diverse classrooms. Multilingual learners deserve teachers who understand and honor their cultural backgrounds while recognizing and supporting their emotional experiences of learning. The web-based module described in this article represents one approach to preparing teachers for this essential work. By making EQ and CQ development more systematic, scalable, and accessible, we hope to help prepare educators capable of meeting the complex demands of 21st-century classrooms.

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Sociobehavioral Predictors of Non-Melanoma Skin Cancer in Texan Adults

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Abstract

*Skin cancer represents a growing public health burden in the United States, particularly among fair-skinned populations. Although ultraviolet (UV) exposure remains the primary environmental predictor, behavioral and occupational factors may also contribute to non-melanoma skin cancer (NMSC) prevalence. This study explores potential relationships between behavioral variables (including age, smoker status, and history of military service) and self-reported NMSC in a sample of Texas adults. Cross-sectional data were drawn from the 2022 and 2023 Texas Behavioral Risk Factor Surveillance System (BRFSS), yielding a combined sample of 24,304 respondents. Independent sample *t*-tests and chi-square analyses assessed associations between age, smoking status, veteran status, and self-reported NMSC diagnosis. A total of 9.6% of respondents reported past NMSC diagnosis. Individuals with NMSC were significantly older ($M = 71.2$, $p < .001$) than those without ($M = 52.3$), with a large effect size ($d = 1.046$). Smoking status was significantly associated with NMSC history ($\chi^2(1) = 46.21$, $p < .001$). Lastly, the association between veteran status and NMSC diagnosis was significant, $\chi^2(1) = 187.395$, $p < .001$. Results suggest NMSC is related to both non-modifiable (age) and modifiable (smoking) determinants of health. Although veteran status was statistically associated in bivariate analysis, this relationship would likely lose significance in multivariable models due to lack of granularity. These findings reinforce the need for targeted prevention strategies focused on older adults and individuals with a history of tobacco use. Future multivariable models incorporating proxy measures of occupational sun exposure may inform equitable interventions.*

Key Words: BRFSS, skin cancer, age, smoking, Texas

Introduction

Skin cancer is the most commonly diagnosed malignancy among fair-skinned populations, accounting for more than one-third of all cancers in the United States and imposing a growing burden on health-care systems worldwide (Leiter et al., 2014). The American Academy of Dermatology (Association American Academy of Dermatology, n.d.) estimates that one in five Americans will develop skin cancer in their lifetime. The CDC estimates that nearly 6 million Americans receive skin cancer treatment annually (CDC, n.d.). Age-standardized incidence rates for non-melanoma skin cancer (NMSC) continue to climb with no sign of

plateau. Modelling suggests that incidence in Germany could double by 2030 (Leiter et al., 2017). Demographic shifts, migration, and increased life expectancy have all been identified as core contributors. Reviews of recent studies on associations socioeconomic status and skin cancer prevalence suggest higher Basal Cell Carcinoma rates among higher SES groups (van Hattem et al., 2009). This could reflect greater health-care access and detection in wealthy populations, while lower consultation rates, inaccessibility to healthcare, and gaps in health literacy could obscure the true burden in rural or lower-income communities (Hu et al., 2022).

In 2015, an estimated 74,000 new melanoma cases were reported nationwide, with Texas accounting for about 5% of these cases. The Texas Panhandle exhibited one of the highest incidence rates in the state at 21.5 per 100,000 individuals, notably higher than the state average of 14.1 per 100,000. Additionally, the region's melanoma mortality rate was nearly double the national average (Chen et al., 2016). These statistics suggest a need for targeted interventions in Texan populations. Collectively, the existing evidence underscores skin cancer as a multifactorial disease driven by complex socio-environmental interactions. Addressing the identified limitations will strengthen the evidence base for population-specific prevention and occupational health policies.

Texas's vast geography, rurality, and low population density make it uniquely vulnerable to the formation of medical deserts, and the state's harsh climate further intensifies this problem. More than half of Texas's 254 counties are classified as rural or frontier, with residents scattered across immense distances and limited access to hospitals or specialists (Rural Health Information Hub, n.d.). Extreme heat, drought, and severe weather events such as hurricanes and floods elevate risks for heatstroke, dehydration, and disease especially among older adults, outdoor laborers, and low-income residents. These environmental pressures, coupled with sparse infrastructure, high uninsured rates, and ongoing provider shortages, create a feedback loop in which geographic isolation and climate extremes jointly sustain Texas's uniquely severe medical desert landscape (Ekren et al., 2025). Due to the vast geography, we see a lot of intraregional variations in skin cancer epidemiology. In regions of Texas with recorded high-UV exposure, such as west Texas and most notably the Texas panhandle where the region's melanoma mortality rate was nearly double the national average. Although the national NMSC-related mortality rate is currently higher than that of melanoma, there is limited literature available surrounding morbidity, mortality, incidence, and or prevalence of non-melanoma skin cancers in

these same populations. These findings suggest a need for targeted interventions in Texan populations.

With this epidemic of cutaneous malignancies (Asadi et al., 2022), there is growing interest in socio-environmental predictors of non-melanoma skin cancer (NMSC). Across studies, ultraviolet (UV) exposure remained the dominant extrinsic driver of cutaneous malignancies, but several additional, non-UV factors emerged. Wunderlich et al. (2024) highlighted immunosuppression, higher body mass index, and alcohol use as independent predictors for basal cell carcinoma (BCC), squamous cell carcinoma (SCC), and melanoma. Genetic polymorphisms (MC1R and CDKN2A), as well as Fitzpatrick skin types I–II, compounded risk even at comparable UV doses (Sena et al., 2016; Hu et al., 2022). Conversely, antioxidant-rich diets and regular dermatologic surveillance were associated with delayed onset or thinner lesions at diagnosis, underscoring the interplay between behavioral and biologic factors (Asadi et al., 2022).

Are certain lifestyles or occupations associated with disproportionately higher risk? Epidemiologic studies further implicate occupational outdoor exposure, lower educational attainment, and specific professions (i.e. construction, agriculture, mining, and healthcare) to elevated skin cancer risk (Sena et al., 2016; Hu et al., 2022). Outdoor workers, such as construction laborers, agricultural workers, drivers, lifeguards, and flight crews, experience cumulative UV doses far exceeding recommended thresholds. This occupational pattern translates to elevated standardized incidence ratios for both melanoma and non-melanoma skin cancer (Sena et al., 2016). Specifically, active-duty military personnel have a disproportionately high burden of NMSC related to prolonged occupational exposure to intense UV radiation and historically inadequate sun-protective behaviors (Riemenschneider and Liu, 2018).

Current evidence points to pronounced geographic and sex-specific disparities. Incidence rates for keratinocyte malignancies have surged in White populations in the United States, Canada, Australia, and New Zealand. Globally, the overall incidence also continues to increase for both sexes over time. Men continue to develop more NMSCs than women, with patterns likely driven by cultural differences in UV-related behaviors such as wearing skin protective clothing, limiting outdoor activity, and seeking shade (Chen et al. 2016; Garbe et al., 2021; Leiter et al., 2014). However, there is recent evidence to support that women in Europe and the United

States are developing Basal Cell Carcinomas at younger ages and in higher numbers than their male counterparts (Heaton and Lawrence, 2018).

Despite these insights, existing data rarely encompasses the full spectrum of socio-environmental determinants within a single population. Surveillance systems such as the Behavioral Risk Factor Surveillance System (BRFSS) capture extensive data on lifestyle, mental health, occupation, and geography, yet remain under-utilized for skin-cancer research. Most epidemiologic studies employed robust analytical designs (prospective cohorts or well-matched case-controls), with standardized outcome definitions and multivariable adjustment for confounders such as cumulative sun exposure and skin phenotype. Large, population-based registries enhance external validity, while systematic reviews synthesize heterogeneous evidence across geographies. However, exposure misclassification persists (i.e. lifetime UV dose) as many studies rely on self-reported sun behaviors or job titles as proxies. Selection bias is a concern in hospital-based samples that over-represent health-seeking individuals, and residual confounding by SES, sunscreen use, or genetic predisposition may inflate or mask true associations.

Few studies disaggregate occupation by intensity of UV exposure or incorporate objective dosimetry, limiting causal inference. The literature convincingly links outdoor work and modifiable lifestyle factors (e.g., tanning bed use, alcohol consumption) to skin-cancer risk, yet gaps remain in quantifying synergistic effects between occupational UV, chemical exposures, and emerging risk modifiers such as air-pollution particulates. Generalizability is further constrained by the predominance of white, Western cohorts. Future research should integrate genomic susceptibility scores and prioritize equity-focused designs to understand disparities in incidence, early detection, and outcomes. Moreover, longitudinal intervention studies, such as the Schleswig-Holstein screening program in Germany, are needed to clarify the lag between screening uptake and mortality reduction and to determine cost-effective strategies for high-risk subgroups (Katalinic et al., 2012).

Collectively, the existing evidence underscores skin cancer as a multifactorial disease driven by complex socio-environmental interactions that are population specific. This work proposes that, to date, BRFSS data has been underutilized for analyzing multi-factorial risks in targeted populations and, more specifically, that this set holds rich data for skin cancer research. This system could offer a solution to identify patterns in under researched areas such as those in rural Texas and overcome barriers such as inaccessibility, population size and distribution, and

healthcare shortages. The present study addresses this gap by examining social and behavioral predictors, specifically age, smoking, and veteran status, of self-reported skin-cancer history in a small representative population. One important future direction is to explore combined or interactive effects among behavioral and occupational predictors using multivariable models. BRFSS data allow for this: for example, veteran status (C08Q13) and smoker status could be modeled jointly to estimate adjusted odds ratios and detect synergistic effects. Including proxy measures of UV exposure such as physical activity levels and outdoor work could improve specificity in risk assessment. Even simple additive models could reveal whether high-risk behaviors cluster within specific demographics. This approach would enrich the current descriptive findings and lay the groundwork for more targeted prevention initiatives.

The project had three a priori hypotheses: 1) a positive direct effect of age on reported NMSC diagnosis by a health professional, 2) a significant positive association between smoker status (current or former) and NMSC diagnosis, and 3) a possible relationship between history of service in the United States Armed Forces and NMSC diagnosis.

Methodology

Literature Review

A systematic literature search was conducted between April and June of 2025. Databases included PubMed and Google Scholar, supplemented by resources from the U.S. Centers for Disease Control and Prevention (CDC) and World Health Organization (WHO) portals. Search terms combined free-text keywords and Boolean operators related to skin cancer, non-melanoma, occupational risk, smoker, age, veteran, and environmental predictors. Filters were applied to limit results to English-language publications from 2015 onward, with priority given to case-control studies, cohort studies, and systematic reviews. The initial search identified 412 records of which 26 full-text articles were screened and met relevance criteria. Reasons for exclusion included insufficient outcome reporting, irrelevant population, or non-analytical study design.

PubMed was utilized primarily for the advanced filter resources to control publication date (less than 5 years), text availability (free full text), and article type (clinical trial, meta-analysis, and systematic review). Google Scholar was primarily utilized to search keywords. The population at risk was composed primarily of fair-skinned individuals, adults, and members of specific occupational groups. Exposure was characterized by ultraviolet radiation

and duration spent outdoors. Groups at minimal risk such as indoor workers, individuals with low UV exposure, and populations engaged in protective behaviors acted as a control.

Sampling

This study utilized data from the Texas Behavioral Risk Factor Surveillance System (BRFSS), a statewide component of the national BRFSS initiative developed by the Centers for Disease Control and Prevention (CDC). The BRFSS is the largest continuously conducted health survey in the world, employing a random-digit-dialed telephone methodology to assess health-related risk behaviors, chronic health conditions, and use of preventive services among non-institutionalized adults aged 18 and older (Texas BRFSS, n.d.). The Texas BRFSS has been conducted monthly since 1987 using a probability sample of adult residents of Texas contacted via telephone. Adults are eligible if they have resided in Texas for 30 or more days in a calendar year. Institutionalized populations are excluded from participation. The survey employs a standardized core questionnaire developed by the CDC to allow for national comparability. States may also include optional modules and state-added questions tailored to local public health priorities. The Texas Department of State Health Services (DSHS) oversees the implementation and management of the Texas BRFSS, including rigorous monthly data editing and the annual compilation of state-level datasets.

Measures and Data Analysis

Variables of interest included NMSC history, age, smoker status, and veteran status (a proxy variable of occupational sun exposure). This study used publicly available Texas BRFSS survey data collected in 2022 and 2023, merged into a combined dataset. In cases of variable overlap, 2022 variable labels were retained for consistency. Core variables were selected specifically to align with study objectives: C07Q06 (“(Ever told) you had skin cancer that is not melanoma?”), C08Q01 (“What is your age?”), Smoker Status (combined variable; BRFSS, n.d.), and (“Have you ever served on active duty in the United States Armed Forces, either in the regular military or in a National Guard or military reserve unit?”).

All statistical analyses were performed using SPSS Statistics v29.0.2.0 (IBM, 2023). Data files were cleaned and re-coded where necessary to ensure consistency with analytical aims and BRFSS coding conventions. Descriptive statistics were computed to characterize the sample, and bivariate or multivariable analyses were conducted as appropriate to assess associations between predictors and health outcomes of interest. Bivariate analyses (independent samples t-test and

chi-square tests) assessed relationships between sociodemographic and behavioral predictors and self-reported non-melanoma skin cancer (NMSC) history.

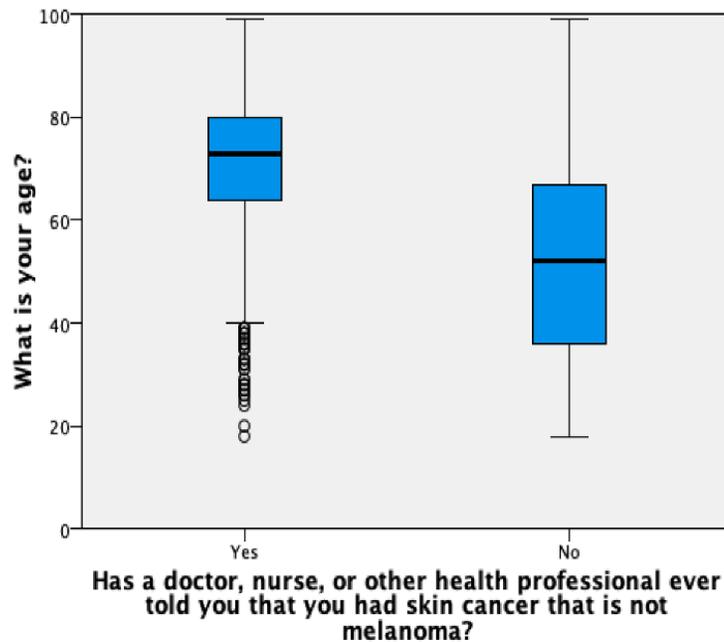
Results

The Texas BRFSS collected data from 14,245 eligible participants in 2022 and from 10,059 eligible participants in 2023 (24,304 respondents in total). Participants were an average of 53 years of age, ranging from 18 to 99 years old (SD: 19), with 48% identifying as males and 52% identifying as females. Of the 24,304 total respondents, 9.6% have been diagnosed with skin cancer that is not melanoma. 37% of the total participants reported current or former smoker status.

We conducted an independent samples t-test with reported NMSC diagnosis (i.e. 1 = yes or 2 = no) as the grouping variable and age as the continuous outcome. Consistent with our predictions, those diagnosed with skin cancer are about 19 years older than those who are not on average. Levene's Test for Equality of Variances ($F = 653, p < 0.001, n = 23,634$) rejected the null of equal variances. Welch's t-test suggests a highly significant age difference between those who have and have not been told they had non-melanoma skin cancer. A Cohen's d value of 1.046 suggests the age difference is over one standard deviation apart, typically considered strong in a behavioral science context.

Figure 1

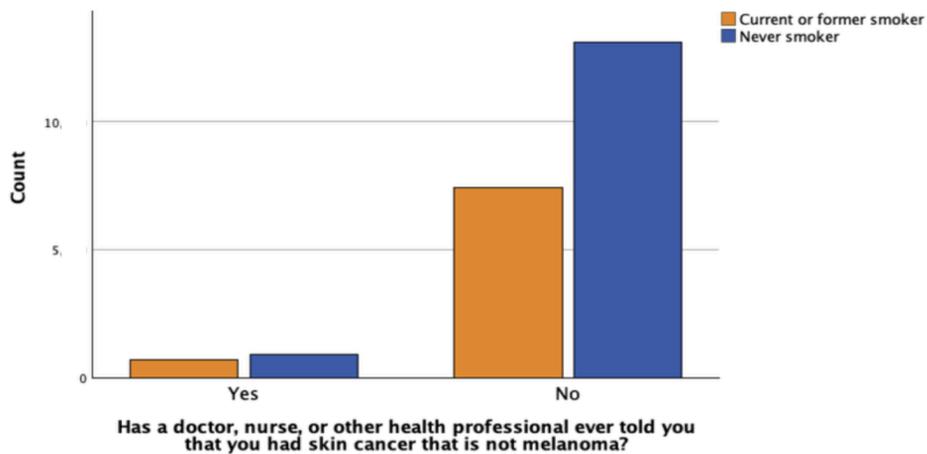
Association between age and NMSC diagnosis



A chi-square test of independence was conducted to examine the relationship between smoking status (i.e. former/current or never smoker) and NMSC diagnosis (i.e. yes or no). The association was statistically significant, $\chi^2 (1) = 46.206, p < .001$, indicating that smokers were more likely to report a history of NMSC compared with never-smokers. Additional tests supported the robustness of this association: the likelihood ratio test was significant, $\chi^2 = 45.154, p < .001$, as was the linear-by-linear relationship, $\chi^2 = 46.203, p < .001$. Effect size was small but meaningful (Cramer's $V = .046$).

Figure 2

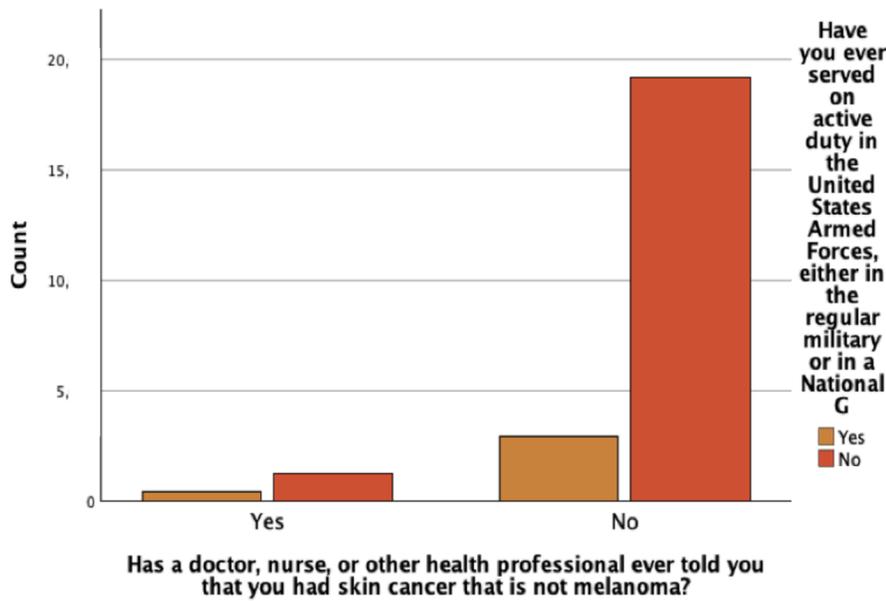
Association between smoking and NMSC diagnosis



Lastly, a chi-square test of independence was conducted to measure a possible relationship, between history of active duty in the United States Armed Forces (i.e. yes or no) and being diagnosed with skin cancer that is not melanoma by a health care professional (i.e. yes or no). The association was significant, $\chi^2(1) = 187.395, p < .001$. Both the likelihood ratio test, $\chi^2 = 159.823, p < .001$, and the linear-by-linear association, $\chi^2 = 187.387, p < .001$, confirmed this relationship. Effect size was modest (Cramer's $V = .089$) but notably stronger than that observed for smoking.

Figure 3

Association between history of service in the United States Armed Forces and NMSC diagnosis



Discussion

Age emerged as the strongest risk factor of NMSC, with individuals reporting an NMSC diagnosis of nearly two decades older on average than those without a diagnosis. This pattern is consistent with the well-established evidence that cumulative ultraviolet (UV) increases across the lifespan and is a prominent environmental driver of skin carcinogenesis (Leiter et al, 2014; Hu et al., 2022). These findings underscore the need to prioritize screening and photoprotection interventions for older Texans, particularly in high-UV regions such as the Panhandle and West Texas, where melanoma mortality has historically exceeded national averages (Chen et al., 2016).

Smoking status was also significantly associated with NMSC history, with current and former smokers reporting higher prevalence than never-smokers. Although the effect size was small, the direction of the association aligns with emerging research linking tobacco use to mechanisms of dermatologic carcinogenesis such as oxidative stress and immune modulation (Andreon et al., 2025). Literature confirms that current and former smokers have higher prevalence and worse prognosis for NMSC compared to never-smokers (Andreon et al., 2025). Results also mirror international studies linking smoking with higher non-melanoma skin cancer incidence and more aggressive phenotypes (Sena et al., 2016). As smoking represents a modifiable risk factor, integration of photoprotection counseling into tobacco cessation programs may provide dual benefit, particularly for aging populations with accumulated UV burden.

Veterans reported NMSC diagnoses at substantially higher rates than non-veterans. This is consistent with occupational literature documenting elevated skin-cancer risk among military personnel due to prolonged outdoor training, deployment to high-UV settings, and field operations (Riemenschneider and Liu, 2018). However, the veteran status variable in this dataset is limited by its dichotomous nature. The BRFSS dataset lacked information on deployment history, service duration, geographic UV intensity, or protective equipment - factors critical for identifying specific exposure pathways and contextualizing risk. As a result, the significant association detected here likely captures broad occupational UV exposure but is insufficiently granular to infer causal pathways. Studies incorporating detailed occupational histories, UV dosimetry, and personal protective behaviors would enhance interpretive power in future analyses.

Together these findings illustrate the multifactorial nature of skin cancer risk where biologic vulnerability, such as skin type or genetic markers, intersects sociobehavioral exposures. Age, smoking, and occupational exposure emerged as meaningful correlates in this Texas sample, consistent with the multifactorial frameworks described in prior national and international studies (Garbe et al., 2021; Hu et al., 2022). The high prevalence, nearly 10%, of self-reported NMSC in this Texas sample mirrors national estimates (Stern, 2010) and affirms the value of BRFSS as a public health surveillance tool capable of capturing state-specific disparities.

The geographic and demographic patterns evident in this dataset echo the concerns raised in the introduction regarding Texas's medical deserts, regional UV extremes, and pronounced rural-urban disparities in access to dermatologic care (Rural Health Information Hub, n.d.). Regional vulnerabilities, particularly in the Panhandle and West Texas (Ekren et al., 2025), point to opportunities for tailored screening initiatives. These trends reinforce the need for regionally tailored strategies including expanded dermatologic services (i.e. teledermatology outreach), and public photoprotection messaging tailored to agricultural and industrial workers who experience chronic occupational UV exposure (Fazel et al., 2023). Considering the disproportionate incidence across Texas regions and modifiable risk factors of skin cancer evaluated in this work, there is a clear need for community-embedded prevention programs that acknowledge both environmental pressures and structural barriers to timely care.

Several limitations warrant consideration in interpretation of these results. Reliance on self-reported diagnoses may introduce recall bias or patient diagnostic misclassification. Residual confounding by photoprotective behaviors such as sunscreen use, or genetic predisposition may inflate or mask true associations. Socioeconomic status, Fitzpatrick phototype, and behavioral factors such as sunscreen use or clothing habits were not included in this analysis but are strong predictors of NMSC incidence and may modify observed associations (Heaton & Lawrence, 2018; van Hattem et al., 2009). Veteran status was captured with a single dichotomous item, restricting insight into occupational heterogeneity. The cross-sectional, anonymous nature of BRFSS limits assessment of causality. Future projects will analyze 2022 and 2023 data separately to limit residual confounding posed potential repeat respondents across survey years. Additionally, Texas-only sampling restricts generalizability, and subgroup analyses may have been underpowered to detect subtle interactions. Future projects will also compare associations across ethnoracial groups to better advocate for these underrepresented communities in policy development.

While the present analysis focused primarily on descriptive and bivariate comparisons, the BRFSS dataset supports more complex modeling approaches. Future multivariable logistic regression models could simultaneously examine predictors such as sun exposure proxies (e.g., outdoor activity or job class), tobacco use, veteran status, and demographic covariates to assess their combined and independent contributions to skin cancer risk. This would allow for adjustment of confounding factors and better estimation of interaction effects across behavioral and environmental domains. Moreover, qualitative research exploring community-specific barriers to skin cancer prevention and care would complement quantitative findings and support culturally tailored public health messaging. Longitudinal studies that evaluate the effectiveness of preventive interventions, such as public sunscreen dispensers, occupational safety mandates, or educational campaigns, are needed to guide evidence-based policy. Longitudinal designs and cost-effectiveness modeling may further clarify the impact of targeted interventions in high-risk regions of Texas.

Conclusion

This study identified three key sociobehavioral predictors of non-melanoma skin cancer (NMSC) in Texas: older age as the strongest correlation, smoking as a significant modifiable risk factor, and veteran status as an indicator of elevated - but insufficiently characterized -

occupational UV exposure. Together, these findings illustrate how cumulative aging processes and behaviors such as smoking shape NMSC patterns within the state, particularly in regions already burdened by high UV intensity and limited dermatologic access. The significant association observed among veterans is promising, suggesting that more granular occupational and deployment-specific data could uncover actionable pathways for prevention in this high-UV-exposed population. By emphasizing the potential of multivariable analysis using rich surveillance data like BRFSS, future work can better clarify the localized interplay of social, behavioral, and occupational determinants of cutaneous malignancies. These findings emphasize the need for integrative, equity-centered approaches to address the complex social and environmental determinants of skin cancer in at-risk, rural communities and highlight opportunities for targeted prevention efforts that align with Texas's unique geographic and structural vulnerabilities. Modifiable predictors, most notably smoking, are promising for future efforts to reduce rising burden of NMSC regionally and globally.

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The Evolving Culture of U.S. Higher Education in the Era of Online Learning

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Abstract

Online learning, accelerated by the COVID-19 pandemic, has significantly transformed the culture of U.S. higher education. This paper examines how the shift from in-person instruction to online modalities has affected instructor-student engagement, conversation, and community, perceived educational quality, and students' responsibility for self-directed learning at undergraduate and graduate levels. Findings suggest that the transition to online education has diminished instructor-student interactions and weakened the sense of community, contributing to lower student satisfaction and perceived declines in educational quality. Concurrently, online formats have increasingly required students to manage their learning independently, placing greater demands on their self-regulation skills. Graduate education specifically faces challenges around maintaining mentorship and meaningful academic discussions. Ultimately, while online education expands accessibility and flexibility, institutions must intentionally cultivate engagement, interaction, and support mechanisms to preserve academic rigor and community values integral to higher education.

Key Words: online education, higher education, instructor-student engagement, self-directed learning, academic community

Introduction

The rapid shift to online education has fundamentally transformed higher education culture in the United States, extending far beyond technological implementation to encompass changes in instructor-student relationships, educational quality, and learning responsibility. While distance learning was already growing in popularity over the past two decades, the COVID-19 pandemic dramatically accelerated this shift. In 2020 alone, an estimated 90% of U.S. colleges and universities moved their courses online as emergency measures (Hollister et al., 2022). Even after campuses reopened, online learning remained far more prevalent than before, for example, 61% of undergraduate students were enrolled in at least one online course in

fall 2021, compared to only 36% in 2019 (National Center for Education Statistics, 2023). Graduate students are even more likely to take classes online. This widespread adoption of online formats is not only a technological shift, but a cultural one. It has introduced new norms and challenges in how instructors and students interact, how academic communities form, and how learning is experienced. These represent permanent transformations in higher education's core values and practices.

This analysis synthesizes extensive scholarly research to examine how online education has systematically altered the culture of higher education. The evidence demonstrates that while online learning can achieve comparable academic outcomes under optimal conditions, it also entails cultural costs, including weakened human connections, reduced spontaneous intellectual discourse, and increased student isolation. These changes reflect a fundamental rethinking of what higher education means and how learning communities function in an increasingly digital world.

Methodology

This research employed a literature review to examine the cultural transformation of higher education through online learning adoption. A comprehensive search was conducted across multiple academic databases, including ERIC, Academic Search Complete, PsycINFO, JSTOR, SpringerLink, and ScienceDirect, covering publications from 2000 to 2025. Three primary search strategies were implemented: "higher education online self-directed" yielded 727 articles, "online education instructor-student relationships" produced 98 articles, and "online education decline quality" generated 751 articles. Inclusion criteria focused on peer-reviewed studies addressing higher education contexts, online learning environments, instructor-student interactions, educational quality, and self-directed learning paradigms. Studies were excluded if they focused solely on K-12 education, lacked an empirical basis, or fell outside the temporal scope. The selection process involved initial screening for relevance, full-text assessment for methodological quality, and thematic analysis identified emergent patterns.

Shift toward self-directed learning models

The transition to online education has altered the cultural expectations surrounding learning responsibility, shifting from instructor-centered to student-centered models. This shift

has changed the way courses are administered and placed an emphasis on the student to be more self-directed. **Students now assume greater responsibility for learning goals, resource selection, and progress evaluation**, responsibilities traditionally managed and shared with instructors and institutions (Cullen & Oppenheimer, 2024). However, this shift in higher education, which places greater educational burden on learners, has not lowered tuition costs. Eighty percent of Americans believe that online education and self-directed education should be less expensive than in-person programs (New America, 2024). Despite reduced academic support and more than half of all schools taking significant profit on online courses, most U.S. colleges and universities charge the same tuition for online and on-campus courses (Robert et al., 2024).

Increased student responsibility coupled with reduced one-to-one personal support has negatively impacted some students, particularly those from lower socioeconomic backgrounds and minority populations. Studies of online self-directed models have found that students with higher GPAs perform better in online courses than their lower-performing peers, compared to the same disparity in in-person courses (Joosten et al., 2019). Even more surprising is that despite self-directed learning model goals, there is no association between self-efficacy and students' satisfaction with their academic achievement (Anthonysamy & Singh, 2023). In fact, studies reveal that self-directed models can result in increased stress and anxiety and difficulties concentrating (Lemay et al., 2021). Feedback from students consistently highlighted that the change to online learning has resulted in less support and that academics must maintain their commitment to offering ongoing, meaningful feedback and mentorship throughout their learning (Maphalala et al., 2021).

Instructor-student relationships

One of the most influential factors on educational success is the instructor-student relationship. Specifically, instructor mind frames and whether academics provide a clear purpose to students for their learning journey (Hattie, 2023). These instructor-student dynamics have fundamentally changed with the transition from in-person lectures to online instruction. The traditional, teacher-led, lecture-based approach is being replaced by a more active and participatory model centered on student engagement in online education (Ouyang et al., 2020).

The research consistently documents significant reductions in meaningful instructor-student interactions within online learning environments, leading to worse outcomes for online learners compared to their in-person peers. A comprehensive study of 3,089 students found that **78% described online experiences as "not engaging," with 75% specifically missing face-to-face interactions with instructors and peers** (Hollister et al., 2022). The substantial decline in instructor-student connection in online classes reveals a deeper issue: without real-time, face-to-face interaction, students often lose their sense of direction and purpose.

Studies also show that teaching presence is the most influential factor in online engagement, yet many instructors struggle to establish meaningful presence in digital environments. While multiple communication channels can increase interaction frequency, the quality of these interactions often remains superficial compared to traditional classroom dynamics. Students report particular difficulty with delayed feedback cycles, reduced immediacy in clarification opportunities, and limited non-verbal communication cues that are important for deep academic discourse (Richards & Thompson, 2023). These barriers impact on student motivation and academic performance, with studies showing lower completion rates and reduced satisfaction in courses lacking meaningful instructor presence.

Diminished Quality of Education

The combination of lower engagement and reduced interaction has raised concerns about the overall quality of education in online formats. While research for the U.S. Department of Education suggests online learning can achieve comparable learning outcomes to traditional instruction under optimal conditions, the reality is not so clear (Means et al., 2009). A 2022 survey found that 43% of students believe online education is worse than in-person instruction. Even more surprising, a 2021 Brookings Institution analysis reviewed numerous studies of online instruction in higher education and found that *“virtually all of these studies found that online instruction resulted in lower student performance relative to in-person instruction”* (Cellini, 2021). This suggests that completely online environments lack critical elements necessary for optimal educational quality.

Critical thinking and analytical skill development present mixed results that raise questions about educational depth in online environments. While students self-report

improvements in problem-solving abilities, faculty themselves express significant skepticism, with only 29% approving of online education's effectiveness (Trietiak, 2017). The research also reveals subject-specific variations that highlight online learning's limitations in certain educational domains. Laboratory sciences, clinical skills, and creative fields show particular challenges in online formats, indicating that the cultural shift toward digital delivery may compromise educational quality in disciplines requiring hands-on experience, mentorship, and collaborative creativity (Harper et al., 2024). This suggests that one-size-fits-all approach or direct migration of face-to-face instructional content to digital delivery systems without strategic pedagogical inadequately serves diverse academic disciplines and learning objectives. However, the most significant finding is that across the board, blended approaches consistently outperform purely online instruction for most disciplines (Means et al., 2009).

Discussion

While this research documents significant challenges in online education's impact on higher education culture, including reduced instructor-student engagement and diminished educational quality, these problems are likely not inherent limitations of the online learning model itself but rather consequences of institutional and instructor failures to adequately adapt pedagogical practices for digital environments. This is also confirmed by the findings of the U.S. Department of Education that online learning can achieve comparable learning outcomes with the right support. The documented decline in meaningful interactions and student satisfaction reflects a widespread resistance to adapting education for online delivery rather than flaws in technology-mediated learning. Many institutions and faculty members have simply transplanted traditional in-person curricula and teaching methods into online formats without recognizing that effective digital education requires fundamentally different approaches to engagement, community building, and instructional design.

The lack of meaningful instructor presence identified in this review likely stems from basic failures to utilize available technologies and pedagogical strategies to maintain or enhance instructor-student relationships. Often, faculty members do not offer virtual office hours through platforms like Zoom, failing to provide the real-time, face-to-face interaction that students consistently report missing. Additionally, the practice of recording video lectures, which provides more personalized, engaging content than simply reviewing material, remains

underutilized, with many instructors instead relying on text-based materials or textbook supplementary material that fails to establish the teaching presence crucial for student engagement. These technological solutions exist and have proven effective when implemented thoughtfully, yet widespread adoption remains limited due to institutional inertia and faculty reluctance to invest in new technological and pedagogical approaches.

Furthermore, the superficial nature of online interactions documented in this research reflects inadequate training and support for faculty transitioning to digital environments rather than inherent limitations of online communication. Effective online engagement requires different skills and strategies than traditional classroom teaching, including proactive communication, creative use of discussion forums, virtual breakout rooms, and multimedia content delivery. When institutions fail to provide comprehensive faculty development or simply mandate the use of learning management systems without pedagogical training, the result is poor-quality interactions and reduced student satisfaction, as documented in this review. The finding that blended approaches consistently outperform purely online instruction suggests that the issue is not online delivery itself, but rather the failure to integrate digital tools with effective teaching practices.

The cultural transformation toward self-directed learning models, while presenting challenges for some students, can be addressed through better institutional support structures and course design rather than abandoning online education entirely. The increased stress and anxiety reported by students in self-directed environments result from weak instructional structure and support systems rather than inherent problems with student autonomy. Institutions that have successfully implemented online education often provide robust student support services, clear learning pathways, regular check-ins, and adaptive technologies that can personalize the learning experience. The equity concerns raised regarding students from lower socioeconomic and diverse backgrounds can be mitigated through targeted support programs, digital literacy training, and course designs that provide multiple forms of engagement and feedback rather than a one size fits all approach.

These findings suggest that the documented cultural challenges in higher education are transitional problems that are resolved through sustained institutional commitment to effective, evidence based online pedagogy rather than permanent consequences of digital learning adoption. The persistence of these issues years after the initial pandemic transition shows that

many institutions have failed to move beyond emergency remote teaching to develop sophisticated online learning cultures that preserve the community, engagement, and educational quality that have historically defined effective higher education. Rather than viewing online education as inherently inferior, institutions should focus on developing the infrastructure, training, and pedagogical innovations needed to realize the potential of digital learning environments while addressing the legitimate concerns about engagement and educational quality identified in this research.

Limitations

This literature review has several limitations that should be acknowledged when interpreting the findings. First, as a narrative literature review rather than a systematic review, this study may be subject to selection bias in the identification and inclusion of sources. Publication bias may have influenced the results, as studies demonstrating negative effects of online education are more likely to be investigated than those showing neutral or positive outcomes. The focus on English-language publications and predominantly Western educational contexts, particularly the United States, limits the generalizability of findings to diverse global higher education systems with different cultural values and technological infrastructures. The rapid evolution of online learning technologies and pedagogical approaches means that earlier studies in the 2000-2025 timeframe may not accurately reflect current online education capabilities and practices. Many included studies also relied on self-reported data from students and faculty, which may be subject to response bias and may not accurately reflect objective learning outcomes or behavioral changes. Finally, the correlational nature of much of the existing research limits the ability to establish causal relationships between online education adoption and the cultural transformations observed, as multiple confounding factors including institutional resources, faculty training, and student demographics influence the outcomes attributed to modality changes.

Conclusion

The cultural transformation of higher education through online learning adoption represents one of the most significant changes in educational history, extending far beyond

technological implementation to include fundamental shifts in human relationships, learning responsibility, and institutional identity. The research demonstrates measurable reductions in instructor-student engagement quality, concerning patterns in educational outcomes, and a systematic shift toward self-directed learning models that have transformed the basic contract between institutions and students.

While online learning can achieve comparable academic outcomes under optimal conditions, the cultural costs include weakened human connections, reduced spontaneous intellectual discourse, and increased student isolation. These changes reflect a fundamental transformation of higher education from a community-based, transformative experience to an individualized, self-directed learning process that places primary responsibility on students rather than institutions.

The permanent nature of these transformations means that higher education leaders, faculty, and policymakers must carefully consider changes in policy and approaches to course content, expectations from instructors, and the quality of education. The evidence suggests that while online learning offers important benefits in terms of access and flexibility, it also represents significant losses in traditional academic culture that may have long-term implications for intellectual development, community formation, and educational equity. Future research must continue examining the transition to online education and its impact on higher education, to ensure that higher education's evolution serves its fundamental mission to help learners secure meaningful employment, excel professionally, achieve financial stability, expand knowledge, and experience personal development.

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Bilingual Aphasia Assessment: Beyond Monolingual Paradigms in Post-Stroke Language Assessment - A Comprehensive Review

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Abstract

Post-stroke aphasia assessment in bilingual populations presents unique challenges that cannot be adequately addressed through monolingual evaluation approaches. This comprehensive review synthesizes current research on bilingual aphasia assessment, examining the limitations of single-language testing and the complexities inherent in evaluating language impairment across multiple linguistic systems. The evidence demonstrates that monolingual assessments may lead to significant clinical oversight, including inaccurate diagnosis and suboptimal treatment recommendations. Current bilingual assessment tools, while advancing the field, face limitations in availability, cultural adaptation, and psychometric validation across diverse language pairs. The development of culturally and linguistically appropriate assessment tools, exemplified by adaptations such as the author's ongoing research on the adaptation of the Brisbane Evidence-Based Language Test (B-EBLT) to the Maltese language, creating the Maltese - English Aphasia Assessment (MEAA), represents a critical advancement in ensuring equitable and accurate diagnosis for bilingual stroke survivors. This review identifies critical gaps in current knowledge and proposes directions for future research to improve clinical outcomes for bilingual individuals with aphasia.

Key Words: Post-stroke aphasia, Bilingual aphasia, Aphasia assessment, Bilingual populations, Multilingual stroke survivors, Language impairment

Introduction

Aphasia, an acquired language disorder typically resulting from brain damage (e.g., stroke) in the language-dominant hemisphere (Papathanasiou & Coppens, 2022), impairs the ability to produce or comprehend language, often manifesting as anomia (Cargnelutti et al., 2019; Richardson & Dalton, 2022). Beyond linguistic challenges, people with aphasia often face severe psychosocial consequences, including anxiety, depression, unemployment, and reduced quality of life due to compromised communication (Richardson & Dalton, 2022; Zakariás &

Lukács, 2022). Consequently, comprehensive aphasia assessment is crucial for detecting the presence and severity of the condition, informing prognosis, guiding treatment planning, and educating patients and their families (Hallowell, 2023). For speech-language pathologists (SLPs), a thorough assessment of an individual’s strengths, weaknesses, and functional communication abilities is vital (Richardson & Dalton, 2022), as undiagnosed or misdiagnosed aphasia can lead to “avoidable disability,” increased costs, and affect eligibility for essential services.

Requisite Characteristics of Aphasia Assessment Instruments

Effective aphasia assessments, grounded in the ICF framework (WHO, 2001), must quantitatively measure expressive and receptive language impairments across oral and written modalities to facilitate systematic evaluation of “Loss of Body Functions and Structures.” Standardized, psychometrically robust tools are crucial for generating reliable and valid data, enabling meaningful comparisons across individuals and groups, and ensuring timely diagnosis and intervention (Ivanova & Hallowell, 2013). These instruments should also prioritize administrative efficiency and temporal economy (Wilson et al., 2018) and be designed for systematic clinical observation to detect nuanced differences in language performance, acknowledging that aphasia typically involves multiple, interacting language subsystems rather than discrete subtypes (Spren & Risser, 2003).

Overview of Aphasia Assessment Tools (primarily monolingual contexts)

Evaluating post-stroke aphasia in monolingual contexts relies on several established instruments. Key English-language tools include the Boston Diagnostic Aphasia Examination (BDAE), created by Goodglass & Kaplan (1972), which diagnoses aphasia syndromes based on localization theory through over 40 subtests across various language modalities (Pineda et al., 1999; Goodglass et al., 2001; Bruce & Edmundson, 2010). The Western Aphasia Battery-Revised (WAB-R) developed by Kertesz in the late 70s (Kertesz, 2007) also employs a syndrome approach, classifying aphasia types and yielding Aphasia, Language, and Cortical Quotients, though its administration can be lengthy (Hallowell, 2023; Norvik & Goral, 2022; Richardson & Dalton, 2022).

The Comprehensive Aphasia Test (CAT) (Swinburn, Porter & Howard, 2005) is a robust tool examining linguistic skills within a cognitive neuropsychological framework, controlling for

psycholinguistic variables, and offering insights into patient perspective and severity tracking (Bruce & Edmundson, 2010; Zakariás & Lukács, 2022; Jensen et al., 2024). For a more efficient assessment, the Quick Aphasia Battery (QAB) (Wilson et al., 2018) provides a multidimensional language evaluation in about 15 minutes, demonstrating high reliability and sensitivity. A more recent development, the Brisbane Evidence-Based Language Test (B-EBLT) (Rohde et al., 2020), offers a modular design with exceptional diagnostic accuracy (80.8% sensitivity, 92.6% specificity) in identifying post-stroke aphasia (Rohde et al., 2022). It is designed to minimize the influence of non-language deficits like hemiparesis or apraxia of speech on test scores by allowing adapted scores. The B-EBLT is gaining widespread adoption with 78.63% of surveyed speech-language therapists reporting its use as their most frequently employed standardized measure (Hounslow et al., 2023). The B-EBLT offers significant advantages in psychometric properties and clinical utility and was selected for the ongoing MEAA research project (The Adaptation of an Aphasia Test for Maltese-English Bilingual Adults) to create a culturally and linguistically responsive aphasia evaluation in Maltese and English for the bilingual Maltese population.

This comprehensive review of these tools aims to highlight why monolingual assessment approaches are often insufficient for bilingual populations, informing best practices in bilingual aphasia evaluation.

Theoretical Foundations of Bilingual Language Processing

Theoretical foundations for bilingual aphasia assessment are rooted in neurolinguistic theories of multilingual brain processing. Paradis's (2004) theory differentiates implicit linguistic competence from explicit metalinguistic knowledge, explaining varied impairment patterns in bilingual individuals. Contemporary research emphasizes dynamic, interactive bilingual language systems (Jessner & Herdina, 2002), highlighting continuous flux and cross-linguistic transfer effects. Furthermore, bilingual processing relies on cognitive control mechanisms for language selection and inhibition, as demonstrated by Green's (1998) Inhibitory Control Model. Damage to these executive control processes, often extending beyond traditional language areas to include prefrontal and anterior cingulate cortices, can lead to unique aphasia symptoms like impaired language switching and inappropriate mixing (Abutalebi & Green, 2007; Luk et al., 2012).

Critical Oversight and Clinical Implications of Monolingual Assessment for Bilingual Individuals

Assessing multilingual individuals presents significant challenges distinct from monolingual evaluation. Unlike monolingual individuals who navigate through a single linguistic system, bilingual persons with aphasia (BPwA) exhibit complex patterns of language impairment and recovery that manifest differently across languages. Since bilingual individuals are not merely the sum of two monolinguals (Grosjean, 1989), monolingual assessment procedures inadequately capture the full scope of linguistic abilities and deficits (Cargnelutti et al., 2019; Norvik & Goral, 2022).

This issue is particularly pressing given that over half the world's population speaks multiple languages, yet aphasia assessment remains dominated by monolingual paradigms, creating significant clinical and research gaps (Paradis, 2011; Goral & Hejazi, 2021). When assessment occurs in only one language, critical clinical oversights emerge that significantly impact patient care, as bilingual individuals frequently exhibit differential language impairment patterns with varying proficiency and impairment levels across languages, following stroke.

This heterogeneity stems from complex interactions between age of acquisition, premorbid proficiency, frequency of use, and lesion characteristics. Bilingual aphasia recovery follows distinct patterns affecting assessment outcomes (Lorenzen & Murray, 2008): parallel recovery (similar impairment and recovery rates maintaining relative proficiency), differential recovery (different impairment and recovery patterns across languages), selective recovery (complete loss of one language while another remains intact), mixed recovery (various pattern combinations changing over time), and successive recovery (sequential rather than simultaneous language recovery). Furthermore, a monolingual approach to aphasia assessment of a bilingual individual can lead to several critical oversights and biases.

Inadequate Evaluation of True Impairment

A rough evaluation in a single language can bias understanding of the actual impairment (Cargnelutti et al., 2019). A systematic assessment of all languages known by the patient is an essential prerequisite for clinical diagnosis, rehabilitation programs, and research. It is no longer considered ethically acceptable to assess BPwA in only one of their languages (Fabbro, 2001).

Lack of Comparable Tools and Cultural Appropriateness

Most aphasia assessment tools are developed for monolingual speakers and are not easily applicable or comparable across different languages (Norvik & Goral, 2022; Grasso et al., 2023; Matic et al., 2023). Building upon these foundational concerns, Matic et al. (2023) demonstrate that simple translation of tests is insufficient because stimuli may be inappropriate, linguistic constructions can differ in complexity, and psychometric properties (e.g., reliability, validity measures) are often not documented for translated versions, making cross-linguistic comparisons of impairment difficult (Kiran et al., 2012; Goral et al., 2012). Test items might refer to culturally uncommon or improper objects or concepts, and the very format of formal testing (e.g., using two-dimensional pictures) may be culturally unfamiliar (Cargnelutti et al., 2019).

Misinterpretation of Pre-morbid Proficiency

As noted by Norvik and Goral (2022), pre-stroke proficiency levels significantly influence post-stroke language patterns. Without understanding a patient's pre-stroke language history (acquisition, use, and proficiency), any decreased performance on an assessment could be misinterpreted as an acquired deficit rather than reflecting a pre-existing lower proficiency in that language (Cargnelutti et al., 2019). Furthermore, the authors reported that self-ratings of proficiency can be unreliable, as patients might overestimate or underestimate their pre-stroke abilities, and family reports can also be uncertain, especially if they do not share all languages. Norvik and Goral (2022) propose focusing on a subjective assessment of communication abilities, rather than language proficiency, by family members and caregivers of a person with aphasia following a stroke, can be a more viable approach to avoid potential misjudgments. In addition, because a self-rating score is subjective, creating a statistical dependency that is intrinsic to the individual, a recommendation would be to calculate a *subtraction score* between a patient's self-rating proficiency in both languages to remove the statistical dependency (Vassallo, 2025).

Inaccurate Baseline Establishment

The absence of comprehensive cross-linguistic assessment protocols precludes clinicians from establishing valid pre-morbid baselines for comparison, compromising the validity of diagnostic conclusions and progress monitoring. Monolingual assessment fails to take into consideration proficiency asymmetry. Highly proficient languages may show better preservation, but this relationship is not always straightforward. Sometimes, a less proficient language may show better recovery due to the specific neural networks involved or the types of learning strategies originally used to acquire that language. Domain-specific proficiency should also be

acknowledged. Bilingual individuals often develop specialized vocabulary and skills in different domains across their languages (Olson, 2024). A person might use one language primarily for professional contexts and another for family interactions, leading to domain-specific proficiency patterns that must be considered in assessment and treatment planning.

Usage Patterns

Daily language use should also be considered when assessing bilingual individuals with aphasia. Frequency and context of language use before stroke influence both impairment severity and recovery potential. Languages used primarily in formal contexts may show different vulnerability patterns compared to those used in intimate, emotional contexts (Kuzmina et al., 2019).

Neglect of One Language and Identity

Assessing multilingual individuals in only one language provides an incomplete picture of their abilities and can lead to significant clinical errors. Since a multilingual person's languages are integral to their identity and culture, limiting assessment to just the majority language may obscure true abilities and result in services being provided in a less optimal language (Cargnelutti et al., 2019; Norvik & Goral, 2022). Testing only the non-dominant language may miss preserved communicative abilities, while assessing only the better-preserved language can overlook significant impairments in the other language, leading to inadequate rehabilitation planning (Peña & Bedore, 2011; Kuzmina et al., 2019). This selective assessment approach can result in either underestimation or overestimation of abilities, inappropriate care placement, and missed opportunities for leveraging preserved language skills. The complexity is further compounded by the fact that certain linguistic features may be impaired in one language but preserved in another due to differences in grammatical structures, phonological systems, and semantic organization across languages (Ning et al., 2020; Bice et al., 2020).

Factors Influencing Bilingual Aphasia Assessment

Pre-morbid Language Proficiency

The assessment of bilingual individuals requires careful consideration of pre-stroke language abilities across all languages. Kuzmina et al. (2019) underscore that multilingual language systems exhibit diversity due to a complex interplay of factors influencing their structure. These factors include the age at which languages are learned, how frequently they are used, prior language proficiency, and how similar the languages are to each other. The level of

competence in each language before any potential language impairment (like aphasia) will impact how the languages are affected.

Age of Acquisition Effects

Research identifies age of acquisition as the strongest predictor of differential language impairment patterns in bilingual aphasia. Languages acquired early in life (typically before age 7) often show different vulnerability patterns compared to those acquired later, necessitating assessment approaches that account for these developmental factors. Although further research is needed, according to Brysbaert & Ellis (2016), early acquired languages may be more resistant to certain types of aphasia due to their deeper neural entrenchment, while late-acquired languages may be more vulnerable to disruption but also more amenable to explicit relearning strategies.

Cultural and Linguistic Considerations

Developing effective bilingual assessment tools requires comprehensive adaptation rather than simple translation to maintain cultural appropriateness and clinical validity. Direct translations often produce culturally inappropriate or meaningless stimuli that fail to preserve critical psychometric properties, as they neglect the specific linguistic and psycholinguistic parameters of target languages (Fyndanis et al., 2017; Kiran et al., 2013). Since linguistic structures vary in phonological complexity, morphological density, and syntactic demands, adaptations must incorporate comparable linguistic properties rather than mere lexical translations, while accounting for how linguistic distance between languages affects impairment patterns and cross-linguistic transfer during recovery (Lauterbach et al., 2008). Cultural variations in conceptual familiarity, gender-based language use patterns, formality levels, and communicative conventions further complicate direct translation approaches. Therefore, comprehensive adaptation protocols must incorporate systematic linguistic analysis, cultural appropriateness evaluation, bidirectional (forward and backward) translation verification, expert consultation, pilot validation, and rigorous psychometric testing to ensure that adapted instruments maintain their clinical utility and diagnostic accuracy across diverse linguistic and cultural contexts while remaining comprehensive, clinically relevant, and user-friendly.

Challenges with Language Mixing and Switching

Bilingual individuals naturally mix or switch languages in everyday conversation (Fabbro, 2001; Goral & Hejazi, 2021). In aphasia, patients may pathologically mix or switch languages. Monolingual assessment settings, even with interpreters, struggle to ensure a

“monolingual mode,” making it difficult to differentiate pathological mixing from typical bilingual use or compensatory strategies (Norvik & Goral, 2022; Cargnelutti et al., 2019). Scoring mixed-language production is also a significant challenge.

Inadequate Clinician Training

Many speech-language therapists report lacking sufficient professional preparation to assess and work with multilingual speakers with aphasia (Grasso et al., 2023).

Looking at Selected Adapted Aphasia Assessment Tools for Bilinguals

While many aphasia assessment tools are designed for monolingual English speakers, a significant advancement in neuropsychology has been the development of bilingual assessment instruments (Fyndanis et al., 2017; Arslan & Peñaloza, 2025). Simple translation is often insufficient, necessitating culturally and linguistically appropriate adaptations (Paradis, 2011; Kiran et al., 2012; Ivanova & Hallowell, 2013; Jensen et al., 2024). The Bilingual Aphasia Test (BAT), developed by Paradis and Libben (1987), is the most comprehensive, available in over 70 languages and 160 language pairs, using a tripartite structure to assess multilingual history, language-specific functions, and translation abilities based on functional equivalence (Fabbro, 2001; Paradis, 2011; Martinez Ferreiro et al., 2024). However, the BAT has limitations, including extensive administration time, examiner requirements, and incomplete psychometric validation (Koumanidi Knoph, 2011; Norvik & Goral, 2022). Adaptations of the Boston Diagnostic Aphasia Examination (BDAE) and the Western Aphasia Battery-Revised (WAB-R) into other languages often face challenges with cultural and linguistic appropriateness and psychometric documentation, limiting their validity and ecological relevance for bilingual individuals (Pineda et al., 1999; Tsapkini et al., 2010; Muñoz et al., 2012; Matić Škorić et al., 2023; Martinez Ferreiro et al., 2024; Richardson & Dalton, 2022; Zakariás & Lukács, 2023). In contrast, the Comprehensive Aphasia Test (CAT) has undergone rigorous psycholinguistic and cultural adaptation through the Collaboration of Aphasia Trialists (CATs) network, demonstrating robust psychometric properties and cross-linguistic comparability in various languages despite its lengthy administration (Fyndanis et al., 2017; Maviş et al., 2021; Zakariás & Lukács, 2022; Matić Škorić et al., 2023; Jensen et al., 2024; Arslan & Peñaloza, 2025; Martinez Ferreiro et al., 2024). The Quick Aphasia Battery (QAB), though efficient and multidimensional, has limited

assessment of reading and writing, potentially missing deficits in these areas (Wilson et al., 2018; Parlak & Köse, 2024).

Conclusions

Assessing bilingual individuals with aphasia requires a fundamental shift from monolingual-based approaches to comprehensive, culturally and linguistically adapted evaluation protocols. Reliance on monolingual assessments or poorly translated standardized tests can lead to diagnostic inaccuracies and inappropriate therapeutic interventions that fail to address the complex linguistic profiles of multilingual speakers. The unique neuropsychological presentation of bilingualism—including varied premorbid language proficiencies, cross-linguistic phenomena such as code-switching, and distinct structural properties of different linguistic systems—necessitates rigorously adapted assessment tools that ensure both psychometric validity and cultural relevance. While specialized instruments like the BAT and adapted versions of established measures represent significant progress, the field continues to face methodological challenges, including cross-linguistic validity concerns, heterogeneous bilingual profiles, standardization difficulties, and complex interactions between premorbid competencies and post-stroke recovery trajectories. The development of the MEAA from the B-EBLT exemplifies this comprehensive adaptation process, involving extensive linguistic analysis, cultural consultation, and expert review to ensure equivalent difficulty and construct validity while maintaining linguistic and cultural appropriateness for the Maltese context. These ongoing challenges underscore the critical need for continued development of evidence-based bilingual assessment protocols and the ethical imperative to evaluate all languages within a multilingual individual's repertoire to ensure accurate diagnosis, appropriate rehabilitation planning, and equitable clinical care for increasingly diverse populations served by clinicians and speech-language pathologists worldwide.

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