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Mahmoud v. Taylor: The Free Exercise Clause and Public Schools

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Abstract

On June 27, 2025, the U.S. Supreme Court announced its decision in Mahmoud v. Taylor. *This case involved the Montgomery County (Maryland) Public Schools' use of storybooks featuring LGBTQ characters and whether the absence of an opt-out procedure violated the religious freedom of parents who did not wish their children to be exposed to those books. The 6-3 ruling in favor of the parents is significant because it illustrates sharp disagreements within the Court over the interpretation of another case,* Wisconsin v. Yoder. *These disagreements reflect not only the Court's legal debate over the Free Exercise Clause of the First Amendment, but also cultural/political divisions that characterize contemporary America. In this instance, the Court's minority viewed use of the storybooks as a permissible way to foster necessary attributes of democratic citizenship, namely civility, tolerance, and an understanding of diverse viewpoints. Conversely, the Court's majority believed that use of the storybooks without an opt-out procedure manifested the Montgomery County School Board's animus toward religion, as well as its concerted efforts to enforce conformity regarding beliefs about sexuality and gender. The majority's reasoning—particularly reliance on misleading quotations and its own distorted analyses of the storybooks—is similar to arguments advanced by elected officials and commentators who identify ill-defined conspiracies as the animating forces behind various public policies.*

Key Words: Free Exercise Clause, LGBTQ, Mahmoud v. Taylor, public schools, storybooks

Introduction

For more than a decade, a second wave of so-called culture wars has generated public debate in the United States over sexuality (the determinants of physical and romantic attraction) and gender (a person's identification as male, female, nonbinary, and/or gender fluid). These debates have influenced and been influenced by issues such as bodily autonomy, use of public facilities, participation in gender-based sports/athletics, service in the U.S. military, and gender-affirming medical procedures (Alfonseca, 2023; Potter, 2022; Ujifusa, 2022).

An additional issue has affected a significant number of PreK-12 public school students: the availability and/or use of books with lesbian, gay, bisexual, transgender, and/or queer (LGBTQ) characters and themes. This issue has been typified by attempts to ban or otherwise limit students' access to or exposure to these books (Flood, 2020). Disputants have increasingly called upon courts to resolve these conflicts. This article analyzes one such case, *Mahmoud v. Taylor.*

(*Mahmoud*) (2025), which involved the use of books with LGBTQ characters and themes as part of the English Language Arts (ELA) curriculum in the public elementary schools of Montgomery County, Maryland. This case, decided by the U.S. Supreme Court, is significant because the majority and minority opinions underscored not only different legal interpretations concerning the free exercise of religion, but also divergent conceptions of the rationales/purposes behind the inclusion of the books in the first place.

Background to *Mahmoud*

Characterized by high levels of religious and cultural diversity, Montgomery County is Maryland's most populous county (Hertzler-McCain, 2024). Montgomery County Public Schools (MCPS) is one of the largest school districts in the nation. With an operating budget in FY2024 of $3.16 billion, it serves more than 160,000 students in 210 schools (Appendix to Petition, 2024, pp. 597a-598a; Montgomery County Public Schools, 2023, p. 1i). MCPS is governed by the Montgomery County School Board (MCSB), which is composed of seven elected members and one student. Thomas W. Taylor, currently superintendent of MCPS, was the primary respondent when *Mahmoud* reached the U.S. Supreme Court, though his predecessor as superintendent, Monifa B. McKnight, was the primary respondent when the case was adjudicated by the U.S. District Court for Maryland Southern Division (District Court) and the 4th Circuit Court of Appeals (Court of Appeals).

MCPS selects instructional materials in a prescribed manner. Professional staff members, including reading and instructional specialists, identify, evaluate, and adopt materials for their pedagogical and curricular appropriateness, with opportunities for public input during various stages of this process. Parents and other community members can also voice objections to, and initiate a review of, instructional materials already in use by MCPS (Montgomery County Public Schools, 2024).

The main objective of MCPS's PreK-12 ELA curriculum is to "create literate, thoughtful communicators" who will "understand and appreciate language and literature as catalysts for deep thought and emotion" by "exploring a *variety* [emphasis added] of texts" (Joint Appendix, 2025, p. 5). This is part of MCPS's broader emphasis on a "culturally responsive" curriculum that fosters an appreciation for "the richness of cultural pluralism"; the need to "respect, value, and celebrate diversity as an essential component of a healthy and thriving community"; the ability to "work effectively in cross-cultural environments"; and the obligation to "confront and

eliminate

stereotypes related to individuals' actual or perceived personal characteristics" (Appendix to Petition, 2024, p. 589a). Among the specific goals in MCPS's PreK-5 ELA curriculum, which is based on the Amplify Core Knowledge Language Arts program, is to "[help] students see the strengths and experiences we all share while celebrating their own *unique identities and experiences*" [emphasis added] (Amplify Education, 2023, p. 10; Griffin, 2024).

In the early 2020s, based on input from parents, teachers, staff, students, and community members, MCPS determined that the instructional materials in its PreK-5 ELA curriculum lacked adequate representation of LGBTQ characters. Consequently, in the spring of 2022, MCPS began the process of identifying and assessing new ELA materials that would be "more inclusive of LGBTQ people" (Appendix to Petition, 2024, p. 603a). A committee of four reading specialists and two instructional specialists reviewed possible texts, making sure that the books "supported MCPS content standards and performance indicators, contained narratives and illustrations that would be accessible and engaging to students, and featured characters of diverse backgrounds whose stories and families students could relate to" (Appendix to Petition, 2024, pp. 603a-604a). After selecting seven LGBTQ storybooks that met these standards, the committee publicly displayed them so that parents and professional staff could provide feedback prior to final approval. The parents who would become the petitioners in *Mahmoud* did not avail themselves of this opportunity (Brief for Respondents, 2025, pp. 3-4; *Mahmoud v. Taylor* [Sotomayor], 2025, pp. 7-8, 28).

The MCSB eventually approved the purchase and use of the seven storybooks for the 2022-2023 school year. However, during the following school year, an ELA supervisor for MCPS disapproved of two of those books on February 23, 2024: *My Rainbow* (Neal et al., 2020) and *Pride Puppy* (Stevenson & McLaughlin, 2021). The rationale given for disapproving of the two storybooks was that they required "more explicit instruction of vocabulary and concepts beyond the curriculum standards" (Appendix to Petition, 2024, p. 274a; Asbury, 2024; Montgomery County Public Schools, n.d.-a; Montgomery County Public Schools, n.d.-b). The five storybooks that remained in use are typical examples of children's literature:

- *Uncle Bobby's Wedding* (Brannen & Soto, 2020) is about a young girl, Chloe, who learns that her uncle is going to get married to his boyfriend. The story recounts Chloe's apprehension that her uncle will no longer have time to spend with her after he gets married (Little Bee Books, n.d.-b).

- *Prince & Knight* (Haack & Lewis, 2018) tells the story of a prince who attempts to find a bride because his parents believe he will need a spouse when he becomes king. During his search for a bride, the prince meets a knight with whom he falls in love and eventually marries (Little Bee Books, n.d.-a).
- *Intersection Allies: We Make Room for All* (Johnson et al., 2019) uses poetic stanzas to share the stories of nine fictional children from diverse backgrounds. The characters explain how the multiple attributes that make up their identities, e.g., race, sex, and gender, affect their lives and sometimes their safety (Dottir Press, n.d.).
- *Born Ready: The True Story of a Boy Named Penelope* (Patterson & Barlow, 2021) relates the true story of one child's journey to express her authentic gender identity. It conveys both the challenges and the fulfillment that accompany this journey (Crown Books for Young Readers, n.d.).
- *Love, Violet* (Wild & Chua, 2022) is about Violet, a young girl who falls in love with another girl. The book conveys Violet's struggle to summon the courage to tell the girl how she feels about her (Macmillan, n.d.).

Representative of the modern storybook genre, these texts function didactically to provide young readers with new information/concepts, to instill literacy and communication skills, and to stress certain values and norms (Gibbs & Early, 1994; *Johnson & Louis, 1987*).

Although the petitioners in *Mahmoud* would acknowledge that *My Rainbow* (Neal et al., 2020) and *Pride Puppy* (Stevenson & McLaughlin, 2021) were no longer approved as part of MCPS's PreK-5 ELA curriculum (and thus not at issue in *Mahmoud*), they nevertheless discussed them. The petitioners' brief also included discussions of two other books that were not at issue, *Jacob's Room to Choose* (Hoffman et al., 2019) and *What Are Your Words?: A Book About Pronouns* (Locke & Passchier, 2021). While no explanation was proffered for the inclusion of these four books, the petitioners believed they were additional, if immaterial, examples of age-inappropriate instructional texts used by MCPS (Brief for Petitioners, 2025, pp. 9-11).

At the time that the storybooks were adopted, MCPS's Religious Diversity Guidelines permitted requests from students (or from parents on behalf of their children) to be excused from "specific classroom activities or discussions" if they believed that they would "impose a substantial burden on their religious beliefs" (Appendix to Petition, 2024, p. 81a). If, however, these

requests became "too frequent or burdensome," a school had the right to refuse them (p. 82a). The Religious Diversity Guidelines indicated that schools were not required to "alter fundamentally the educational program" or to design separate educational programs or courses "to accommodate a student's religious practice or *belief*" [emphasis added] (p. 82a).

During the 2022-2023 school year, some MCPS parents requested—for both religious and non-religious reasons—that their children be excused from class when the storybooks were read and/or discussed. Teachers and administrators initially approved these so-called opt-out requests. However, by March of 2023, the number and tracking of these requests, the temporary removal of students from classes, and the need for alternative assignments had created an "unworkable" situation (Brief for Respondents, 2025, p. 12). MCPS, therefore, sent a message to parents on March 23 announcing that opt-out requests for instructional activities/lessons would no longer be granted for any reason, nor would individual notifications be given prior to the use of the storybooks. On May 24, a group of MCPS parents filed suit in District Court against the MCSB and the superintendent, requesting a temporary injunction requiring that the opt-out provision be restored and that advance notice be given to parents prior to any use of the storybooks (Brief for Respondents, 2025; *Mahmoud v. McKnight*, 2023).

Three families were involved in the case throughout its adjudication. Tamer Mahmoud and Enas Barakat—devout Muslims—averred that there would be "detrimental spiritual consequences" if their son were exposed to instruction about sexuality and gender that contradicted "well-established Islamic teachings" (Appendix to Petition, 2024, p. 532a). Similarly, Melissa and Chris Persak believed that their Roman Catholic faith required that their daughters be taught that the "sexual differences between males and females" were "immutable" (p. 543a). The final two parents were Svitlana and Jeff Roman, Ukrainian Orthodox and Roman Catholic, respectively, who did not question the biological basis of gender, or their duty to ensure that their son's instruction regarding "sexuality and gender identity" was consistent with their religious beliefs (p. 541a).

On August 24, 2023, District Court Judge Deborah Boardman ruled against the petitioners, i.e., the parents, who then appealed to the Court of Appeals. On May 15, 2024, by a vote of 2-1, the Court of Appeals affirmed the judgment of the District Court, prompting petitioners to seek a writ of certiorari for a hearing before the U.S. Supreme Court, a writ that was granted on January 17, 2025.

Adjudication by the U.S. Supreme Court

Yoder, "Mere Exposure," and "Very Real Threats"

After listening to oral arguments on April 23, 2025, the U.S Supreme Court announced its decision in *Mahmoud* on June 27, ruling 6-3 in favor of the petitioners. The majority opinion was written by Justice Samuel Alito, who was joined by Chief Justice John Roberts and Justices Amy Coney Barrett, Neil Gorsuch, and Brett Kavanaugh. Justice Clarence Thomas wrote a separate concurring opinion that echoed the main points delineated by the majority.

The key question in *Mahmoud* was whether eliminating the student opt-out provision and advance notifications had placed a burden on the petitioners' exercise of their religious beliefs, given that the storybooks contained perspectives on sexuality and gender that conflicted with the messages that they (the petitioners) were trying to inculcate in their children. Such a burden, the petitioners claimed, would violate the Free Exercise Clause, which is the section of the First Amendment to the U.S. Constitution that protects the right of individuals to exercise freely, i.e., practice, their religion.

How the petitioners framed this key question is important to understanding some of the language and arguments in the majority opinion. The petitioners believed that incorporating the storybooks as part of MCPS's ELA curriculum equated to "*instruction* [emphasis added] in gender and sexuality"—in fact, some parents also referred to it as "indoctrination" (Appendix to Petition, 2024, pp. 184a, 618a). These claims were made in the face of repeated avowals by the respondents that using the storybooks for instruction in gender and sexuality was strictly prohibited. Even more to the point, the respondents argued that there was no evidence indicating that teachers had ever violated this prohibition (Brief for Petitioners, 2025, p. i). To be sure, the respondents in their brief had characterized the storybooks quite differently than the petitioners had: "To start, the storybooks themselves do not instruct about gender or sexuality. They are not textbooks. They merely introduce students to characters who are LGBTQ or have LGBTQ family members" (Brief for Respondents, 2025, p. 26). The minority, in its opinion, would stress how this extended variety of storybook characters responded to the needs of a democratic society by emphasizing "sameness" rather than "difference," and by fostering "inclusion" instead of "exclusion" (*Mahmoud v. Taylor* [Sotomayor], 2025, p. 38). The majority opinion ignored or dismissed these assertions. By doing so, it drew a parallel to an analogous op-out right accorded

to students by the State of Maryland. The latter, as part of its mandate for comprehensive health education, permitted students to opt out of health education classes when instruction covered "family life and human sexuality" (Appendix to Petition, 2024, p. 172a; Comprehensive Health Education, 2019). If students were able to opt out of health classes when instruction covered those topics, then—according to the petitioners—students should have the same right to opt out when instruction covered similar topics in ELA lessons that incorporated the storybooks (Appendix to Petition, 2024, p. 185a).

In reviewing the decisions made by the lower courts, the majority admitted that the District Court found no evidence that use of the storybooks had constituted "indoctrination." Tellingly, though, the majority omitted a critical consideration in the District Court's reasoning. Citing a passage from a highly germane case, *Parker v. Hurley* (2008), the District Court had noted: "The court [in *Parker v. Hurley*] concluded the 'reading by a teacher of one book, or even three, and even if to a young and impressionable child, does not constitute indoctrination'" (*Mahmoud v. McKnight*, 2023, p. 35). The majority also acknowledged that the Appeals Court had ruled that a free exercise of religion claim could be maintained only if the petitioners could "show direct or indirect coercion arising out of exposure" to the storybooks (*Mahmoud v. McKnight*, 2024, p. 35). The majority, however, focused on Judge Marvin Quattlebalm's dissent in the Appeals Court decision. He argued that "the messages from the books conflict with and undermine the sincerely held religious beliefs [that the petitioners] hold and seek to convey to their children" (*Mahmoud v. McKnight*, 2024, p. 49). Quattlebaum suggested that simple exposure to those messages was sufficient to uphold the petitioners' claim of a free-exercise burden because, in his view, exposure was a form of coercion. The majority would largely adopt Quattlebaum's reasoning, but—unlike Quattlebaum—it would rely on its interpretation of *Wisconsin v. Yoder* (*Yoder*) (1972) to support its contentions.

The respondents in *Yoder* were members of the Old Order Amish and Amish Mennonite religions (Amish). Amish groups from Europe began settling in Pennsylvania beginning in the early seventeenth century, with subsequent migrations from Pennsylvania to the American Midwest and South. Their traditional beliefs include simplicity, submission to divine will, pacifism, an emphasis on manual/vocational labor, limited use of technology, and self-sufficiency. Perhaps the most distinctive characteristic of Amish life is their practice of cultural separatism, i.e., living together and apart from others. Related to the Amish's cultural separatism is the cessation of formal schooling at the end of eighth grade, after which children

spend the remainder of their adolescence with adult community members, learning various vocations and religious precepts. The Amish believe that this stage of development is essential for an individual's spiritual salvation (Dewalt, 2006; Kraybill et al., 2013; Stevick, 2007). As a result, the respondents in *Yoder*, whose children were 14 and 15 and no longer attended school, were charged with violating Wisconsin's compulsory school attendance statute, which required children to attend a public or private school until age 16 (*Wisconsin v. Yoder*, 1972).

The Court eventually ruled 6-1 in favor of the respondents in *Yoder*. The majority noted that the Amish had "convincingly demonstrated . . . the interrelationship of belief *with their mode of life*" [emphasis added] and the "vital role that belief and daily conduct play in the *continued survival* [emphasis added] of Old Order Amish communities and their religious organization" (*Wisconsin v. Yoder*, 1972, p. 235). The majority warned that Amish compliance with the Wisconsin compulsory education law would present "hazards" and a "heavy impediment" to this continued survival (p. 218). In short, the majority concluded that the Wisconsin statute carried with it "precisely the kind of objective danger to the free exercise of religion that the First Amendment was designed to prevent" (p. 218). In an important caveat that the majority in *Mahmoud* would all but brush aside, the majority in *Yoder* noted that "probably few other religious groups or sects" would be able to meet the standard it was setting for establishing a free exercise burden (p. 236).

Notwithstanding, what the majority in *Mahmoud* attempted to do was to show that the petitioners' free exercise burden in *Mahmoud* was equivalent to the respondents' free exercise burden in *Yoder*. The majority actually used stronger language than this, insisting that "the burden imposed here [in *Mahmoud*] is of the *exact same character* [emphasis added] as that in *Yoder*" (*Mahmoud v. Taylor* [Alito], 2025, p. 36). This ultimately became the majority's rationale for ordering MCPS to restore the advance-notification and opt-out procedures for the storybooks.

In its analysis of *Yoder*, the majority in *Mahmoud* did not deny that the court (in *Yoder*) had based its ruling on the conclusion that "'high school attendance . . . interposes a serious

barrier to the integration of the Amish child into the Amish religious community,'" primarily because it would "'take them away from their community, physically and emotionally, during the crucial and formative adolescent period of life'" (*Mahmoud v. Taylor* [Alito], 2025, p. 20). Indeed, the majority in *Yoder* had argued that it was this compulsory physical and emotional separation from the Amish community that would cause substantial interference with the "religious development" of Amish children (*Wisconsin v. Yoder*, 1972, p. 218). However, in subsequently asserting that the state's inference in *Mahmoud* was exactly the same as that in *Yoder*, the majority in *Mahmoud* ignored this central point in *Yoder* (that the "objective danger" to religious freedom was the separation of Amish children from their community for long periods each day)—and instead claimed that the burden in *Yoder* was caused by "'exposing Amish children to worldly influences in terms of attitudes, goals, and values contrary to [their] beliefs'" (*Mahmoud v. Taylor* [Alito], 2025, p. 21). This lowering of the bar set by *Yoder* for establishing a free exercise burden was one reason that the majority could maintain that the MCSB's "introduction of the LGBTQ+ inclusive storybooks . . . substantially interferes with the religious development of their [the petitioners'] children and imposes the kind of burden on religious exercise that *Yoder* found unacceptable" (*Mahmoud v. Taylor* [Alito], 2025, pp. 21-22). This interpretation of *Yoder* was consistent with Judge Quattlebaum's previously mentioned dissent, in which he had argued that a free exercise burden had been established because the storybooks contained messages that conflicted with the petitioners' religious beliefs (*Mahmoud v. McKnight*, 2024, p. 49).

The minority opinion in *Mahmoud*, which was written by Justice Sonia Sotomayor and joined by Justices Elena Kagan and Ketanji Brown Jackson, rejected the majority's argument that the free exercise burdens in *Yoder* and *Mahmoud* were comparable—or that an impermissible burden existed in *Mahmoud* at all. On the issue of comparability, the minority noted:

> The problem in *Yoder* was not that the law exposed children to material that would incidentally "undermine" religious beliefs, but that it compelled Amish parents to do what their religion forbade: send their children away rather than integrate them into the Amish community at home. (*Mahmoud v. Taylor* [Sotomayor], 2025, p. 15)

Thus, in the minority's view, it was "remarkable" for the majority to suggest, for example, that classroom use of *Uncle Bobby's Wedding* (Brannen & Soto, 2020) was akin to the compulsory school attendance law in *Yoder*. The minority did not mince words on this point:

> Reading a storybook that portrays a family as happy at the news of their gay son's engagement, the majority claims, is equivalent to a law that threatened the very "survival of [the] Amish communit[y]" in the United States. To read that sentence is to refute it. (*Mahmoud v. Taylor* [Sotomayor], 2025, p. 21)

The minority expressed similar incredulity about the majority's views regarding MCPS's use of *Prince & Knight* (Haack & Lewis, 2018): "According to the majority, that [the storybook's happy ending] makes reading *Prince & Knight* equivalent to a law that risked 'destruction of the Old Order Amish church community.' The absurdity of that claim, once again, requires no explanation" (*Mahmoud v. Taylor* [Sotomayor], 2025, p. 21).

The minority contended that the majority, in erroneously likening the free exercise burden in *Mahmoud* to that in *Yoder*, had transformed "mere exposure" *to* the storybooks into a "very real threat" posed *by* the storybooks, the latter being a prominent phrase in *Yoder* connected to establishing the respondents' free exercise burden. The minority (in *Mahmoud*) succinctly excoriated what it believed the majority had done: "[T]he majority rescues petitioners' exposure theory by simply renaming it" (*Mahmoud v. Taylor* [Sotomayor], 2025, p. 13).

For the minority (and for the majority, too), the difference between "mere exposure" and a "very real threat" was an important distinction. As the minority explained:

> [T]his Court has made clear that mere exposure to objectionable ideas does not give rise to a free exercise claim. Simply being exposed to beliefs contrary to your own does not prohibi[t] the free exercise of your religion. Nor does mere "[o]ffense . . . equate to coercion." (*Mahmoud v. Taylor* [Sotomayor], 2025, p. 10)

In the passage noted above, the key word is "coercion" because it is a critical criterion in determining whether the Free Exercise Clause has been violated. The minority cited *Yoder* and several other longstanding precedents—*Abington v. Schempp* (1963), *Bowen v. Roy* (1986), *Carson v. Makin* (2022), *Lyng v. Northwest Indian Cemetery* (1988), *Trinity v. Comer* (2017), and *West Virginia v. Barnette* (1943)—to highlight this point: "[T]he Clause prohibits the government from *compelling* [emphasis added] individuals, whether directly or indirectly, to give up or violate their religious beliefs" (*Mahmoud v. Taylor* [Sotomayor], 2025, p. 10).

This put the majority in a complicated legal position. Its interpretation of *Yoder* had seemingly signaled the sufficiency of using mere exposure to conflicting or offensive beliefs as the determinant of whether the Free Exercise Clause had been violated. Yet, leaving the matter.

would require overturning much of the case law established by the precedents listed above. In order to escape the minority's accusation that this was exactly what it was doing, i.e., overturning several precedents by "renaming" one thing ("mere exposure") as another ("a very real threat"), the majority needed to demonstrate that use of the storybooks involved *more* than just exposure to antithetical viewpoints—that it involved coercing/compelling the petitioners to give up or violate their religious beliefs. The majority attempted to find this coercion/compulsion in the putative messages conveyed by the storybooks, messages that the minority would label as "imagined" (*Mahmoud v. Taylor* [Sotomayor], 2025, p. 20).

The Storybooks' Messages

The majority had conceded that the MCSB's policies prohibited the storybooks from being used as part of "*explicit instruction* [emphasis added] on gender identity or sexual orientation in elementary school" (Appendix to Petition, 2024, p. 11a; *Mahmoud v. Taylor* [Alito], 2025, p. 8). This prohibition also extended to any attempts to change how an adult or student felt about gender identity or sexual orientation. Thus, in the absence of any evidence that explicit instruction had occurred (despite the majority's repeated misuse of the word "instruction"), the majority was compelled to identify if/when the storybooks were part of coercive efforts to change student beliefs about gender identity or sexual orientation. One of the majority's first targets was a document entitled, "Adding an LGBTQ+ Lens to Our Critical Selection Repertoire," which it (the majority) claimed had been used when selecting the storybooks (Appendix to Petition, 2024, pp. 622a-623a; *Mahmoud v. Taylor* [Alito], 2025, p. 4). Though the validity of this assertion remains unclear, MCPS did use the document as one resource in creating/maintaining school media collections (McKnight, 2023). The majority singled out three selection criteria from this document: "Is heteronormativity reinforced or disrupted?;" "Is cisnormativity reinforced or disrupted?;" and "Are power hierarchies that uphold the dominant culture reinforced or disrupted?" (*Mahmoud v. Taylor* [Alito], 2025, p. 4). The majority did not view "disrupted" as a positive term, but one that denoted an attack or an attempt to sow confusion; in pedagogical terms, the majority believed it referred to instructional materials whose purpose was to change beliefs, which implied a not-so-hidden reason for their use by MCPS. Such an interpretation, however, is inaccurate. In the parlance of contemporary educational theory and practice, "disruptive" refers to texts and/or other instructional materials used in anti-bias/anti-racist curricula that emphasize equity, diversity of voices, and multiple

perspectives (Ebarvia, 2019). The objectives of such curricula are entirely consistent with the stated goals of MCPS's PreK-5 ELA program.

Without utilizing any sort of scholarly framework—or citing a single reference—the majority also raised concerns about the contents of the storybooks themselves. In addition to discussing the two books that MCPS had disapproved of and two books that were not at issue (see above), the majority propounded what it assumed were the entirely self-evident messages that four of the five disputed storybooks conveyed.

The whole point of *Prince & Knight* (Haack & Lewis, 2018), the majority argued, was to make "impressionable children" celebrate the prince's marriage to another *man* [emphasis added] (*Mahmoud v. Taylor* [Alito], 2025, p. 22). A straightforward reading of the storybook, however, makes it clear that the prince is on a quest to find a "worthy bride," and only after meeting "many ladies" for whom he feels no attraction, does he end up falling in love with a knight (Haack & Lewis, 2018, sents. 4-5). This is not a rejection of heterosexual marriage writ large—the majority had argued that all of the "[storybooks] are designed to present certain values and beliefs as things to be . . . rejected"—but the inclusion of same-sex marriage as an example of how some people express their love/desires (*Mahmoud v. Taylor* [Alito], 2025, p. 22). Furthermore, as the minority indicated, the celebration of a marriage at the end of the storybook makes it no different from scores of other fairytale romances that were in MCPS's libraries (*Mahmoud v. Taylor* [Sotomayor], 2025, p. 6).

Turning to *Uncle Bobby's Wedding* (Brannen & Soto, 2020), the majority described its message as "subtle," even "coy," implying that the MCSB was being disingenuous about the book's primary theme (*Mahmoud v. Taylor* [Alito], 2025, p. 23). The majority identified this theme as "two people can get married, regardless of whether they are of the same or the opposite sex" (*Mahmoud v. Taylor* [Alito], 2025, p. 23). However, this is not the storybook's theme, just an aspect of contemporary U.S. society that conflicted with the petitioners' religious beliefs; the majority did not explain why the storybook's acknowledgment of this social/legal reality, i.e., same-sex marriage, was a "very real threat" to religious freedom, per *Yoder*. The majority also claimed that making the celebration of Bobby's marriage the narrative climax of the storybook revealed an additional attempt by respondents to undermine the "moral messages" the petitioners wished to convey to their children (*Mahmoud v. Taylor* [Alito], 2025, p. 22). As with *Prince & Knight* (Haack & Lewis, 2018), the majority missed the entire point of the storybook, something

that the minority was quick to note. The main focus of the narrative, the minority clarified, is Bobby's niece's fear that his marriage will mean that he no longer has time to spend with her. The denouement of the storybook is when she realizes that this fear is baseless (*Mahmoud v. Taylor* [Sotomayor], 2025, p. 21). To this extent, *Uncle Bobby's Wedding* is not unusual; separation from the presence or the attention of parents or other family members—or the fear of such separation—is a foundational theme in children's literature (Immel & Grenby, 2009).

The majority's discussion of *Intersection Allies* (Johnson et al., 2019) was cursory and gave the impression that the storybook is almost entirely about gender identity, which is not accurate. Only one of the nine vignettes is about a non-binary child, whom the majority misidentified twice as transgender. The majority said very little about the storybook besides stating the obvious, that its views "sharply conflict[ed] with the religious beliefs that the parents wish to instill in their children" (*Mahmoud v. Taylor* [Alito], 2025, p. 24). This is probably the best example of what the minority meant when it accused the majority of simply renaming one legal dictum— "mere exposure"—as something else—an "objective danger" that would qualify as a free exercise burden (*Mahmoud v. Taylor* [Sotomayor], 2025, p. 30).

The majority asserted that *Born Ready* (Patterson & Barlow, 2021) "slyly conveys a positive message about transgender medical procedures," though why the majority employed the word "slyly" remained unexplained (*Mahmoud v. Taylor* [Alito], 2025, p. 24). This message about transgender medical procedures is sent, according to the majority, when the main character Penelope—a girl who identifies as a boy—tells her mother that she wants "to be Papa" (Patterson & Barlow, 2021, sent. 47). The mother responds with an affirming comment, after which Penelope exclaims, "For the first time, my insides don't feel like fire. They feel like warm, golden love" (Patterson & Barlow, 2021, Sents. 57-58). The majority interpreted that interaction by noting, "To young children, the moral implication of the story is that it is seriously harmful to deny a gender transition and that transitioning is a highly positive experience" (*Mahmoud v. Taylor* [Alito], 2025, p. 25). The majority did not explicate how "young children" were to reach such a conclusion from that passage. The majority further contended that the storybook conveys a message of intolerance. To wit, when Penelope's brother expresses confusion over her gender identity— "This doesn't make sense. . .. You have to be born [a boy]" (Patterson & Barlow, 2021, Sents. 75, 77)—the mother responds by affectionately pulling both children to her and whispering, "Not everything *needs* to make sense. *This is about love*" [emphases in original]

(Sents. 79-80). The majority characterized the mother's reaction as a "reprimand" that means "it is hurtful, perhaps even hateful, to hold the view that gender is inextricably bound with biological sex" (*Mahmoud v. Taylor* [Alito], 2025, p. 25). A more plausible interpretation, given the narrative arcs of all five storybooks, is that this exchange illustrates the authors' attempt to show the mother's validation and love for both her children, which by extension serves as an endorsement of diversity that encompasses all children who might read the storybooks (PEN America, 2025).

Constructing a Conspiracy

Other sources that the majority identified as a "pressure" on the petitioners' children "to conform" to religiously objectionable beliefs were optional materials designed to assist teachers and administrators with classroom discussions and parental queries about the storybooks. In August of 2022, MCPS held a workshop for teachers and administrators at which these materials were distributed. One document was "Responding to Caregivers/Community Questions." In response to a potential question about whether the storybooks were an attempt to get children to reject the values they were being taught at home, the suggested answer began with a categorical, "Absolutely not" (Appendix to Petition, 2024, p. 638a). The majority, though, omitted that denial, and instead quoted from a different part of the suggested answer: "'Teaching about LGBTQ+ is not about making students think a certain way; it is to show that there is no one right or normal way to be'" (*Mahmoud v. Taylor* [Alito], p. 7). By quoting that passage out of context—and by omitting "Absolutely not"—the majority made it seem that MCPS's goal might well have been to compel children to reject certain beliefs. The majority also omitted another denial of coercive intent located in that same suggested answer:

> The purpose of learning about gender and sexuality identity diversity is to demonstrate that children are unique, and that there is no single way to be a boy, girl, or any other gender. If a child does not agree with or understand another student's gender identity . . . *they do not have to change how they feel about it* [emphasis added]. However, they do not get to make fun of, harass, harm, or ignore the existence of other students." (Appendix to Petition, 2024, p. 638a)

Far from being an attempt to make all students conform to a single set of beliefs, this guidance reflected MCPS's concern over ensuring that all students felt safe and welcome in the district's schools. Notably, in contrast to the majority, the minority highlighted a different section of the

optional materials that underscored this need to use discussions of the storybooks to instill basic lessons of democratic citizenship: "'School,'" teachers were told to remind students, "'is a place where we learn to work together regardless of our differences. In any community, we'll always find people with beliefs different from our own and that is okay—we can still show them respect'" (*Mahmoud v. Taylor* [Sotomayor], 2025, pp. 6-7).

The second document among the optional materials that the majority identified as a source of coercion, "Sample Student Call-Ins," contained instructional suggestions and possible responses to questions and/or comments that might arise when students read/discussed the storybooks. Teachers, for example, were encouraged to "disrupt either/or thinking," which the majority interpreted as hostility toward the beliefs that the petitioners were attempting to impart to their children (Appendix to Petition, 2024, pp. 629a-630a, 633a-634a; *Mahmoud v. Taylor* [Alito], p. 7). The majority, though, failed to note that teachers were advised to "disrupt either/or thinking" only as it related to inaccurate and/or harmful stereotypes. As noted above, confronting and eliminating stereotypes is one of MCPS's broad educational goals (Appendix to Petition, 2024, p. 589a). Another one of the majority's omissions was even more misleading. The majority, explaining part of the "Sample Student Call-Ins" document, noted, "If a student claims that a character 'can't be a boy if he was born a girl,' teachers were encouraged to respond, 'That comment is hurtful'" (*Mahmoud v. Taylor* [Alito], p. 7). But the hypothetical student in the above example prefaces the comment with the disparaging pronouncement, "That's weird," which is the sort of insensitive remark teachers were being advised to discourage. Moreover, the majority omitted "That's weird" not just once, but three times in various references to that section of "Sample Student Call-Ins." The minority called attention to this, arguing that the majority "should presumably agree" that the "*excised statements* [emphasis added] … could be hurtful to students in the classroom and thus warrant discouragement" (*Mahmoud v. Taylor* [Sotomayor], 2025, p. 32).

The misleading parsing of both "Responding to Caregivers/Community Questions" and "Sample Student Call-Ins" was actuated by the majority's need to substantiate its otherwise untethered allegations that the MCSB was encouraging teachers "to correct the children and accuse them of being 'hurtful' when they express a degree of religious confusion" and "to reprimand any children" who disagreed with "particular viewpoint[s]" concerning same-sex marriage and gender (*Mahmoud v. Taylor* [Alito], pp. 26, 27). This was one reason that the

minority criticized the majority's insistence that the MCSB had undertaken an intentional campaign to "impose upon children a set of values and beliefs that are hostile to their parents' religious [principles]" (*Mahmoud v. Taylor* [Sotomayor], 2025, p. 2). The minority believed that it had shown, by pointing out these misleading quotations, that "the full record reveals a starkly differently reality" (*Mahmoud v. Taylor* [Sotomayor], 2025, p. 2).

The majority's characterization of MCPS's animus toward petitioners and their beliefs also included unofficial comments made by MCSB board member Lynne Harris. Harris, the majority purported, had said that parents who opposed the storybooks were comparable to "white supremacists" who want to prevent their children from learning about civil rights and "xenophobes" who object to "stories about immigrant families" (*Mahmoud v. Taylor* [Alito], 2025, p. 11). Had this recapitulation of Harris's remarks been accurate, the majority's argument might have gained legal traction, given that a recent U.S. Supreme Court decision, *Masterpiece Cakeshop v. Colorado Civil Rights Commission* (2018), had determined that government action is prohibited if such action is motivated by "hostility toward a religion or religious viewpoint" (p. 638). Legal precedents aside, the majority's representation of Harris's comments cannot withstand close scrutiny. As the minority clarified, Harris had not analogized the petitioners to white supremacists or xenophobes; rather, she had worried about the administrative burdens and ethical consequences that might accompany a resumption of the op-out and notification policies:

> "Do [the plaintiffs] realize it would be an impossible disruption to the school system if teachers had to screen the content they plan to teach every day and send out notices so white supremacists could opt out of civil rights content and xenophobes could opt out of stories about immigrant families?" (Espey, 2023)

The words and phrases that the majority used were just as significant as the ones it omitted, especially since this verbiage reinforced a narrative that portrayed the petitioners as victims of the MCSB's allegedly prejudicial and callous actions. A few prominent examples of this language, with added emphases, include the following from the majority opinion: the MCSB erred by its "*abject* refusal to widespread and *impassioned pleas* for accommodation" (p. 3); petitioners "*beseeched* the Board to allow opt-outs, but those *pleas* fell largely on *deaf ears*" (p. 35); the MCSB had "*deliberately* design[ed] its curriculum to make parental opt-outs more cumbersome" (p. 39); and the majority accepted without qualification the petitioners' accusation that the MCSB was using the storybooks "to *impose* an *ideological* view of family life and

sexuality" (p. 13) (*Mahmoud v. Taylor* [Alito], 2025).

Polarized Conceptions of the Law and Public Schooling

In summation, the majority and minority opinions in *Mahmoud* illustrate marked disagreements over legal points and the purpose of MCPS's curricula. Both sides agreed that exposure to conflicting views was not sufficient to establish a free exercise burden, but while the minority believed that MCPS's use of the storybooks was "mere exposure" (thus failing to establish a free exercise burden), the majority thought that use of the storybooks without advance notifications or the ability to opt out was an "objective danger" and a "very real threat" to the religious freedom of the petitioners (thus establishing a free exercise burden). However, the majority's arguments—as critiqued by the minority—failed to demonstrate how use of the storybooks was an "objective danger" or a "very real threat," at least not as those concepts had been articulated in *Yoder*.

The opinions also reveal widely disparate conceptions of the intentions that were motivating the introduction/use of the storybooks. For the majority, the storybooks were an attempt to advance an ideological agenda whose purpose was to validate certain beliefs at the expense of others. It was nothing less than a "chilling vision of the power of the state to strip away the critical right of parents to guide the religious development of their children" (*Mahmoud v. Taylor* [Alito], 2025, p. 31). This sweeping indictment of the MCSB, along with tortured interpretations of the storybooks and misleading quotations, impart a sense of moral panic and conspiracy to the majority opinion (Cohen, 2003; van Prooijen & Douglas, 2018). In this respect, it was as if the majority did not believe what it saw but instead saw what it believed.

The minority maintained that use of the storybooks was one of many legitimate ways that MCPS was trying to make its ELA curriculum more inclusive. As the minority saw it, this was part of the "core premise of public schools"—to introduce students to "a range of concepts and views that reflect our entire society" (*Mahmoud v. Taylor* [Sotomayor], 2025, p. 38). This necessarily involved teaching civic virtues such as "mutual tolerance," "respect," and "kindness," which—as the evidence demonstrated—MCPS was using the storybooks to accomplish (*Mahmoud v. Taylor* [Sotomayor], 2025, pp. 31, 32). Finally, the minority argued that these goals were critical to the larger enterprise of democratic governance, a concern conspicuously absent from the majority opinion—the word "democracy" does not appear even

once in the majority opinion. The minority quoted approvingly from *Elk Grove Unified School District v. Newdow* (2004) that "'no robust democracy insulates its citizens from views that they might find novel or even inflammatory'" (*Mahmoud v. Taylor* [Sotomayor], 2025, p. 10). Ultimately, for the minority, public schools offered "children of all faiths and backgrounds an education and an opportunity to practice living in our multicultural society" (*Mahmoud v. Taylor* [Sotomayor], 2025, p. 1). The majority vehemently disagreed with that proposition.

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Teaching Strategies That Can Develop Demographic Literacy for Undergraduates in Demography Courses

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Abstract

An undergraduate demography course can be perceived as challenging to students. In my eleven years of experience teaching demography at California State University, Bakersfield, student feedback highlighted two main challenges. Demography is a scientific discipline within the social sciences, often housed within sociology programs, which means many undergraduates only take one demography course in their undergraduate careers. Hence, students report frequently feeling overwhelmed by the newness and unfamiliarity of demographic theories, concepts, and measures. Additionally, students experiencing math anxiety and/or insecurity in their quantitative reasoning also develop data aversion, since a significant part of population data analysis in demography includes quantitative-based methods. Therefore, this paper describes my attempt to address these two challenges through two instructional practices: incorporating a flipped classroom model for quantitative lessons and incorporating in-depth lessons on writing about numbers/data into the course curriculum. The changes described had a positive impact on students' overall performance in the course and in their perceptions of the course materials.

Key Words: Teaching Demography, Demographic Literacy, Quantitative Literacy

Introduction – The Challenges

This paper focuses on offering two instructional strategies that address two challenges of teaching demography to undergraduate students in the social sciences. Demography is a discipline within the social sciences that systematically and scientifically studies the size, composition, and distribution of the human population of a given area at a specific point in time, mainly through (though not limited to) fertility, mortality, and migration patterns, and the consequences of these changes (Poston & Bouvier, 2017). Furthermore, demography as a discipline relies on quantitative methods for the analysis of population data. One of the challenges this paper addresses is that many undergraduates often feel overwhelmed by the newness and unfamiliarity of demographic theories, concepts, and measures. A possible reason

for this experience is that at many U.S. four-year institutions, undergraduate students often do not encounter demography until late in their college careers, a trend that was first observed in the 1980s by Stephan and Massey (1982). Furthermore, in the U.S., demography is often treated as a specialized area within sociology and therefore a secondary focus within sociology programs (Palloni, 2002). Usually, students take a single demography course offered among many electives (Abowitz, 1990). Hence, undergraduates frequently enroll in demography courses without a clear understanding of the discipline, including a lack of knowledge in fundamental theories, concepts, measures, and methods. This lack of exposure to the discipline may contribute to why some students find demography courses overwhelming, given the amount of new and unfamiliar information. Therefore, instructional strategies that can break down unfamiliar information into more manageable parts could help address this challenge.

Furthermore, a second and related challenge of teaching demography to undergraduates that this paper addresses is that students in demography courses are expected to develop demographic literacy, which includes quantitative literacy. Demography literacy is defined as having the ability to confidently analyze and interpret numerical population data (presented as facts, figures, and numbers) in a way that enables students to provide evaluations and potential solutions to real-world population concerns (Poston & Sullivan, 1986). Hence, many undergraduates can be intimidated by the quantitative nature of demography, especially when expected to analyze real-world population data. Students may not have had a previous quantitative course or may carry over insecurities and anxieties from previous bad experiences with math, making taking demographics courses challenging. Compounding the issue, many undergraduate students have not adequately developed the skills that allow them to write quantitatively, to write about numbers. Feeling ill-equipped to write about numbers can also add to the challenges of teaching demography, which requires students to write data paragraphs and papers as part of a formal assessment of learning.

Moreover, this paper argues that being able to read and write about numbers effectively is an essential skill and tool for many fields (Miller, 2004; Polito, 2014). Writing about numbers is not just about inserting numbers into sentences; it is a way to communicate a narrative about the data to readers in a way that they understand the importance of the numbers (Coven, 2022) through the use of prose, tables, and figures (Miller, 2004). Unfortunately, even though instructors teaching scientific disciplines recognize the importance of writing about numbers,

they do not include explicit curriculum or instruction in their courses due to seeing it as too time-consuming a task when students need to have more experience with the content before developing skills such as communicating through written results (Coil et. al., 2010). Since writing about numbers is a significant component of developing demographic literacy, demography instructors in undergraduate courses that use written responses to assess student learning must include it as part of the course curriculum. It should not be assumed that students will learn to write about numbers as they go, completing assignments or activities; instead, it should be included as part of the course curriculum.

Hence, this paper argues that these two challenges discussed above need to be addressed because teaching demography successfully to undergraduates in the social sciences is of utmost importance for several reasons. As a scientific discipline, demography requires students to develop demographic literacy. Hence, training in demography equips students with the skills to become responsible consumers of statistics focused on population issues, often used and sometimes misused in politics and media. Important population issues today include (but are not limited to) poverty and homelessness, health disparities across socioeconomic statuses, racial educational inequalities, and immigration patterns and trends affecting U.S. institutions.

Additionally, training in demography includes highly marketable skills such as the ability to analyze, evaluate, and interpret population data, which is in demand across many sectors and therefore appeals to social science students from multiple fields. However, I have observed in the eleven years of teaching demography that, as initially observed by Poston and Sullivan (1986), the very nature of what makes demography invaluable can sometimes intimidate and deter undergraduate students.

Therefore, in the following sections, this paper provides a brief review of the literature on instructional models or strategies recommended by other demographers to teach undergraduates specifically. Then, in the next section, this paper discusses two instructional strategies I have used to overcome the two challenges in teaching demography to undergraduates addressed above. The two instructional strategies discussed in this paper are the flipped classroom model and the incorporation of writing about numbers into my course curriculum.

Background Literature on Teaching Demography to Undergraduates

Overall, this section provides a brief review of relevant works that are especially helpful in designing demography courses. A review of the literature on teaching demography helps us start to draw some solutions to the two challenges of teaching demography to undergraduates discussed in the section above. There has been debate across the decades about what should be included in a demography course, and so we have some guidelines for teaching demography in general. Yet there has been limited discussion on how demography should be explicitly taught to undergraduates. The teaching guidelines and strategies covered in this section continue to provide relevant guidance to demography instructors today, which is why they are included in this paper. However, there is a need for more and updated research and attention to the topic, as the general consensus from published works suggests that demography as a discipline could be taught more effectively to undergraduates (Burch, 2018). Furthermore, teaching practices continue to evolve with technological advancements.

According to Abowitz (1990), there are four standard instructional models used to teach undergraduates demography. One model is population problems-focused (which could also be considered a population studies model), a second model is a data and methods-focused course, a third model teaches "general demography" (which is a balance of the first two models teaching a little of both), and a fourth model uses an interdisciplinary approach to teach demography and a related discipline together (which is the primary focus of Abowitz) (Abowitz, 1990). What Abowitz identifies as a population problems-focused course model is discussed by Weeks (1986) as a course that employs a sociological approach to explore demographic concepts by comparing international populations and regions, highlighting their concerns related to social, political, and economic change. Poston and Sullivan (1986) provide an example of model two, which focuses on data and helps students develop demographic literacy by emphasizing the practice of data interpretation and evaluation skills, all of which are key components of demographer training. Furthermore, Burch (2018) provides guidelines and examples of what model three looks like, which includes both what he calls the substantive theory aspects of demography and the hands-on data analysis approach. In fact, both Poston and Sullivan (1986) and Burch (2018) highly stress the importance of including data analysis as part of a demography course despite the challenges, since it is a key part of the discipline.

For example, Burch provides guidelines that follow the third model of undergraduate courses, as described by Abowitz above, which is a model that blends the general principles (concepts, theories, and measures) of demography with data analysis. Burch (2018) specifically recommends that demographers not separate the teaching of demographic methods and population studies, which focus on more substantive issues, into different courses. Furthermore, Burch (2018) stresses that emphasizing student activities that apply theory to analyze real-world situations should be part of every demography course. Finally, Burch (2018) also recommends that instructors make use of visual representations of theories in lectures, in addition to graphic representations of data. All of these guidelines help ensure that an instructor is actually teaching a demography course that represents the essential aspects of demography as a scientific discipline.

Furthermore, examining Poston and Sullivan (1986) more closely provides a better understanding of how to design demography courses that teach demographic literacy in a less intimidating manner to undergraduates who are uncertain about their quantitative reasoning abilities. For example, Poston and Sullivan explain the importance of designing a course curriculum to convince students of the relevance and importance of demography in students' daily lives by personalizing data in a series of activities and assignments that allow them to practice interpretation and evaluation skills (1986). Such activities/assignments recommended by Poston and Sullivan include having students focus throughout the semester on writing a report on the country of their birth. Another example Poston and Sullivan recommend is having students write a population autobiography where they answer in narrative form many common demographic questions related to place or birth, number of people in a household, how many times and where they have migrated, types of employment people in the household are engaged in, etc. By personalizing demographic concepts, measures, and data, undergraduates can feel more at ease, as they are dealing with something less abstract.

In summary, as already mentioned, there is a need for further studies and discussions that focus not only on the challenges of teaching demography to undergraduates but also on creative instructional practices to promote the discipline and encourage undergraduates to pursue careers in demography. Hence, this paper seeks to address this need by offering a discussion of two instructional strategies I attempted in teaching my demography courses. The teaching strategies I attempted best fit what Abowitz above identifies as the "general

demography" course (model 3). Recall that this third model attempts to provide students with a well-rounded experience in the introduction of demography by using both substantive population problems and data analysis to develop demographic and quantitative literacy. Furthermore, as Burch (2018) stresses in his ten guidelines, demography is a scientific discipline within the social sciences, and therefore, it should emphasize the theoretical and methodological principles of demography. This paper further argues that using this general demography model also best addresses the challenges addressed in this paper's introduction. Thus, this paper builds upon the literature presented in this section.

Instructional Strategies Attempted to Address Challenges in Teaching Demography

The section below includes a discussion of two successful instructional strategies I attempted in recent years, teaching demography to undergraduates at California State University, Bakersfield. I was inspired to make changes to my instructional strategies based on initial feedback from students who found demography courses very challenging. I found that adopting a flipped classroom model and incorporating in-depth lessons on writing about numbers significantly improved students' overall performance on course assignments compared to previous semesters that did not utilize these strategies. Additionally, based on student feedback, it seems that both strategies may have contributed to alleviating some of the students' feelings of being overwhelmed by the unfamiliarity of demographic concepts and methods. Furthermore, based on student feedback, the strategies may have reduced some anxiety and uncertainty when dealing with quantitative reasoning and population data analysis.

Adopting a Flipped Classroom Model

Adopting a flipped classroom model, either for some lessons or the entire semester, can be a solution to help remedy the challenges of teaching demography to undergraduates. A review of the literature shows there are many definitions of a flipped classroom (Ward et al., 2021); however, most would agree that a flipped classroom requires students to do some independent direct learning before class and then utilize class time to working on interactive student centered activities that help students apply learned content (Bergmann & Sams, 2023; Ward et al., 2021; Horn, 2013). The independent learning out of class can include a

variety of materials, but often technology-driven models include video lectures and other online resources before class (Bergmann & Sams, 2023; Neilsen et al., 2018; Horn, 2013).

Furthermore, flipped classrooms are effective in enhancing student learning, attitude, and motivation for learning in a variety of subjects at different levels. Bergmann and Sams (2023) argue that students of this century are very comfortable with digital learning and appreciate several aspects of a flipped classroom, especially its flexibility with autonomous learning that can help busy students. I became most convinced to try a flipped classroom model for demography courses when reading the ample evidence that this model improved the experience and performance for students in several undergraduate introductory statistics courses (Neilsen et al., 2018; Peterson, 2016; Windquist & Carlson, 2014; Wilson, 2013). Because demography uses quantitative methods and reasoning as part of developing demographic literacy the positive findings in statistics courses for undergraduates can also help students as in the instructional example explained in the section below.

Instructional Example using Flipped Classroom in Demography

This section illustrates how I use a flipped classroom model to teach indirect standardization as a method for comparing two populations' crude death rates (CDRs). A crude death rate measures the total number of deaths in a population per 1,000 people. This lecture highlights why comparing demographic measures, such as CDRs, alone to determine a population's overall quality of life or health is not recommended. The reasons are that we need to know more about the population's composition and structure to make better inferences. There are a few factors that can elevate CDRs, such as when a population has a larger proportion of older persons (age 60+) compared to the proportion of younger persons, compared to populations with the inverse population composition (age structure) (Rowland, 2003). Hence, this lesson demonstrates to students not only the challenges of comparing population measures like CDRs, but it also provides them with demographic tools of analysis to make better-educated comparisons.

Overall, this lesson is inspired by an example used by Rowland (2003) that uses direct standardization to compare the 1996 CDRS for the United Kingdom and Kuwait. To accomplish this lesson using a flipped classroom model, self-learning is assigned as an online lecture video. This video lecture introduces the basic demographic measures required in this lesson: CDRs and age-specific death rates (ASDRs). As part of this introduction, the

video lecture teaches students the basic definitions and formulas for these measures. Furthermore, the video lecture also explores with students a variety of visual data in the form of maps and figures (population pyramids) that illustrate examples of CDRs and ASDRs for different countries around the world. Additionally, the video lecture requires that students complete practice calculations along with guided instruction. The video utilizes a stylus so that students can watch me handwrite the calculations and interpretations on the screen. Moreover, students can pause, rewind, and rewatch the lesson as they complete the practice calculations to test their comprehension. It has been noted that students value flipped classrooms that utilize online lessons that allow them to pause and rewind lecture content (Bergmann & Sams, 2023).

Thus, when students come to class, they are already knowledgeable and more comfortable with the basic measurements and calculations that will be used in the in-class activity. The in-class activity completes the whole lesson by guiding students through the calculation and interpretations used for indirect standardization. First, students are presented with the population pyramids for the U.S. and Kuwait's population in 2017. Students in previous lessons have already learned to become comfortable interpreting population pyramid characteristics, and so we spend time comparing and contrasting the age structures. It becomes apparent that Kuwait's population pyramid is complicated to classify, as it has a very different age and sex composition compared to the U.S. The lecture then explains how the age structure of a population can impact its CDR in such a way that populations with a higher proportion of elderly persons compared to younger persons can increase CDR and erroneously lead to the assumption that there is a high CDR. They are then provided with a brief history of Kuwait to help put Kuwait's population pyramid into context. Students are encouraged to include any known history or demographic theories related to morality and the health patterns each population may experience, depending on the proportion of elderly and youth.

After a period of discussion, students are then provided with handouts that include tables with required population and mortality data for both the U.S. and Kuwait in 2017. Then, as a class, we use the data in these tables to work through the steps outlined on the handout to complete indirect standardization. The students dictate the class pace as we work through the series of calculations that include using CDRs and ASDRs from the online lesson. We complete

several examples of calculation on the board until all students' report feeling comfortable moving forward to the next step. Simultaneously, I project a pre-programmed Excel worksheet that I have programmed to perform the necessary calculations for indirect standardization. Students are taught to perform hand calculations simultaneously, which they see are also completed using the Excel spreadsheet, as numerical data is input into specific highlighted boxes. Students need to learn how to use the pre-programmed Excel worksheet, as they will use it on their own to perform indirect standardization again, as part of a country project where they focus on a country of their choice throughout the semester to write a demographic report.

Overall, since using a flipped classroom model to teach quantitative methods such as indirect standardization to undergraduates, the performance on written assessments has significantly increased. I believe this is attributed in part to adopting a flipped classroom, which breaks down a complex lesson into smaller, more manageable parts. Additionally, online instruction provides students with a visually interesting lesson and the ability to practice basic calculations on their own, reducing anxiety before coming to class. Then, in the in-class activity, students are further eased into the more complex methods of indirect standardization at their own pace and with me present to address any concerns in real time. Furthermore, students practice using the data and tools (the pre-programmed Excel worksheet) that they will need to complete indirect standardization on their own as part of a country project assignment. In the country project, students utilize data for a country of their choice to compare to the U.S.

Finally, I want to clarify why I use pre-programmed Excel worksheets to perform complex calculations, as students have reported that using them helps reduce quantitative anxiety. Most students are more familiar with Excel than they are with statistical software packages such as SPSS, R, or STATA. And sometimes teaching students how to work with data in statistical software packages is beyond the scope of an introductory demography course. Therefore, using pre-programmed Excel spreadsheets still allows students to work with data using computer software that can also analyze data. Pre-programming the Excel worksheet to perform calculations and generate graphs of the data that students can visually interpret and analyze helps develop demographic literacy, a key objective of my demography course.

Writing About Numbers as Part of the Course Curriculum

Since incorporating in-depth lessons on writing about numbers into my demography courses, I have seen significant improvements in grades on assignments and overall performance. Which, in turn, I argue, also helped change student perceptions of the course by reducing stress, as teaching students how to write about numbers can address some of the issues related to anxiety around quantitative reasoning and data aversion. If individuals are unable to discuss data, such as that found in a table or figure, with confidence, they will avoid writing about data (Polito, 2014).

Instructional Example - Writing About Numbers

The example discussed in this section illustrates how I implement an in-depth lesson about writing about numbers, along with a scaffolded final paper, to reduce uncertainties related to quantitative literacy, specifically written communication about numbers and data interpretations and analysis. I use scaffolding to assist students in preparing their midterm and final papers in demography. Scaffolding is an instructional strategy that helps students by breaking down large projects into smaller, low-stakes assignments and is especially useful when developing their writing and research skills one step at a time (Gallant & Rettinger, 2025). Hence, the elements of this lesson are reiterated throughout the semester in several assignments, and students receive feedback on their quantitative writing throughout the semester as well.

First, it is made clear to students at the beginning of the semester that learning how to write effectively about numbers will be a significant part of their assessment, as it is part of the core learning objectives. I place the in-depth lesson on writing about numbers early in the semester, after students have been introduced to the general theories, concepts, and measures in demography. The lesson is given once students are expected to use numbers in their writing to interpret data on smaller assignments. Furthermore, I find that presenting this lesson in person helps students ask questions in real time, thus enhancing their learning and understanding of lesson objectives. The lesson is guided by both PowerPoint slides and supplemented by handouts that highlight essential information from the lecture, which students can quickly refer to later when writing. I start the lesson by showing students that writing about numbers in prose is really no different than writing about any other topic, since they still need topic sentences for paragraphs and supporting evidence (Miller 2004). The first part of the lesson focuses on how to construct a sentence that interprets something meaningful about numbers to readers.

The second part of the lesson then builds on the first part by demonstrating how we use paragraphs to illustrate the pattern we want the reader to see. Both lessons break down the structure of a sentence and a paragraph using highlighted text to visually identify the key components. For example, I show them the following sentence that interprets a CDR: The crude death rate for China in 1960 is 40 deaths per every 1,000 persons in the population. Each color-coded section contains a necessary part of an interpretation that I expect them to use for all demographic measures in the course. They are provided with a handout that includes all the basic demographic measures used in this course and an example of how to write an interpretation using the highlighted color-coded method, showing required information: population name, date of data, actual numerical data, and the measure being identified and explained appropriately.

Similarly, the next part of the lesson, which focuses on the structure and components of a quantitative paragraph, also employs the color-coded highlight method to show students how paragraphs about numbers are structured. They are provided supplemental handouts with examples of written passages that have been color coded show the structure of data paragraphs: the topic sentence is one color, the sentence interpreting specific numerical data that we just learned in the previous lesson is in another color, and the sentences that either compare or provide additional information that help the reader better understand the narrative where we communicate the relationship between the numbers is highlighted into another color. This method turns writing about numbers into a visual formula that students can use in their own writing, whether in sentences or paragraphs. Furthermore, I ask students to practice this method with their own writing and encourage them to use it to review their written work when submitting assignments that require paragraphs. If they cannot clearly identify and highlight all the sections, then this alerts them that something is missing.

Finally, I want to emphasize that structuring writing prompts and assignments in the described method above, with the addition of having students compare numerical data in some way, helps them write stronger interpretations and analyses of numerical data. Others have also found that using quantitative comparisons is an effective way to develop writing skills in writing about numbers (Ruscetti et al., 2018; Miller, 2004). Overall, incorporating this in-depth lesson on writing about numbers and structuring assignments using scaffolding and quantitative comparisons significantly improved students' performance. Students were

more able to demonstrate that their demographic literacy skills were developing across the semester.

Closing Discussion

This paper was inspired to address two challenges in teaching demography to undergraduate students based on their feedback, my eleven years of experience, and on previously observed challenges highlighted by demographers in teaching demography literature. The first of the two challenges addresses how many students often feel overwhelmed by the newness and unfamiliarity of demographic theories, concepts, and measures. This could be attributed in part to the fact that demography is its own scientific discipline but is often housed within another discipline (sociology). Furthermore, students may take one or two demography courses in their entire undergraduate careers. The second challenge is that demography courses require the development of demographic literacy, which is closely tied to quantitative literacy. This can be intimidating for students who have math anxiety or insecurity in quantitative reasoning, as demographic methods involve analyzing population data and employing quantitative reasoning.

Therefore, to address these two issues, this paper discussed two teaching strategies, which included a flipped classroom model and incorporating in-depth lessons on writing about numbers as part of the course curriculum. Both these strategies improved student performance on assignments compared to previous semesters. And student feedback seems to show signs that quantitative anxieties or insecurities were reduced. Overall, I hope this paper inspires other demography instructors to share their creative endeavors in addressing similar or additional challenges they face when teaching demography to undergraduates, as there is a need for more research and discussion on this topic. As already mentioned, demography provides instrumental skills to students, which is one of many reasons why we should try to attract more undergraduates and encourage them to pursue the discipline.

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Leadership in Action: How Teachers' Beliefs, Skills, Climate, Education, and Reflection Shape Their Leadership Approach

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Abstract

This qualitative study examines how emerging teacher leaders construct their leadership identities through a combination of personal beliefs, professional skills, graduate coursework, and reflective practice. Conducted within a Master of Teacher Leadership program at a public university in Texas, the research draws from reflective responses and goal-setting artifacts submitted by thirty-five graduate students enrolled in a five-week online leadership course. The study addresses three guiding questions: (1) What knowledge and skills do teacher leaders need to be effective in today's educational environment? (2) How do coursework, personal bias, and external influences shape leadership philosophy? (3) What competencies do candidates aim to refine to support future leadership roles? Thematic analysis revealed that candidates emphasized reflective practice (97%), communication and collaboration (94%), and emotional intelligence (80%) as essential leadership attributes. Coursework was identified as both a catalyst for growth and an area that requires greater relevance and application. Participants highlighted a desire to remain in classroom roles while influencing campus reform, often citing technology integration, curriculum development, and self-regulation as priority areas for continued growth. Findings suggest that graduate-level leadership preparation can foster a mindset shift in teacher leaders, encouraging agency, adaptive expertise, and a student-centered vision of leadership. The study concludes with implications for program design, including the integration of more practice-based experiences and the conduct of longitudinal assessments of leadership impact beyond program completion.

***Key Words*:** Teacher Leadership, reflective practice, educational reform, professional development, instructional leadership

Introduction and Background

In an era of rapid educational reform, teacher leadership has emerged as a critical force in shaping instructional effectiveness and school climate. Yet, when asked about their leadership roles, many educators still respond with, "I am just a teacher" (Helterbran, 2010). While leadership is widely recognized as essential for school improvement, teachers themselves (Fullan, 2005) rarely drive the process. Empowering educators to embrace leadership requires intentional training programs that build confidence, encourage reflection, and equip them to influence meaningful school reform (Uribe-Florez et al., 2014).

This study explores the interplay of teachers' beliefs, skills, professional climate, and reflective

practice in shaping their leadership approaches. By examining how teacher leadership candidates develop and refine their philosophies, this research provides valuable insights into the competencies required for educators to drive change. Through a blend of theoretical analysis and practice-based inquiry, this study contributes to the ongoing conversation about how teacher leaders impact student achievement, instructional innovation, and school transformation.

Review of Literature

The purpose of this descriptive qualitative study was to gain insight into teacher leadership candidates' philosophy, knowledge, skill level, and reflection on the impact of teacher leadership on school reform. The study also examined the candidates' goals for continuing to learn and pursuing a leadership role. This section will examine Research Question 1.

Leadership Competencies

The primary function of school leaders is to facilitate the achievement of the objectives and goals of an educational institution. Educational leadership encompasses several vital aspects that are central to a school's mission, such as teaching and learning processes, supervisory responsibilities, instructional methodologies, academic programs, and assessment and evaluation practices. (Mduwile, P., & Komariah, A., 2021). A comprehensive approach to developing school leadership competencies can significantly impact the creation of effective schools. This approach combines three key elements: strategic policy implementation, professional development, and innovative leadership practices. (Ambon, J., Alias, B. S., & Mansor, A. N., 2025). The distributed leadership approach encourages the engagement of all stakeholders in the educational process and holds them accountable for student learning outcomes. (Gumus, S., Bellibas, M.S., Esen, M., & Gumus, E., 2018).

Technology Integration and Leadership Practices

Many qualities are required to be a successful leader who fosters a creative and critical approach to curriculum leadership supported by technology. Leaders must be knowledgeable about current technology relevant to pedagogy and capable of suggesting appropriate technology for specific content and context. (Mduwile, P., & Komariah, A., 2021). One of the key roles of a school leader is to spearhead instructional technology initiatives, promoting their widespread use in teaching and student learning. (Christensen, R., Eichhorn, K., Prestridge, S., Petko, D., Sligte, H., Baker, R., Alayyar, G., & Knezek, G. (2018). Establishing an institutional culture and vision for technology, ensuring access to technology for teachers and students, and providing quality

professional development are essential for the effective use of instructional technology. (Robinson Carney, C., 2019).

Socio-Emotional Learning (SEL) and Responsive Equity Leadership

Educators and administrators considered SEL crucial for addressing the social and emotional needs of high school students, promoting their well-being, academic achievement, and life readiness. They also acknowledged its importance in enhancing the school climate and relationships. (Felder, S. R., 2024). Effective leaders manage emotions skillfully, understand others' feelings, inspire motivation, empower their teams, and build trust to achieve success. (Alamo, M., & Falla, D., 2023). School leaders identified empathy and effective communication as essential leadership qualities for cultivating a positive and supportive atmosphere. (Bukhari, S. U. P., Ali, K. K., Ashiq, R., Rub, H. A., & Kalhoro, I. A., 2024).

Change Management and Adaptive Leadership

To make an organization more adaptive, leaders must develop personal skills, cultivate supportive attitudes, and establish collaborative structures that promote adaptability. (Dunn, R., 2020). Adaptive leadership is particularly well-suited for educational organizations, given the interdependence of students, parents, teachers, and legislators. Leaders must oversee both leaders and subordinates while fostering collaboration and professional growth. (Khoso, F. J., Sahito, Z. H., & Kerio, G. A., 2025. Research indicates a strong, positive correlation between Transformational Leadership and Organizational Citizenship Behavior (OCB). This leadership style significantly enhances employee productivity and satisfaction across various organizations, including higher education institutions. Leaders should emphasize individual consideration, intellectual stimulation, and idealized influence to foster OCB, ensuring employees feel valued, motivated, and encouraged to share their ideas. (Sharma, R. K., & Sharma, K., 2022).

Policy and Community Engagement

School and district leadership are essential for maintaining high-quality, sustainable partnerships. School leaders play a pivotal role in creating a welcoming environment, fostering collaboration, and promoting a culture of shared leadership. As partnership models become increasingly complex, the demand for effective school leadership is growing ever more urgent. (Valli, L., Stefanski, A., & Jacobson, R., 2014). School leaders play a crucial role in developing strong partnership programs and encouraging teachers to engage parents in their children's education, both at school and at home. Their leadership in cultivating a collaborative school culture and establishing partnership structures is vital for helping teachers engage with families

to support student success. (Jung, S. B., & Sheldon, S., 2020).

Coursework

Graduate coursework and professional development are instrumental in shaping teacher leaders' philosophies and practices. Engaging in advanced studies exposes educators to new theoretical frameworks, reflective practices, and evidence-based instructional strategies (Smith, 2021). Research indicates that teachers who participate in ongoing professional development are more likely to adopt innovative approaches, become reflective practitioners, and contribute to school improvement efforts (Smith, 2021; Day & Gu, 2010).

Coursework that emphasizes leadership, collaboration, and data-driven decision-making prepares educators to navigate complex educational challenges and lead change effectively (Smith, 2021). Graduate programs that integrate experiential learning and action research further support teacher leaders in applying theoretical knowledge to real-world educational settings (Cochran-Smith & Lytle, 2009). These opportunities allow educators to critically examine their practices, engage in continuous improvement, and advocate for systemic change (Avalos, 2011).

Standardized Testing

Standardized testing exerts considerable influence on school leadership and instructional priorities. The pressure to achieve high test scores often shifts leaders' focus from instructional improvement to data management and test preparation (Jimenez & Modaffari, 2021). This can result in a narrowed curriculum, increased stress among educators, and diminished emphasis on holistic student development (Jimenez & Modaffari, 2021).

While standardized assessments provide valuable data for guiding instruction, overreliance on test scores may undermine creativity, critical thinking, and equity in education (Jimenez & Modaffari, 2021). Studies indicate that excessive focus on testing can lead to instructional practices that prioritize rote memorization over deeper learning experiences (Wiliam, 2010).

Principals and educational leaders must balance accountability requirements with their responsibility to foster rich, student-centered learning environments. Effective leadership involves advocating for assessment policies that support diverse learning needs while ensuring that instructional practices remain engaging and meaningful (Wiliam, 2010).

Politics

Politics plays a decisive role in shaping educational leadership, influencing policy, funding, curriculum, and school autonomy. The political climate—whether characterized by

stability or polarization—affects leaders' ability to implement reforms, secure resources, and build coalitions with stakeholders (Woo et al., 2023). Educational leaders must navigate complex political landscapes, advocate for their schools, and align their vision with national and local priorities (Woo et al., 2023). Political instability can create challenges in securing funding and implementing policies, while centralized or decentralized governance structures impact the autonomy of educational leaders (Hopkins, 2023). Understanding the intersection of politics and education is crucial for leaders striving to create inclusive and equitable learning environments (Hopkins, 2023).

Bias

Implicit bias remains a pervasive challenge in education, influencing teacher expectations, disciplinary practices, and student outcomes. Studies highlight how implicit racial and gender biases can lead to inequities in grading, access to advanced coursework, and disciplinary actions, contributing to achievement gaps and the underrepresentation of minority students in STEM and other fields (Santa Maria, 2024). Research has shown that implicit biases among educators can shape student-teacher interactions, often leading to differential treatment based on race and socioeconomic status (Hu & Hancock, 2024).

Leaders must take proactive steps to recognize and address their own biases, foster open dialogue, and create equitable policies and practices (Santa Maria, 2024).

Collaboration

Collaboration is widely regarded as a foundational element of effective educational leadership. Research demonstrates that collaborative cultures empower educators to share responsibility for student learning, foster collective capacity, and enhance professional growth (Ambon et al., 2025; Holowka, 2020). Principals and school leaders play a critical role by establishing structures for collaborative planning, protecting instructional time, and distributing leadership responsibilities, which nurtures teamwork and shared ownership (Fladerer et al., 2020; Holowka, 2020). Collaborative leadership also encourages innovation, as teachers are empowered to contribute ideas and take initiative in school improvement efforts (Ambon et al., 2025). This approach not only improves decision-making but also builds trust, strengthens school culture, and leads to higher student achievement (Yukl, 2012). When teachers work together in professional learning communities, they are more likely to implement evidence-based practices and support each other's growth, resulting in a more positive and effective school environment (Holowka, 2020; Fladerer et al., 2020).

Mentorship

Mentorship is a vital driver of teacher leadership and professional growth. Effective mentoring relationships—whether instructional, psychosocial, or peer-based—help teachers develop leadership skills, confidence, and a sense of community within their schools (Mori, 2024; Gul et al., 2019). Structured mentorship programs foster reflective practice, support career transitions, and improve educational outcomes for both mentors and mentees (Stanulis & Floden, 2009). Research shows that mentoring enhances communication, collaboration, and decision-making skills, while also promoting teacher retention and a positive school culture (Gul et al., 2019). Additionally, mentorship programs have a measurable impact on student achievement, school connectedness, and the development of leadership capacity among both novice and experienced teachers (Mori, 2024; Stanulis & Floden, 2009).

Influence Change

Teacher leaders are pivotal agents of change, driving school improvement, innovation, and positive culture shifts. Research shows that teacher leadership is linked to higher student achievement, professional growth, and the successful implementation of reform initiatives (Aliu & Kaçaniku, 2023; Smylie & Eckert, 2018). Effective teacher leaders identify barriers to student success, model best practices, and foster reflective, collaborative environments (Berry et al., 2010; Smylie & Eckert, 2018). They also play a crucial role in mentoring novice teachers, fostering a culture of continuous learning, and advocating for instructional improvements (Lowery-Moore et al., 2017).

Graduate programs and professional development that nurture confidence, adaptability, and change management skills prepare educators to lead transformation at the classroom, school, and district levels (Aliu & Kaçaniku, 2023). Research suggests that instructional leadership significantly enhances teacher self-efficacy, which in turn improves student outcomes (Alanoglu, 2022). Teacher leaders to bridge the gap between administration and classroom practice makes them essential in shaping effective educational strategies (Helterbran, 2010).

Student Centered

Student-centered education prioritizes active learning, critical thinking, and student agency, leading to improved academic and personal growth (Richardson, 2020). Research shows that student-centered strategies—such as collaborative learning, peer mentorship, and project-based instruction—enhance engagement, inclusivity, and achievement (Richardson, 2024; Tadesse et al., 2024). These approaches foster deeper learning by encouraging students to

explore concepts in meaningful ways, rather than passively absorbing information (Kaput, 2018). Studies indicate that student-centered learning improves motivation and self-efficacy, particularly among marginalized student populations (Kaput, 2018).

Effective school leaders support this approach by providing resources, modeling student-centered values, and fostering strong relationships among staff and students. Leadership plays a crucial role in sustaining student-centered learning environments by promoting professional development and ensuring that instructional practices align with student needs (Kaput, 2018).

Professional Development

Professional development is a crucial skill for teacher leaders, with forty out of forty-four candidates planning to refine this area1. As "lead learners," teacher leaders' model lifelong learning and instructional leadership. Research by Day & Gu (2010) suggests that focusing on professional development prepares teacher leaders to support colleagues in implementing new pedagogies1. Effective teacher leaders design meaningful learning opportunities based on staff needs, as noted by Shulman (2004).

Growth Mindset

The concept of possessing a growth mindset, first introduced by Carol Dweck (2006), is an essential component for effective leadership. Teacher leaders with a growth mindset accept challenges as opportunities for growth and recognize that setbacks are part of the learning process, with much to learn from failure, thereby building a resilient nature. Research from Yeager & Dweck (2012) indicates that teacher leaders who reflect a growth mindset are likely to create a positive culture where growth for students and staff is encouraged. Teacher leadership candidates who choose to develop and refine a growth mindset will strive to create and maintain safe learning environments for students and staff.

Self-Control

The concept of self-control is a logical trait for any leader to have and is essential for teacher leaders in their role working with students, staff, and families. Their work requires them to lead by example and keep their emotions in check. Research indicates that self-regulation is closely related to leadership effectiveness (Zhao et al., 2019). Consequently, teacher leadership candidates who focus on refinement in self-control are prepared to manage conflicts, facilitate difficult conversations within professional parameters, and work effectively under pressure. Moreover, cultivating self-control is crucial for modeling behavior that fosters a positive and productive learning environment for students and staff (Zimmerman, 2000).

Professional Development

In the career of an educational leader, professional development is a lifelong process of learning, where the leader is the lead learner. The term "Lead Learner" in educational leadership refers to a school leader who models lifelong learning, professional growth, and instructional leadership (Fullan, 2014). Professional development plays a pivotal role in improving instructional practices. Teacher leaders are the voice behind designing and delivering meaningful learning. Day & Gu's (2010) research infers that teacher leadership candidates who focus on professional development for refinement will be prepared to support their colleagues in implementing new pedagogies.

Technology Integration

The continuous rapid advancement of technology in education has made technology integration an increasingly important skill for teacher leaders (Ertmer & Ottenbreit-Leftwich, 2010). Not only do teacher leaders have to implement technology effectively, but they also need to provide guidance to peers on technology integration; peers who may not be comfortable doing so. Research indicates that focusing on refining technology integration will lead to the development of effective guidance practices (Dexter, Anderson, & Becker, 2012). Moreover, technology is essential for facilitating personalized learning and creating collaborative learning environments (Puentedura, 2013).

Curriculum Development

For decades, curriculum development has been a pillar of teacher leadership programs. According to Darling-Hammond et al. (2017), effective teacher leaders are not only proficient in implementing curricula but also in designing and adapting curricula to meet the needs of diverse learners. Teacher leaders are expected to collaborate in curriculum design, using data-driven decisions to improve student outcomes (Fullan, 2014). Teacher leaders who emphasize refinement in curriculum development build their capacity in effective instructional practices and leading curriculum reforms.

Methodology

The objective of this descriptive qualitative research study was to gain insight into teacher leadership candidates' philosophy, knowledge, skill level, and reflections of teacher leadership candidates on the impact of teacher leadership on school reform. It also examines the candidates' goals to continue learning and to assume leadership roles. This study was designed to provide a foundation for determining how the candidate's perspectives may impact on their

practice as leaders and how that middle voice of leadership will impact school reform. While also informing how universities and districts can support the development of this middle voice of leadership.

Content of the Course

This course is the final course in the Teacher Leadership Master's Program. This synthesis course serves as a pivotal culminating experience, enabling students to critically examine the breadth of knowledge they have acquired throughout their program. By reflecting on key concepts, research-based strategies, and pedagogical frameworks, students deepen their understanding of how this learning translates into effective classroom practices and teacher leadership. The course promotes an intentional approach to integrating theoretical insights with practical applications, empowering educators to refine their instructional methodologies, support diverse learners, and drive systemic improvements in their schools and districts. Through self-assessment and collaborative dialogue, participants cultivate a leadership mindset, positioning themselves as change agents who advocate for equitable education and innovative teaching practices.

Participants

The participants in this study were graduate students enrolled in the Master of Teacher Leadership program at Lamar University. Specifically, the sample was drawn from the Fall 2 2024 cohort of PEDG 5376, a five-week online course designed to synthesize learning and application of leadership principles in education. The course had a total enrollment of forty-four students, of which a random sample of thirty-five participants was selected for analysis. These educators, representing diverse backgrounds and instructional experiences, engaged in reflective practice, exploring how their coursework shaped their pedagogical approaches and leadership roles within their schools and districts. Their insights offered valuable perspectives on integrating teacher leadership principles into contemporary educational settings.

Procedures

This study employed a descriptive, qualitative research design, utilizing textual analysis to examine the philosophies, skill sets, and goals of teacher leadership candidates within the Master of Teacher Leadership program at Lamar University. Data were collected from a required assignment in Module 5 of the PEDG 5376 course, where thirty-five randomly selected participants provided reflective responses on leadership competencies, influences shaping their

philosophy, and skill refinement plans. To ensure a systematic approach, comparative analysis principles were applied, with coded textual responses categorized into emergent themes. The study reviewed archived student responses from seven key sections: self-directed learning, presentation and self-control, communication and student-centered practices, knowledge and skills, reflective practice, goal setting, and conclusions. These responses were then analyzed for patterns in leadership development, instructional efficacy, and future refinement strategies. The methodological approach provided an in-depth understanding of how coursework and external factors shape the perspectives of teacher leadership candidates, while highlighting areas for growth in leadership competencies.

Data Collection and Analysis

Data was collected from archived textual responses from a course-embedded assignment in Module 5, which required candidates to reflect on seven key areas: self-direction and responsibility, presentation and self-control, communication and student-centered approaches, knowledge and skills, reflective practice, goal setting, and overall leadership conclusions. These components were designed to assess each candidate's evolving leadership philosophy, skill set, and future aspirations through open-ended questions.

Research Questions

The following questions guided this research:

RQ1. With the changing landscape of educational leadership, what skill sets, and knowledge will teacher leaders need to be effective?

RQ2. What biases, outside influences, and coursework help to shape master's students' philosophy of teacher leadership?

RQ3. What future skills do teacher leadership candidates plan to refine to become effective leaders?

Findings and Emergent Themes

Analysis of participant responses yielded rich insight into how teacher leadership candidates conceptualize and develop their leadership capacities. Three central themes emerged, each corresponding to a guiding research question.

1. Core Leadership Competencies (RQ1)

Participants identified reflective practice (97%) as the most critical competency for effective leadership. Communication and collaboration skills (94%), instructional expertise and

data literacy (86%), and emotional intelligence (80%) were also frequently cited. Candidates emphasized that leadership requires ongoing self-assessment, peer collaboration, and adaptability in meeting the needs of students.

2. Influences on Leadership Philosophy (RQ2)

Coursework (80%) was the most influential factor in shaping leadership philosophy, although some students critiqued specific assignments as lacking practical relevance. Standardized testing (51%) and politics (46%) also emerged as shaping forces. Interestingly, only a minority (11%) cited bias as a considerable influence. Across responses, 100% of participants identified collaboration and mentorship as central to their leadership identity, with many emphasizing their desire to lead while remaining in the classroom.

3. Areas for Refinement and Growth (RQ3)

Professional development (100%) was universally identified as essential for continued leadership growth. Participants expressed a desire to refine self-regulation (86%), cultivate a growth mindset (72%), and strengthen technology integration skills (52%)—a smaller but notable group (35%) prioritized curriculum development. Many candidates articulated concrete goals, such as leading professional development, enhancing data analysis capabilities, and utilizing AI or digital tools to improve instruction.

Cross-Cutting Trend

A recurring narrative across responses was the view of teacher leaders as agents of change who led from within the classroom. This "lead learner" identity reflects a shift from traditional hierarchical models to a more distributed, collaborative leadership approach. Participants demonstrated a strong understanding of how teacher leadership contributes to school improvement, instructional quality, and student achievement.

Analysis of Research Questions

To address the three research questions in this study, the researchers followed the principles of comparative thematic coding. Each response was independently reviewed and coded using emergent categories and subcategories to identify patterns and recurring concepts. Codes were refined through constant comparison, ensuring alignment across participants' reflections and maintaining internal consistency. This allowed for the identification of dominant themes and frequency of responses, providing both qualitative depth and descriptive insight into the participants' perspectives. In exploring the evolving demands of educational leadership, this study sought to determine the essential skill sets and knowledge required for teacher leaders to

be effective. Five key themes emerged from participants' reflections, highlighting competencies that contribute to leadership success. These themes include reflective practice, communication and collaborative skills, instructional expertise and data literacy, emotional intelligence, and change management.

RQ1. *With the changing landscape of educational leadership, what skill sets, and knowledge will teacher leaders need to be effective?*

Reflective Practice. Among the participants, 97% emphasized the importance of reflective practice in teacher leadership, identifying professional development and continuous self-assessment as critical to growth. Reflection enables educators to assess their methods and refine their practices, promoting adaptability and improvement. One participant noted, "Reflection is especially important for growth as an educator. It allows us to evaluate our practices and find ways to improve ourselves." Another echoed this sentiment, stating, "I am always reflecting on my practices and am not afraid to make changes if it will help my students." These findings support the notion that intentional reflection enhances instructional efficacy and drives ongoing development among educators.

Communication and Collaborative Skills. Effective communication and collaboration emerged as the second most valued skill, with 90% of participants recognizing its significance in leadership effectiveness. Teacher leaders who cultivate open communication foster trust and engagement among students, colleagues, and stakeholders. One participant explained, "Effective communication allows me to convey concepts and engage not only students but also colleagues and parents, fostering a collaborative environment." Another shared, "Collaboration is a key part of my philosophy because I believe that education thrives when teachers work together." Participants underscored the importance of active listening, empathy, and teamwork in navigating the complexities of school leadership.

Instructional Expertise and Data Literacy. Instructional expertise and data literacy were identified as essential competencies by 86% of participants, reflecting the growing demand for data-driven educational practices. Participants recognized the integration of technology and assessment strategies as integral to instructional leadership. One candidate remarked, "I try to incorporate technology often in my classroom, whether it is the platform I have students deliver or receive information on, to practice their writing and grammar skills, etc. It can be useful in

many ways." This aligns with research highlighting that instructional expertise extends beyond content mastery to encompass assessment design, student data analysis, and the adaptation of teaching strategies to improve learning outcomes.

Emotional Intelligence. Emotional intelligence (EI) emerged as a foundational aspect of teacher leadership, with 80% of participants highlighting its role in fostering supportive and inclusive environments. Educators who demonstrate empathy, self-regulation, and interpersonal awareness play a crucial role in fostering positive school climates and promoting productive learning experiences. One participant explained, "When adopting a person/student-centered approach in communication, factors like speech, body language, and written notes are vital in conveying empathy, understanding, and support." These perspectives align with established EI frameworks, which emphasize self-awareness, motivation, and social skills as essential components of effective leadership. Leaders who exhibit emotional intelligence build trust, manage conflicts, and cultivate communities where students and staff feel valued.

Change Management. While only 57% of participants prioritized change management, those who did acknowledge its importance in educational innovation. Teacher leaders must navigate evolving pedagogical landscapes and institutional reforms to foster growth and development. One participant expressed their commitment to adaptability, stating their goal to "learn more about educational programs, presentation tools, and AI" as a means of staying ahead in an increasingly digital and dynamic learning environment. This sentiment underscores the need for educators to embrace change and develop strategies to lead through transitions in curriculum, policy, and the integration of technology.

RQ2. *What bias, outside influences, and coursework help to shape master's students' philosophy of teacher leadership?*

Coursework. Participants identified coursework, testing pressures, politics, and bias as factors influencing their philosophies of teacher leadership. Eighty percent of respondents cited coursework as a considerable influence on their development as leaders, although some noted concerns regarding the relevance of assignments. One participant reflected, "The coursework made me think about leadership differently, but some assignments felt like busy work rather than meaningful learning experiences." Another note. "It influenced my belief in the power of community within educational settings and shaped my commitment to fostering a supportive environment for both students and fellow teachers." A participant stated the following. "One area

I found particularly inspiring was the focus on evidence-based practices, which has encouraged me to explore more resources for growth." We will use the participants' feedback as we design and update our coursework.

Testing Pressures. Standardized testing remains an intensely debated topic in education, with educators and researchers expressing both support and criticism. Many educators argue that standardized tests place excessive pressure on students and teachers, often leading to a curriculum that is overly focused on test preparation and neglects deeper learning. Despite these concerns, some educators acknowledge that standardized tests provide a consistent measure of student progress across schools and districts. The data from these tests can help to identify students who need additional support or advanced academic challenges, ensuring equitable access to resources. Fifty-one percent of respondents reported that testing pressure impacts instruction and student achievement. One participant says. "In 2019, the Texas Legislature required that all reading teachers pass the STR exam. My district implemented an eleven-month program to train us in place of the exam. This new way of thinking has drastically changed the way reading looks in my classroom and across the state of Texas. We now offer explicit phonics teaching in our classrooms instead of a more literacy-based approach."

Politics. Political influences shaped the leadership philosophy for 46% of participants, particularly about policy changes and school budgeting constraints, or in some cases, led to increased funding. One candidate reported. "In the last five years, legislative policies such as the ESSA (Every Student Succeeds Act) and the push for more rigorous accountability through standardized assessments have significantly influenced the field of education. These policies have emphasized the importance of data driven. Another expressed a negative impact of politics. "As well as certain books being banned from being used in the classroom for a novel study. Two evidence-based practices that help meet these changes are differentiation and collaboration." A third participant noted the positive influence of politics. "One piece of legislation that has affected and influenced my field is the provision of ESSER (Elementary and Secondary Schools Emergency Relief). This has influenced my field in that it provided funds to schools to help after COVID. These funds helped provide resources for students to support schools in closing the achievement gaps and to help them operate after the pandemic. These funds provided for our school to provide Chromebooks to students, helped to pay teachers for working after contract hours to help with tutoring, and provided supplies and services to students."

Bias. Although only 11% of participants explicitly acknowledged bias as a factor in shaping their leadership philosophy, its lower prevalence in responses suggests that it may not be widely recognized or openly discussed. This could indicate an implicit influence rather than a consciously articulated concern, highlighting the need for deeper reflection on how biases, whether personal or systemic, impact educational leadership and decision-making.

Collaboration and mentorship. Participants consistently emphasized collaboration and mentorship as essential elements of teacher leadership, with 100% citing them as influential in shaping their philosophy. One participant noted, "Teacher leaders have the power to empower every individual to make a difference." Another reinforced the collaborative mindset, stating, "This spirit of teamwork leads to more effective solutions for improving student learning and outcomes." A third participant cited. "Reflecting with an experienced colleague gives you the opportunity to discuss what is going well and identify areas where you might need to improve. This type of reflection allows you to receive constructive feedback and offers a supportive ear when you need to talk through your challenges."

Influencing Change. Additionally, 85% of participants recognized the importance of influencing change, advocating for leadership roles that support student success. One Participant expressed this "Teacher leaders have the power to empower every individual to make a difference." A second participant reported. "Regardless of the specific role, teacher leaders have a responsibility to foster a culture of continuous improvement in schools by leading by example, supporting professional development, enhancing student learning, collaborating, and advocating for both teachers and students."

Student Centered Approach. 83% prioritized student-centered approaches, aligning their leadership philosophy with equitable educational practices. One participant shared, "Every child should have access to an education that is relevant and appropriate for their needs. Some students may need more time to grasp the content fully." Another expressed "I hope to join this revolution by supporting the teachers at my campus through increased collaboration and professional development targeted at the needs of our gifted students."

RQ3. *What future skills do teacher leadership candidates plan to refine to become effective leaders?*

Areas for Refinement and Growth (RQ3) Professional development (100%) was universally identified as essential for continued leadership growth. Participants expressed a

desire to refine self-regulation (86%), cultivate a growth mindset (72%), and strengthen technology integration skills (52%)—a smaller but notable group (35%) prioritized curriculum development. Many candidates articulated concrete goals, such as leading professional development, enhancing data analysis capabilities, and utilizing AI or digital tools to improve instruction.

Discussion

The findings of this study illustrate the complexities of teacher leadership development, emphasizing the interplay between reflective practice, collaboration, instructional expertise, emotional intelligence, and change management. Participants overwhelmingly prioritized reflective practice (97%), reinforcing existing research that self-assessment is a foundational element of effective leadership (Helterbran, 2010). Reflection fosters continuous improvement, enabling educators to critically evaluate their instructional approaches and refine their leadership strategies.

Similarly, communication and collaboration (94%) emerged as key competencies, underscoring the importance of shared leadership within schools. Collaborative environments not only enhance peer support but also facilitate instructional innovation, aligning with research highlighting distributed leadership as essential for educational reform (Gumus et al., 2018). Participants frequently cited the role of mentorship in leadership formation, viewing professional networks as vital for growth.

Instructional expertise and data literacy (86%) were widely recognized as necessary skills for teacher leaders, particularly in navigating the increasing emphasis on data-driven decision-making. Many participants emphasized the importance of integrating technology, aligning with research that suggests digital proficiency is a critical leadership attribute (Christensen et al., 2018). Emotional intelligence (80%) was also identified as a defining characteristic, with participants highlighting the need for empathy, self-regulation, and interpersonal awareness—qualities recognized as central to fostering inclusive school environments (Felder, 2024).

The lower emphasis on change management (57%) suggests that while educators acknowledge its importance, they may not yet view themselves as active change agents within their institutions. This finding highlights an opportunity for leadership preparation programs to

strengthen training on adaptive expertise and reform strategies, ensuring that teacher leaders feel equipped to navigate systemic change effectively.

Beyond competencies, this study also examined external influences on leadership development, revealing the varied impacts of coursework (80%), standardized testing (51%), and politics (46%). While coursework was widely recognized as a catalyst for growth, some participants expressed concerns regarding its practicality, suggesting a need for more embedded, real-world applications. The findings reinforce previous research advocating for experiential learning models to bridge theory and practice (Uribe-Florez et al., 2014).

Participants expressed a powerful desire to refine leadership skills, with professional development (100%), self-regulation (86%), growth mindset (72%), and technology integration (52%) identified as priority areas. Notably, 35% of participants emphasized curriculum development, reflecting an interest in influencing instructional design. These trends suggest that teacher leadership candidates aspire to lead from within the classroom, positioning themselves as instructional change agents rather than transitioning into administrative roles.

Conclusions and Implications

This study underscores the evolving nature of teacher leadership, emphasizing that effective leaders cultivate self-awareness, collaboration, instructional expertise, and adaptability to drive meaningful changes in schools. The findings suggest that graduate-level leadership preparation can shift teacher leaders' mindsets, encouraging agency, reflective practice, and student-centered leadership.

Given participants' emphasis on collaboration and mentorship, leadership programs should integrate peer coaching models that foster professional networks. Strengthening coursework relevance through case-based learning and practical application may also enhance leadership development, ensuring that candidates feel equipped to translate theory into practice.

Additionally, findings on change management suggest a need for greater emphasis on adaptive leadership strategies. Preparing educators to navigate policy shifts, implement reforms, and address systemic challenges can enhance their ability to lead effectively within complex school environments.

Finally, as technology and data literacy continue to shape instructional leadership, professional development initiatives should prioritize digital competency to ensure that teacher leaders are equipped to leverage technological tools for instructional improvement.

Future research could investigate the long-term effects of leadership training, including longitudinal assessments to track the influence of teacher leadership beyond program completion. Examining how graduates implement leadership competencies in real-world settings will provide further insights into how leadership development translates into school-wide and district-level improvements.

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The Impact of Dedicated Emergency Managers on Teachers' Perceptions of School Resilience: A Quantitative Study

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Abstract

The purpose of this quantitative study was to examine the relationship between the presence of a dedicated emergency manager and teachers' perceptions of various dimensions of school resilience, as measured by the School Resilience Assessment Questionnaire (SRAQ). The study sample consisted of two school districts in Southeast Texas, one with a dedicated emergency manager and the other without one. The sample population includes a total of 77 survey respondents. An Independent Samples T-Test was used to test for differences in teachers' perceptions of resilience between the district with a dedicated emergency manager (n = 36) and the district without an emergency manager (n = 41) across four SRAQ subscales. The study had four research questions that correlated to the four SRAQ subscales. Results revealed no statistically significant differences across all four subscales. Teachers without an emergency manager reported slightly higher perceptions in all four subscales: Functional, Education, and Architecture and Equipment + Safety. These findings suggest that the presence of a dedicated emergency manager may not significantly influence teachers' perceptions of school resilience. Future research with larger samples and additional contextual variables is recommended further to explore the impact of emergency managers on school resilience.

Key Words: school resilience, school safety, emergency management, emergency manager

Introduction

Ensuring the safety and resilience of K–12 schools is crucial, particularly given the increasing frequency of natural disasters and school violence. Between 2000 and 2021, 46 active shooter events in elementary and secondary schools resulted in 276 casualties (Irwin et al., 2023), while disasters since 1980 have led to over $1 billion in damages (Smith, 2020). Though much research has focused on school preparedness, few studies have explored teachers' perceptions despite their frontline role in crisis response and recovery. School safety increasingly involves the role of dedicated emergency managers, whose leadership can influence preparedness across mitigation, response, and recovery phases (Jensen & Kirkpatrick, 2022). However, research on how this leadership structure affects teachers' views of resilience remains limited. Mutch (2014) noted the need for deeper inquiry into how leadership roles shape school recovery and readiness. This study addresses that gap by exploring how the presence of an emergency manager affects teachers' confidence in their school's preparedness and resilience,

helping to inform future strategies that center on both leadership and frontline perspectives.

school resilience, as measured by the School Resilience Assessment Questionnaire (SRAQ)(Mirzaei et al., 2021). The study compared teachers' perceptions of resilience in schools with a dedicated emergency manager versus schools without a dedicated emergency manager in K-12 public schools within the Southeast Houston, Texas region. The subsequent research questions were used to lead the study:

RQ1. Is there a significant difference between the perceptions of teachers regarding the role of a dedicated emergency manager in a school's effectiveness in responding to emergencies?

RQ2. Is there a significant difference between the perceptions of teachers regarding the impact of architectural resilience factors, such as building design and safety measures, on school safety and disaster preparedness in schools with and without a dedicated emergency manager?

RQ3. Is there a significant difference between the perceptions of teachers regarding the availability and adequacy of emergency equipment in contributing to school resilience in schools with and without a dedicated emergency manager?

RQ4. Is there a significant difference between the perceptions of teachers regarding the role of emergency preparedness education in enhancing school resilience in schools with and without a dedicated emergency manager?

Literature Review Evolution of Emergency Management and School Preparedness

Disasters can affect any community, regardless of size or location, often demanding coordinated responses across multiple agencies (Bajracharya & Hastings, 2020; Ryan et al., 2020). Historically, responses to disasters have been fragmented, lacking the necessary cooperation among local, state, and federal agencies (National Governors Association, 1979). In response to these inefficiencies, the federal government consolidated emergency response functions in the 1970s with the creation of the Federal Emergency Management Agency (FEMA) (Haddow et al., 2010).

In the decades that followed, emergency management adopted an "all-hazards" approach, expanding beyond natural disasters to include technological and human-made hazards. This evolution laid the groundwork for more integrated frameworks, such as the Integrated

Emergency Management System (IEMS), which promoted a comprehensive and proactive approach to managing risks (Haddow et al., 2010).

School Resilience and Vulnerabilities

A student's perception of safety is essential to their well-being and educational success (Yablon & Itzhaky, 2015). Resilience, a multifaceted concept, is commonly understood as the ability of a system to return to its normal condition after disruption (Hosseini et al., 2016). The United Nations International Strategy for Disaster Reduction (UNISDR, 2009) further defines resilience as the capacity of a community or system to resist, absorb, and recover efficiently from hazardous events.

Resilience in schools includes structural and non-structural elements, organizational processes, and community engagement (Mirzaei et al., 2019). Schools serve not only as centers of learning but also as vital community assets before, during, and after disasters (Hull, 2012). Key components of resilience include communication, social capital, and adaptive learning (Castleden et al., 2011; Son et al., 2020). A systems approach to preparedness, including planning, safe facilities, and training, is essential (Carlson et al., 2012; Shah et al., 2018). When integrated into K-12 education, resilience frameworks can positively shape youth development and community outcomes (Masten et al., 2008).

Although over 50 million children attend school daily in the U.S. (Kearns, 2021), schools are vulnerable to natural hazards that disrupt academics and damage infrastructure (Lai et al., 2016; Convery et al., 2014). Inadequate awareness of these risks can hinder readiness (Convery et al., 2014). Effective emergency response requires understanding local hazards and planning accordingly (Nickerson et al., 2006). Schools with designated preparedness coordinators and funding are generally more prepared (Horton et al., 2023; Rebmann et al., 2012). Leadership plays a critical role by prioritizing drills and simulations that promote a culture of safety.

School readiness is dynamic and evolves with new threats. Resilient schools actively reduce vulnerabilities and improve operational capacity (Mirzaei et al., 2020). Involving stakeholders like school nurses ensures health-related emergencies are considered in planning (Flaherty, 2012; Rebmann et al., 2012). Continuous adaptation is essential to keeping preparedness efforts effective.

Leadership, Organizational Culture, and Community Engagement

Strong leadership, organizational culture, and community engagement are foundational

elements of school resilience, particularly in the context of crisis preparedness and response. Effective leadership in schools extends beyond routine management to encompass clear communication, rapid decision-making, and cross-system coordination, all of which are essential during emergencies (Reid, 2020; Klein & Schwanenberg, 2022; Knebel et al., 2012). Training and development of critical competencies, including procedural knowledge, decisiveness, and effective communication, enhance leaders' readiness to manage emergencies (Henstra, 2010; Albanese & Paturas, 2018; Gill et al., 2021; Hayes & Omodei, 2011). Transformational leadership styles, characterized by support, clarity, and optimism, further strengthen schools' crisis responses (Zhao & Jowett, 2022).

Community resilience relies on collaborative leadership, where trust, communication, and stakeholder participation are central to cultivating preparedness and effective governance (Bodas et al., 2022a; Antronico et al., 2020). As pivotal community hubs, schools play a significant role in both preparedness and recovery efforts (Haig, 2014; Cedering & Wihlborg, 2020; Mutch, 2016). Inclusive planning that engages educators, law enforcement, and local officials leads to enhanced preparedness outcomes, especially when structured frameworks like ICS and NIMS are implemented to align with best practices (Kano et al., 2007; Horton et al., 2023; Lopez et al., 2019; Nickerson et al., 2006; Bigley & Roberts, 2001). Ultimately, effective leaders nurture a culture of preparedness within their organizations through ongoing training, critical reflection, and continuous improvement (FEMA, 2013; Shah et al., 2018; Nicogossian et al., 2011).

Infrastructure and Physical Safety

School infrastructure plays a critical role in determining a school's capacity to withstand and recover from emergencies. Architectural design, building materials, and safety features have a significant impact on a school's resilience (Campos, 2020; Mirzaei et al., 2019). A holistic approach, including structural and non-structural elements, functional systems, and site selection, is necessary to build resilient schools (Mirzaei et al., 2021; Agarwal et al., 2023; Ronoh, 2018).

Several studies highlight global infrastructure vulnerabilities. In regions such as Kabul and Nepal, poor building codes and outdated construction methods leave schools highly vulnerable to seismic events. Retrofitting and enforcing building standards are key strategies to improve safety (Naseri & Kang, 2017; Dixit et al., 2014). Santa-Cruz et al. (2016) and Vahdat

and Smith (2014) further emphasize the need for upgrading facilities to meet modern safety standards, especially in disaster-prone areas.

Resilient infrastructure also supports the broader role of schools as community shelters and crisis response centers. Secure, accessible facilities are essential during mass-casualty events and natural disasters (Graham et al., 2006; Oktari et al., 2018). Features such as reinforced structures, clear evacuation routes, and emergency stations enhance both preparedness and response effectiveness (Sarwono & Qolbi, 2024; Ingaramo & Pascale, 2020). Ultimately, infrastructure alone is not enough; schools must also be able to adapt and mobilize resources in real-time. Still, investing in safe, well-designed buildings provides a strong foundation for school emergency resilience.

Resources, Training, and Preparedness Gaps

Resource availability and effective utilization are essential for school emergency preparedness. Schools must plan, stockpile, and manage supplies to ensure safety and continuity during crises. Proper management directly impacts a school's ability to respond and recover (Nganji, 2018; Acido & Kilongkilong, 2022).

Studies show that many schools lack sufficient emergency supplies, plans, or funding. Horton et al. (2023), Rebmann et al. (2016), and Kano and Bourque (2007) found widespread gaps in disaster preparedness, particularly regarding supply readiness. Cannon et al. (2022) similarly reported that inadequate planning hindered post-disaster recovery efforts following major hurricanes.

Physical resources such as medical kits, AEDs, and backup power are also critical. Khan (2023) and Zusman and Marghella (2013) emphasize the importance of maintaining life-saving equipment and training staff in its use. Studies in disaster-affected areas, including Japan and Afghanistan, highlight the need for food stockpiles, waste planning, and infrastructure to support basic needs (Amitani et al., 2017; Naseri & Kang, 2017).

Funding remains a primary barrier to preparedness. Rebmann et al. (2016) and the Federal Commission on School Safety (2018) stress that without adequate financial support, schools struggle to maintain training, infrastructure, and emergency supplies. Research across sectors shows that public-private partnerships and federal incentive programs, such as FEMA's Community Rating System, can help overcome these barriers (Lurie et al., 2013). Investments in resilience yield long-term economic and social benefits even without a disaster (Fung &

Helgeson, 2017; Tanner et al., 2016). Prioritizing preparedness today builds stronger, more adaptable schools for the future.

Methodology

Research Design

This study employed a cross-sectional survey design, which captures data at a single point in time and is effective for assessing attitudes, beliefs, and opinions (Creswell & Guetterman, 2019). The design was chosen to examine teachers' perceptions of school resilience about the presence of a dedicated emergency manager.

A non-probability convenience sampling method was employed, targeting teachers from two school districts, one with a dedicated emergency manager and one without. Each district either provided teacher contact information or directly distributed the survey to facilitate access to the sample population.

This approach enabled a focused comparison of perceptions without relying on snowball sampling. The aim was to capture a snapshot of how teachers view resilience efforts in their respective districts, shedding light on the potential influence of emergency management leadership structures.

Participants and Setting

The sample for this study consisted of teachers from two K–12 public school districts in Texas, one with a dedicated emergency manager and one without. Teachers were selected as the target population due to their critical role in implementing emergency preparedness measures and shaping school resilience. Participants included teachers across grade levels (elementary, middle, and high school) with varying years of experience, providing diverse perspectives on resilience practices.

Following approval from district administrations, recruitment was conducted via email invitations containing a link to the online survey. Teachers were required to review and agree to an informed consent form before participating. Only currently employed teachers in one of the two selected districts were eligible for participation. Findings may not extend to all Texas teachers or schools in other regions. Additionally, the voluntary nature of participation introduces self-selection bias, as those more engaged in emergency preparedness may be more inclined to respond.

Data Collection

The Lamar University Institutional Review Board (IRB) approved this study. Data were

collected from teachers in two Texas K–12 public school districts, one with a dedicated emergency manager and one without, to enable a targeted comparison of teacher perceptions of school resilience.

Prior to data collection, permission was obtained from both districts. In the district with an emergency manager, the researcher was provided teacher email addresses to distribute the survey directly. In the district without an emergency manager, the survey was shared through internal district email distribution lists. These procedures ensured adherence to district policies and minimized disruption to staff.

Teachers were invited to complete an anonymous online survey after reviewing an informed consent form, which outlined the study's purpose, voluntary participation, and data use. No personal identifiers were collected by the survey platform (Qualtrics), preserving participant anonymity. All survey responses were stored securely in a password-protected cloud system, accessible only to the researcher. The data was cleaned and prepared for analysis to explore differences in perceptions between the two districts.

Data Analysis

After data collection, responses were exported to Excel for initial coding, cleaning, and issue identification, then imported into SPSS for statistical analysis. Descriptive statistics were generated to summarize the dataset. To address each research question, independent samples t-tests were conducted to compare mean responses between teachers from districts with a dedicated emergency manager and those without. A significance level of .05 was used to determine statistical relevance.

Separate t-tests were used to evaluate differences in teachers' perceptions across four dimensions:

- Effectiveness in emergency response
- Architectural resilience
- Adequacy of emergency equipment
- Emergency preparedness education

The independent variable was the presence of a dedicated emergency manager in the school district (yes or no), determined by using public sources such as district websites or state databases.

The dependent variables were teachers' perceptions of school resilience, measured using the School Resilience Assessment Questionnaire (SRAQ) (Mirzaei et al., 2021). The SRAQ includes

four subscales: Functional (Effect_Mean), Education (Effect_Educ), Architecture (Effect_Arch), and Equipment + Safety (Effect_SafetyEquip). These data points were used to assess the relationship between emergency management leadership and perceived school resilience.

Findings

Survey data from 77 teachers across two K–12 public school districts in Southeast Houston, one with a dedicated emergency manager and one without, were analyzed to compare perceptions of school resilience. After excluding responses with excessive missing data, final analyses included 41 respondents from the district without a dedicated emergency manager and 36 from the district with one.

The presence of a dedicated emergency manager served as the independent variable (coded dichotomously), and teacher perceptions were measured using the four subscales of the School Resilience Assessment Questionnaire (SRAQ). Independent samples t-tests were conducted to address each of the study's four research questions.

RQ1

Is there a significant difference between the perceptions of teachers regarding the role of a dedicated emergency manager in a school's effectiveness in responding to emergencies?

To address this, responses from SRAQ items 20–30 (functional subscale; Effect_Mean) were analyzed. Results showed no statistically significant difference in perceptions between teachers in districts with a dedicated emergency manager and those without (Table 1). Surprisingly, teachers in the district without a dedicated emergency manager reported slightly higher perceptions of effectiveness. The effect size was small (d = -0.42), and the null hypothesis was not rejected.

Table 1

Independent Samples T-Test for Functional Subscale (Effect_Mean) by Emergency Manager Presence

Group	n	M	SD	t	df	p	Cohen's d
Emergency Manager	36	4.0	0.67	-1.85	75	0.068	-0.422
No Emergency Manager	41	4.29	0.69				

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

RQ2

Do teachers' perceptions of architectural resilience factors differ between schools with and without a dedicated emergency manager?

Analysis of SRAQ items 13–19 (Effect_Arch) revealed no significant difference between groups (Table 2). Teachers in the district without an emergency manager reported slightly higher perceptions of building design and safety, with a small effect size (d = -0.28). The null hypothesis was not rejected.

Table 2

Independent Samples T-Test for Architectural Subscale (Effect_Arch) by Emergency Manager Presence

Group	n	M	SD	t	df	p	Cohen's d
Emergency Manager	36	4.23	0.69	-1.22	75	.227	-0.28
No Emergency Manager	41	4.41	0.57				

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

RQ3

Is there a significant difference in teachers' perceptions of emergency equipment availability and adequacy between schools with and without a dedicated emergency manager?

Analysis of SRAQ items 2–8 (Effect_SafetyEquip) showed no significant difference between groups (Table 3). Teachers in the district without an emergency manager reported slightly higher perceptions, but the effect size was negligible (d = 0.06). The null hypothesis was not rejected.

Table 3

Independent Samples T-Test for Safety and the Equipment Subscale (Effect_SafetyEquip) by Emergency Manager Presence

Group	n	M	SD	t	df	p	Cohen's d
Emergency Manager	36	4.39	0.54	-0.28	75	0.78	0.06
No Emergency Manager	41	4.42	0.49				

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

RQ4

Do teachers' perceptions of emergency preparedness education differ between schools with and without a dedicated emergency manager?

Responses to SRAQ items 9–12 (Effect_Educ) showed no significant difference between groups (Table 4). Teachers in the district without an emergency manager reported slightly higher

perceptions of training, but the effect size was small (d = -0.12). The null hypothesis was not rejected.

Table 4

Independent Samples T-Test for Education Subscale (Effect_Educ) by Emergency Manager Presence

Group	n	M	SD	t	df	p	Cohen's d
Emergency Manager	36	3.87	1.14	-0.50	66.46	.62	-0.12
No Emergency Manager	41	3.99	0.91				

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

Implications

This study examined whether the presence of a dedicated emergency manager influenced teachers' perceptions of school resilience. The lack of significant differences suggests that simply appointing an emergency manager may not directly enhance how teachers perceive preparedness.

While prior research highlights the benefits of having emergency managers, particularly in coordinating preparedness education and resource availability (Kano & Bourque, 2008; Rebmann et al., 2012), this study found that teachers in the district without an emergency manager reported slightly higher perceptions across most dimensions. This suggests the need for a more comprehensive and integrated approach to building school resilience.

Districts should consider enhancing emergency preparedness through systemic strategies, such as improving staff training frequency and quality (Mutch, 2014), fostering a culture that prioritizes safety, and strengthening internal communication around emergency protocols. Leadership engagement is also critical; teachers are more likely to feel confident and prepared when district and school leaders actively support resilience efforts.

Finally, districts should assess resource allocation for emergency equipment and infrastructure improvements, recognizing that the presence of an emergency manager alone may not necessarily drive changes in perception. A holistic approach that includes leadership, culture, communication, and training may be more effective in shaping a resilient school environment.

Recommendations for Future Research

Given the small effect sizes and lack of statistically significant findings, further research is warranted to explore the role of dedicated emergency managers in school resilience. First,

future studies should involve larger sample sizes to increase statistical power, as this study's sample (n = 77) may have been too limited to detect meaningful differences.

Generalizability was another constraint. This study focused on two districts in Southeast Houston, which may not reflect broader educational contexts. Future research should include a more diverse sample of districts across various regions, taking into account factors such as district size, socioeconomic conditions, local emergency management practices, and funding levels.

Additionally, the use of self-reported perceptions introduces potential bias. Teachers' views may not fully represent actual preparedness levels, as perceptions can be shaped by individual experiences or limited awareness of protocols. Future studies could include objective measures of preparedness alongside perception-based data.

The cross-sectional design also limits understanding of changes over time. A longitudinal approach may reveal whether the impact of a dedicated emergency manager becomes more evident with sustained implementation of preparedness strategies.

Researchers should also explore broader systemic factors such as organizational culture, training frequency and quality, communication effectiveness, and leadership involvement. Examining how specific emergency management activities, like staff training, drill implementation, or past incident experience, shape teacher perceptions would offer deeper insights. Qualitative studies could further enrich understanding by capturing the lived experiences of teachers and exploring why the presence of an emergency manager may not influence perceptions as expected.

Conclusion

This study examined whether the presence of a dedicated emergency manager influenced teachers' perceptions of school resilience across four dimensions: functional, educational, architectural, and safety + emergency equipment. Findings revealed no statistically significant differences between schools with and without an emergency manager, suggesting that this role alone may not substantially shape teacher perceptions.

These results point to the importance of broader systemic factors, such as organizational culture, leadership engagement, and the quality and frequency of emergency training, as potential drivers of perceived resilience. While emergency managers may support preparedness efforts, their presence may not directly influence how frontline educators assess readiness.

Despite its limitations, including a small sample and limited generalizability, this study contributes to the growing body of research on emergency management in educational contexts. It underscores the need for a more holistic approach to improving school resilience, one that integrates leadership, communication, training, and resource strategies. Future research should continue to explore these dynamics to inform more effective practices and ensure that schools are better equipped to protect students and staff in the event of an emergency.

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Food Marketing: Effectiveness of Marketing and Advertising Messages

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Abstract

Marketing and advertising messages have a great deal of influence on food choices. This paper is focused on how such messages can be more effective in terms of marketing foods to individuals.

The analysis of consumer behavior concerning health-oriented food products in this paper uncovers significant insights into the factors influencing consumer attitudes and behaviors. Key factors examined include perceived weight issues, educational background, income levels, and gender. Utilizing statistical methods such as independent samples t-tests and mean comparisons, this study describes differences in attributes like Preventative Focus, Promotion Focus, and Purchase Intention.

Key Words: Food Marketing, Preventive focus, Promotional focus, Gender differences.

Introduction

Marketing and advertising messages have a great deal of influence on food choices. This paper is focused on how such messages can be more effective in terms of marketing foods to individuals. Effects of regulatory focus (Preventative vs. Promotional), gender, education, and income are examined.

Literature Search and Generation of Hypotheses

Due to their direct impacts on individuals' health conditions, numerous studies across multiple disciplines have scrutinized how emotions influence consumers' decisions to choose between healthy and unhealthy foods. In the present study, a review of the marketing literature was conducted to synthesize previous studies' findings on the link between emotions and unhealthy food consumption. The results reveal four distinct paths in the literature when

examining the impact of consumers' emotions on their unhealthy food consumption. The first research theme suggests that individuals turn to unhealthy food consumption to manage their negative emotional states, considering food consumption as a coping mechanism. Studies in the second theme highlight the gratifying nature of food and the significance of indulgence in rationalizing unhealthy food consumption, where consuming unhealthy food becomes a means of reward and pleasure. The third research theme delves into the multidimensional nature of emotions and their impact on food consumption, going beyond valence while the fourth theme focuses on food sensation and its moderating effects on emotions. Researchers within this theme argue that understanding emotions' various dimensions is crucial in studying their influence on food choices. (Khoshghadam, L., & Rajabi, R. 2024).

A study by Wagner, Howland, and Mann (2014) explored the effects of subtle and explicit health messages on food choice. The research found that a subtle health message, conveyed through an image, was more effective in influencing individuals to select healthy food options compared to an explicit message labeling an item as healthy. The results indicated that the image-based subtle message had a greater impact on food choice, particularly among female participants. The study suggested that subtle messages may operate implicitly, outside conscious awareness, and could minimize reactance or the license to indulge. Furthermore, the research highlighted the potential role of dual process models in explaining these effects, emphasizing the importance of considering cognitive resources in response to health messages. Overall, the findings underscored the effectiveness of subtle health messages in promoting healthy food choices over explicit health labeling, offering a promising strategy for health communication initiatives. Wagner, H. S., Howland, M., & Mann, T. (2014).

Verbeke discusses the impact of communication on consumers' food choices, emphasizing the challenges faced in promoting positive outcomes like health and nutritional benefits. The paper highlights that health and nutrition considerations compete with taste, price, and convenience in food choices. Factors influencing behavior change and information processing are crucial in determining consumers' willingness to engage with food-related information. The effectiveness of communication efforts in improving consumer knowledge, attitudes, and behavior hinges on consumers perceiving the need for information and the benefits of active reasoning. This includes reducing uncertainty, enhancing knowledge, and aiding in decision-making aligned with individual preferences. (Verbeke, W., 2008).

Advertisers use various psychological principles to influence consumers' moods and behaviors. Techniques such as creating reciprocity, fostering commitment, and establishing authority are commonly employed to enhance the emotional appeal of advertisements. These principles help capture attention and evoke positive emotional responses, leading to better ad recall and increased purchase intentions. (The Chicago School of Professional Psychology, 2020).

Emotional appeals are particularly effective in younger audiences and can lead to irrational shopping behaviors, demonstrating the strong influence of mood on consumer decisions. (Vrtana & Krizanova 2023). Zimmerman and Shimoga (2014) examined the effects of food advertising and cognitive load on food choices. The study results raise the possibility that "food marketing may have disparate effects across different populations, disproportionately influencing the eating behaviors of some of the most vulnerable subgroups and potentially contributing to disparities in diet and in related health outcomes".

"Marketing works". These opening words of the Institute of Medicine's report on food marketing to children [14] apply to adults as well as to children. These study results suggest that food marketing may have disparate effects across different populations, disproportionately influencing the eating behaviors of some of the most vulnerable subgroups and potentially contributing to disparities in diet and in related health outcomes.

Hashim et al. (2018) concluded that "the influence of mobile marketing on consumer purchase intention and consumer attitude in Malaysia shows the attitude towards mobile advertising has a positive relationship with purchase intention. They suggested that factors such as the length of time and timing of advertisements may contribute to this relationship, referencing a study by Boyd and Mason (1999) which found that length of time affects purchase intention".

The researchers highlighted that sending information to consumers at inopportune times, such as when not coinciding with pay day, can result in low intention to purchase advertised products or services (Hashim et al., 2018, p. 18). They also found that subjective norms have a strong relationship with intention to purchase in mobile advertising. The authors noted that this result is consistent with past studies, such as Isaid and Faisal (2015), and aligns with the extended theory of reasoned action (Ajzen & Fishbein, 1980).

Hashim et al. (2018) summarized that their study focused on entertainment, informativeness, irritation, credibility, and subjective norms as factors influencing Malaysian

consumers' attitudes towards mobile advertising message content and purchase intention (p. 1201). They reported significant effects for all factors except irritation and credibility, which showed no significant effects on attitudes and purchase intention.

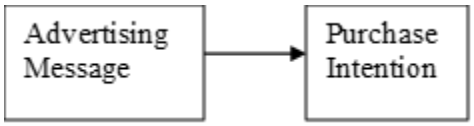
The authors concluded by calling for further investigation into these non-significant factors. Hashim et al. (2018) recommended that future studies should be more rigorous, with an extensive sample size, and should focus particularly on Gen-Y or young consumers, as they are more influenced by and active on mobile devices (p. 1201).

Kalog et al. (2022) conducted a study examining the influence of food advertisements on university students' food choices and nutritional status in Ghana. The research revealed that "the internet was the primary source of food advertisements (58.9%), followed by television (21%) (Kalog et al., 2022, pp. 6-8). Students' food decisions were influenced by factors including advertisements, taste, price, familiarity, and appearance. Notably, exposure to food advertisements did not significantly impact students' Body Mass Index (BMI)".

The study found low consumption of advertised fruits and vegetables among students, contrasted with higher uptake of sugar-sweetened beverages, prepared meals, and high-fat pastries. The researchers suggested that health authorities could utilize internet and television advertising to promote nutritious food choices among students. They also emphasized the need for further research into the influence of environmental factors and advertising on students' eating habits and dietary patterns (Kalog et al., 2022, pp. 6-8).

This study highlights the complex interplay between food advertising, student food choices, and nutritional outcomes in a Ghanaian university context, suggesting potential for targeted interventions using popular media channels to improve dietary habits among university students. Based on the above findings, we postulate:

H1: The Advertising message is a primary determinant of Purchase intention.



Young and Hetherington (1996) concluded that evidence exists for short-term effects of food product advertising, particularly cereals, on children's brand preferences and choices. The

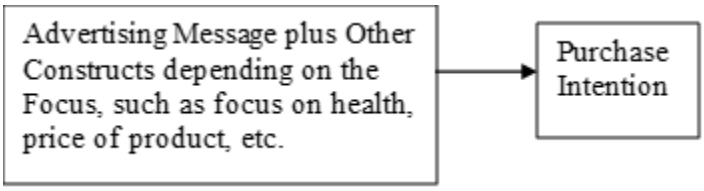
authors noted a correlation between the presence of cereal brands in households and children's exposure to commercials for these brands.

Vecchi et al. (2024) conducted two online experiments with 940 adolescents aged 13-17 to examine the effects of online food advertisements and emotions on food choices. The study found that negative emotions increased the selection of unhealthy sweet snacks, resulting in food choices with higher added sugars and lower dietary fiber. “There was no overall impact of food advertisements on snack selection. Weak evidence suggested that positive or neutral emotions combined with food advertisements led to selections with higher added sugar and lower fiber density”.

The authors noted limitations, including potential inaccuracies in self-reported BMI and the delay between food selection and consumption. They suggested that future research should investigate non-traditional advertising types, peer versus celebrity influence, and targeted brand effects. The study has implications for food marketing strategies and highlights the need for targeted interventions in emotional intelligence education and advertising literacy, particularly for specific demographic groups. We postulate:

H1a: The determinants of Purchase intention vary depending on levels of Prevention Focus. Focus.

H1b: The determinants of Purchase intention vary depending on levels of Promotion



Lin (2015) found that “health-related advertisements were more effective when they aligned with viewers' regulatory focus and utilized an appropriate graphics-text ratio. For promoting health and lifestyle changes, ads should use minimal graphics, extensive text, and a promotion-focused message emphasizing benefits.” Conversely, for disease prevention (e.g., colorectal cancer), ads should employ more graphics, less text, and a prevention-focused message highlighting negative consequences of inaction.

These studies highlight the importance of regulatory focus theory (RFT) in understanding consumer motivations and predicting advertising effectiveness. Shao et al. (2015) emphasize that consumers cannot be categorized into simple promotion or prevention focus groups, advocating for a more nuanced, quadratic approach to self-regulatory focus (SRF) in future research.

Lin and Yeh (2017) found that “viewers' regulatory focus can be temporarily altered by advertisements, influencing attitudes and behavioral intentions. They suggest that aligning message framing with regulatory focus can enhance comprehension and accessibility of health-related advertisements. The study also noted differences in effect sizes among actual behavior, attitudes, and behavioral intentions, with behavioral intentions showing the largest effect”.

Both studies underscore the importance of tailoring advertisement content and presentation to match the target audience's regulatory focus, whether inherent or temporarily induced, to maximize persuasiveness and impact on consumer behavior.

Yousef et al. (2021) concluded “the superiority of negative advertising appeals over positive and coactive appeals in social media advertising for environmental and charity contexts. Negative appeals were found to be more effective in engaging audiences and positively influencing social behavior”. This research extends the application of Shawky et al.'s (2020) multi-actor social media engagement framework, demonstrating its value in assessing the effectiveness of social advertising appeals and evaluating behavioral outcomes.

Micu and Chowdhury (2010) suggest that ‘product type may play a crucial moderating role in the impact of goal compatibility on advertising effectiveness. While previous research has shown that promotion-framed information is more persuasive for individuals with promotion goals and prevention-framed information for those with prevention goals (Aaker & Lee, 2001), their results indicate that marketers should also consider the type of product being offered. For instance, regardless of an individual’s prevention or promotion goals, a person seeking a hedonic product may not be persuaded by a prevention-focused message, and vice versa for utilitarian

products''. Additionally, our findings build on Mogilner et al.'s (2008) work, suggesting that the temporal proximity of a purchase may interact with product type in determining the effectiveness of promotion versus prevention-focused messages.

A study by Sesar et al. (2022) included findings that have several important implications for influencer marketing strategies. Firstly," influencers should explicitly disclose paid advertising in their posts, as this transparency positively affects their perceived credibility among consumers". This recommendation applies equally to both micro-influencers and celebrity influencers, as no significant difference was found in participants' perceptions based on influencer type.

Secondly, the research confirms that "influencer credibility directly impacts brand awareness and purchase intention. Influencers who clearly disclose their sponsorship status are perceived as more credible, which in turn enhances brand recognition and awareness. This increased brand awareness subsequently has both direct and indirect positive effects on consumers' purchase intentions".

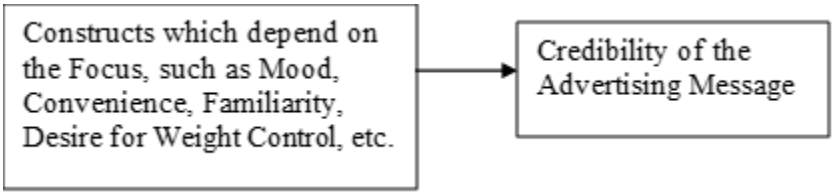
The study also reveals that influencer credibility positively and significantly influences brand awareness, which in turn significantly affects purchase intention. These findings underscore the importance for brand managers to consider influencer credibility when developing marketing strategies. Additionally, communication policies, including advertising disclosure, should incorporate various activities to boost brand awareness, as this enhances both direct consumer purchase intentions and the effectiveness of influencer credibility.

So, we postulate the following set of hypotheses:

H2: The credibility of the Advertising message is determined by different dimensions (such as Mood (how it makes me feel) and Familiarity (how familiar I am with the food).

H2a: The credibility of the Advertising message is determined by different dimensions, depending on the levels of Prevention Focus.

H2b: The credibility of the Advertising message is determined by different dimensions, depending on the levels of Promotion Focus.



A higher proportion of women focus on nutritional value of food and prioritize healthy

eating more so than do men. We found that the foods or food components most viewed as “very unhealthy” and most avoided were sugar, food additives, alcohol, saturated fat, and white flour. This is in line with previous findings that women perceive sweet foods as less healthy and avoid consumption of high fat foods to a higher extent, compared to men. Bärebring, Palmqvist &Winkvist, 2020).

Alignment between regulatory focus and message framing enhances ad effectiveness. Promotion-focused individuals are more influenced by gain-framed messages, while prevention-focused individuals respond better to loss-framed messages. (Higgins, 1997).

Women may be more prevention-focused, emphasizing safety and responsibility, while men may be more promotion-focused, aiming for achievements and gains. This difference impacts their food choices, with women avoiding unhealthy options and men being more open to trying new foods.

Hiller et al. (2017) concluded “comprehensive overview of gender differences across diverse topics in primary prevention, revealed that women are generally more inclined than men to engage in health behaviors associated with primary prevention. While the study confirms the existence of gender differences, the implications for healthcare systems and policy measures remain unclear.”

When considering the broader context of primary prevention, the review suggests that being female tends to promote more effective preventive behaviors. However, the authors stress that additional studies are necessary to clarify the effects and draw more definitive conclusions that could inform appropriate healthcare and policy interventions.

This review underscores the importance of considering gender as a significant factor in primary prevention strategies, while also highlighting the need for more targeted research to fully understand and leverage these differences in public health initiatives.

Osborn et al. (2016) reported that gender, grade classification, weight perception, and worrying about weight were associated with BMI. They noted that in a multiple regression analysis, gender was related to BMI. The researchers found that seniors had significantly higher BMI measurements than first-year students, indicating a relationship between grade classification and BMI. Additionally, they observed that those who reported "always worrying about weight" were the only group to have BMI in the obese category. Finally, Osborn et al. (2016) concluded that there were significant relationships between BMI and weight perception (p. 297).

So, we postulate the following hypotheses:

H3: Females have a higher score on each of the dimensions of the study.

H3a: High Preventative Focus individuals show significant differences between males and females on different dimensions than Low Preventative Focus individuals do.

H3a: High Promotion Focus individuals show significant differences between males and females on different dimensions than Low Promotion Focus individuals do.

Ziso et al. (2022) suggested that food insecurity is a widespread issue in the United States, significantly impacting quality of life and increasing risks for obesity, diabetes, and cardiovascular diseases." The authors identified several barriers to food security in certain areas, including lack of transportation, food deserts or food swamps, and insufficient nutrition education. Their review paper examined various approaches to reduce food insecurity in low-income communities and improve access to healthy foods, particularly fruits and vegetables."

The researchers found that multilevel approaches yielded the most notable results, addressing a wide range of factors. These approaches incorporated nutrition education, taste-testing events, price reductions on healthy products, improved access to healthy options, and policy changes. However, they noted that a major limitation of multilevel approaches is the difficulty in identifying which specific components led to changes in food behaviors.

Ziso et al. (2022) also highlighted other limitations in existing studies, such as small sample sizes, predominantly female participants, self-reported data, and potential bias. They emphasized the need for further research, particularly on the impact of perceived food environments on purchasing and consumption habits. The authors suggested that future studies should focus on developing and validating multi-dimensional interventions tailored for target populations with special needs and barriers, as well as examining the influence of perceived food environments and social support on improving diet quality in populations with limited access to healthy foods.

Klink et al. (2023) conducted a qualitative evidence synthesis on the perception of healthy eating among adult populations in high-income countries. The authors found that while individuals generally understand dietary recommendations, they attribute diverse meanings to healthy eating and food, which likely influences their dietary behaviors. The study suggests that to improve population dietary habits, it is crucial to carefully phrase and consistently communicate dietary recommendations in a way that associates healthy eating with pleasure and

immediate well-being, while considering people's daily realities.

The researchers noted limitations in the current literature, particularly regarding underserved populations. They emphasized the need for further in-depth research to better

understand perceptions and constructions of healthy eating, including specific food-related values held by different populations and their influence on diet-related behaviors.

Klink et al. (2023) cautioned that the beliefs identified in their review should not be interpreted as a comprehensive representation of all adult populations in high-income countries. Instead, they should be viewed as a compilation of various attitudes toward healthy eating that can exist. The authors also highlighted their intention to investigate socioeconomic differences in participants' views but were unable to do so reliably due to a lack of diversity in low-income populations and clear specification of socioeconomic status in the included studies.

This review provides valuable insights for developing consumer-oriented, practicable, and acceptable food policies, behavioral medicine interventions, and dietary recommendations that can effectively improve population health and well-being.

This leads to H4: Higher-income individuals tend to be more concerned about placing a greater emphasis on their perceived weight and eating food that is healthy-nutritious-good for them. No difference is expected in propensity toward a Preventative vs. Promotion Focus.

Sogari et al. (2018) conducted a study on college students' eating habits using an ecological model for healthy behavior. The researchers aimed to understand the individual, social, and environmental factors influencing students' healthy eating choices, rather than providing specific nutritional recommendations. They found that participants' food choices were influenced by a combination of individual, social, and university environmental factors.

The authors emphasized the importance of using an Ecological Model to gain insights into students' food choices and support healthier behaviors. They suggested that colleges and campus dining halls play a crucial role in guiding healthy eating behaviors and should take the lead in creating a healthy environment for students.

Sogari et al. (2018) argued that understanding the reasons behind unhealthy eating behaviors among young adults is essential for developing effective policies and managerial strategies to address various forms of malnutrition, including obesity, anorexia, and micronutrient deficiencies. The study presented opinions and recommendations for effective, tailored intervention programs and environmental modifications to support healthy eating, using an ecological framework that combined psychological, social, and environmental strategies.

Lee et al. (2022) examined the relationships between food literacy, health promotion literacy, and healthy eating habits among young adults in South Korea, with a focus on the

moderating effects of information sources. The researchers investigated how individuals' primary information pathways, specifically mass media and interpersonal networks, influenced the development of food and health promotion literacy.

The study found that while there was no significant difference between individuals who relied on mass media versus interpersonal networks, the effectiveness of each information source was clearly identified. This finding suggests a new direction for future research in literacy studies, emphasizing the importance of identifying the most effective information tools for enhancing different dimensions of literacy.

Lee et al. (2022) highlighted several practical implications from their research: "Governments, educational institutions, and researchers should focus more on the potential of food literacy and health promotion literacy as efficient ways to address the growing obesity problem in modern society."

Stakeholders in the food system and health education sector should collaborate to develop systematic intervention plans for enhancing people's literacy competencies.

"The authors recommended establishing mandatory educational interventions within school curricula to ensure all individuals have the opportunity to improve their food and health promotion literacies from an early age."

This study contributes to the field by examining literacy concepts from a new perspective and emphasizing the importance of information sources in literacy development.

This leads to H5 as shown below.

H5: Higher-education individuals tend to be more concerned about placing a greater emphasis on Preventative Focus and eating food that is healthy-nutritious-good for them.

Wood and Shukla (2016) concluded that their study contributed significantly to the understanding of weight bias, its relationship with health consciousness, and behavioral actions, as well as the implications for behavioral change policy and interventions (p. 7). The authors confirmed previous findings regarding the prevalence of weight bias among various groups. However, they emphasized that their discovery of a positive association between weight bias and healthy eating behavior has important implications for the design and delivery of obesity programs.

The researchers challenged the notion that health consciousness leads to healthy eating behavior and that dietary planning tools support positive behavior change around food. They

noted that normative influences are crucial but operate differently depending on the presence of an obese relative in the family (Wood & Shukla, 2016, p. 7).

Wood and Shukla (2016) highlighted that obesity has been labeled a "problem" behavioral or lifestyle issue by various stakeholders, including politicians, health professionals, and social marketers. They acknowledged that the intention of social marketers and public health professionals is to improve health and life outcomes by encouraging or enabling behavior change for weight loss (p. 7).

The authors referenced the argument made by some behavior change specialists that approaches centered on changing the behavior of overweight individuals should be replaced by population-wide interventions and policy initiatives to tackle obesity (Schwartz & Brownell, 2007, as cited in Wood & Shukla, 2016, p. 7). Based on their findings, Wood and Shukla (2016) suggested that the promotion of healthy eating through social marketing and educational programs should be accompanied by actions to dispel myths and assumptions about the causes of obesity (p. 7).

The researchers emphasized the study's unique nutrition perspective, which captured detailed information on adolescents' daily food choices - an aspect often overlooked in similar studies. Gaylis et al. (2019) concluded that “the examination of gender-specific differences in relation to weight misperception could contribute to the development of effective, gender-based interventional strategies” (pp. 272-273).

Gaylis et al. (2019) acknowledged several limitations and strengths of their study (pp. 272-273). The authors noted that while their sample was large, it was not representative of the entire US adolescent population, cautioning against broad generalizations. They highlighted that the self-reported nature of the questionnaires may have led to inaccuracies in height, weight, physical activity, and food consumption data, potentially affecting BMI calculations and other results.

The researchers also pointed out that the study's setting in day camps with sports participation might have skewed the data towards a more physically active population. Gaylis et al. (2019) suggested that future studies should include more accurate measurements of body fat percentage for precise body composition data (pp. 272-273).

Despite these limitations, the authors emphasized several strengths of their study. They highlighted the large, multiethnic sample size representing Southern California adolescents aged

13 to 19 years old. Gaylis et al. (2019) noted that their study examined relationships between numerous variables, including body weight perception, BMI, physical activity, gender, ethnicity, and food choices (pp. 272-273).

Osborn et al. (2016) concluded their study by offering several recommendations for future research in the field of weight perception and health behaviors among college students (p. 297). The authors suggested that more detailed questions about individual health behaviors should be included in future studies. They recommended using separate surveys with specific questions for each type of health behavior, which could potentially lead to more meaningful results.

Osborn et al. (2016) emphasized the need for a singular focus on dietary behaviors, such as fruit and vegetable consumption, to better assess students' eating patterns compared to the general survey used in their study. The researchers also stressed the importance of identifying gender behavioral differences, noting that their study found a significant relationship between gender and BMI (p. 297).

The authors proposed that future studies could analyze the effect of grade classification on health behavior, as their research showed that seniors had significantly higher BMI scores than freshmen. Osborn et al. (2016) also suggested incorporating a qualitative component to gain more in-depth information about student body image and body satisfaction (p. 297). This leads us to postulate:

H6: Those who perceive that they have a weight problem are likely to have higher scores on the dimensions in this study.

Methodology

Participants were recruited from faculty and staff members of a Southern university in the United States to participate in an online survey using the SurveyMonkey program. The website link was forwarded to the selected participants via e-mail. When participants clicked the link, they entered the survey website. The cover sheet indicated that the purpose of the study was to examine subjects’ opinions of some foods and what was of interest was their general reaction to the food. They were asked to look at the image of the plate, evaluate the food, and answer the questionnaire. They answered some demographic questions and submitted their answers. Finally, they entered their office telephone number to win one of three $20 sweepstakes for participating in the study.

Measures and variables included:

- A statement to measure the perceived weight level, I am afraid that I am overweight, at a 5-point scale (1=strongly disagree and 5=strongly agree).
- *Ad Effectiveness.* In this paper, ad effectiveness refers to the consumer attitude toward the persuasiveness of food advertisement with claims which articulate the evidence in support of the food being advocated. Ad effectiveness was measured using the scale adapted from the scale by Lang and Yegiyan (2008). The four items (each rated on a 5-point Likert type scale) were: (1) This claim in this ad got my attention; (2) This claim in this ad was convincing; (3) This claim helped me feel confident about how best to deal with food; (4) this claim helped me to decide if I am going to buy the item or not. The average value for each claim was computed by summing the average item for all the claims. The reliability alpha for this scale is .862.
- *Attitude/Evaluation toward Food.* In this study, Attitude toward food represents the individual's favorable or unfavorable reaction to the advertised food. To measure food evaluations, we use a four-item, five-point semantic scale created by Barone, Shimp and Sprott (1997), on which 1 reflects a very negative evaluation of the food and 5 indicates a very positive evaluation. Subjects were asked to indicate their attitude toward food by checking the appropriate point. We sum the responses to the question items, such as Overall, this _ looks‖ bad/good, undesirable/desirable, worthless/worthwhile, and useless/useful, to achieve a composite value. The reliability alpha for this scale is .902.
- Other constructs and reliability measures are described in Table 1.

With the exception of Packaging Average, all the values of Cronbach's alpha are in the acceptable range.

Analysis and Results

H1: The Advertising message is a primary determinant of Purchase intention.

A regression analysis was run with Purchase intention as the dependent variable and several independent variables: the composite scores for Health, Weight, Healthy-Nutritious-Good for me, Mood, Convenience, Sensory, Natural ingredients, Price, Weight control, Familiarity, Packaging, Ad effectiveness, and Message average. See Table 2 for the results.

$F = 95.065$, $p < 0.001$

Of all the independent variables, the Ad Message was the only one that was found to be significant. This variable is a measure of how consistent the message is with the consumer's perceptions: The message in the ad is very true, I agree with the message in the ad, I'd say the same things to my friend, and the message conveys my life philosophy. If there is a close fit between my beliefs and what the message says, I am more likely to purchase the product. While this is intuitively obvious, we will now examine if (preventive and promotional) regulatory focus will impact this basic relationship.

To illustrate the distinction between prevention-focused and promotion-focused consumers, consider the behavioral patterns of two contrasting personas:

A prevention-focused individual, such as *Mary, a 32-year-old health-conscious nurse*, is likely to carefully evaluate product labels, prioritize nutritional safety, and choose familiar, risk-free options. Her food decisions are driven by a desire to avoid negative outcomes—such as health risks, weight gain, or low-quality ingredients. This persona reflects the core characteristics of prevention-focused consumers who are motivated by caution, responsibility, and long-term well-being.

In contrast, a promotion-focused persona, like *Jake, a 29-year-old adventurous foodie*, embraces indulgence, novelty, and reward. He is likely to seek bold flavors, variety, and exciting experiences—even if they come with some uncertainty or excess. Promotion-focused consumers prioritize gaining something—pleasure, variety, social recognition—and are more likely to respond to food advertising that emphasizes opportunity, excitement, or personal gratification.

This contrast not only exemplifies how regulatory focus theory plays out in food marketing contexts but also supports the hypothesis that tailoring advertising messages to align with a consumer's regulatory orientation can significantly impact purchase intention and product evaluation.

H1 was supported.

H1a: The determinants of Purchase intention vary depending on levels of Prevention Focus.

$F_{low} = 18.449$, $p < 0.001$

$F_{high} = 29.394$, $p < 0.001$

We note from Table 2a, that the Advertising message continues to be significant in both

cases, but:

- When Prevention Focus is high, we see that the health average has a positive coefficient, which means that the higher the belief that "I am in good health" the purchase intention for healthy foods is higher. But, when Prevention Focus is low, we see that Health average has a negative coefficient, which means that the higher the belief that "I am in good health" the purchase intention is lower.
- Price becomes a significant factor for the purchase of healthy foods when Prevention Focus is low. It is not a significant factor for those with high Prevention Focus.

To illustrate how varying levels of prevention focus influence purchasing behavior, particularly in response to price, consider a scenario where consumers choose between two yogurt options. A high prevention-focused individual, driven by health-consciousness and a desire to avoid negative outcomes, is more likely to select a premium-priced yogurt such as *Olympic Greek Yogurt* at $6.99. This choice reflects not only concern for quality and safety but a willingness to pay a premium for perceived nutritional superiority and trust in the brand.

In contrast, a low prevention-focused consumer, though still mindful of health, may experience price as a critical decision factor. Faced with a similar product—*Yoplait Original Yogurt* priced at $1.99—this individual may favor the lower-cost option, rationalizing that it meets basic standards without the added financial burden. For this segment, the extra cost of the premium product becomes unjustifiable, especially if health risks are perceived as minimal or manageable. This distinction reinforces the finding that price becomes a deal-breaker when prevention focus is low. While both consumers may value health, the willingness to invest in it differs. Those with high prevention focus override price sensitivity in favor of safety, while those with low prevention focus allow cost considerations to dominate**,** even if it means accepting slightly higher risk or lower quality.

H1a is supported.

H1b: The determinants of Purchase intention vary depending on the levels of Promotion Focus.

$F_{low} = 48.489$, $p < 0.001$

$F_{high} = 26.198$, $p < 0.001$

We note form Table 2b that the Advertising message continues to be significant in both cases, but:

- When Prevention Focus is high, we see that Advertising effectiveness becomes a

significant factor. This is consistent with the approach of high Promotion Focus individuals.

From H1a and H1 b, we note that, not only do High Prevention Focus individuals have different messages that appeal to them relative to Low High Prevention Focus individuals, but that is also true relative to High Promotion Focus individuals and Low Promotion Focus individuals.

	Low	**High**
Preventative Focus	Message, Health (-), Price (-)	Message, Health (+)
Promotion Focus	Message	Message, Ad effectiveness

To illustrate how different levels of promotion focus influence consumer choice, consider the example of a fast-food purchase decision. A low promotion-focused consumer prefers consistency and familiarity. Presented with meal options, this consumer simply grabs the regular KFC bucket meal—a known, reliable choice that delivers satisfaction without the need for novelty or external validation.

In contrast, a high promotion-focused consumer seeks experiences that are novel, exciting, or aspirational. For this individual, the decisive factor is not the product itself, but the meaning and identity associated with it**.** The same chicken meal, when endorsed by a global sports icon like Cristiano Ronaldo, becomes more than just food—it becomes a statement of identity, passion, and personal alignment with excellence. The consumer is thrilled to purchase a personalized or celebrity-branded combo, feeling an emotional reward linked to recognition, excitement, and status.

Thus, while the product (chicken) remains fundamentally the same, what tips the scale for the high promotion-focused consumer is the emotional and symbolic payoff—the sense of being part of something bigger or being seen. For low promotion-focused individuals, such cues are less influential; the focus remains on immediate gratification and simplicity.

This distinction confirms that the intensity of promotion focus directly shapes which cues hold persuasive power—familiarity versus personal aspiration—influencing not just what is chosen, but why it is chosen.

H1b is supported.

H2: The credibility of the Advertising message is determined by different dimensions

(such as Mood (how it makes me feel) and Familiarity (how familiar I am with the food).

A regression was run with Advertising message as the dependent variable and the following variables as independent variables: Health, Weight, Healthy-Nutritious-Good for me, Mood, Convenience, Sensory, Natural ingredients, Price, Weight control, Familiarity, and Packaging. See Table 3 for the results.

$F = 17.087$, $p < 0.001$

H2 is supported.

H2a: The credibility of the Advertising message is determined by different dimensions, depending on the levels of Prevention Focus.

$F_{low} = 17.052$, $p < 0.001$

$F_{high} = 10.335$, $p < 0.001$

We note that when Prevention Focus is high, the determinants are more utilitarian – such as the familiarity of the food (what I usually eat) and the ability to control my weight. However, when Prevention Focus is low, the determinants are more hedonic – such as how it makes me feel and how convenient it is to buy and make.

H2a is supported.

H2b: The credibility of the Advertising message is determined by different dimensions, depending on the levels of Promotion Focus.

$F_{low} = 16.530$, $p < 0.001$

$F_{high} = 11.228$, $p < 0.001$

We note, from Table 3a, that when Promotion Focus is low, the determinants are more utilitarian (similar to when Prevention Focus was high)– such as the familiarity of the food (what I usually eat) and the belief that the food is healthy, nutritious and good for me. However, when Prevention Focus is high, one determinant is more hedonic – such as how it makes me feel (just as it was for low-Prevention Focus individuals), but the other one is utilitarian (it helps me control my weight).

	Low	**High**
Preventative Focus	Mood, Convenience	Familiarity, Weight Control

Promotion Focus	Familiarity, Healthy-Nutritious-Good for me	Mood, Weight Control

H2b is supported.

H3: Females have a higher score on each of the dimensions of the study. See results in Table 4.

Females have a numerically higher score on all the dimensions in Table 4. The highlighted cells indicate the dimensions on which females have a statistically significantly higher score ($p < .05$).

H3a: High Preventative Focus individuals show significant differences between males and females on different dimensions than Low Preventative Focus individuals do.

The highlighted cells in Table 4a indicate dimensions for which there is a significant difference between males and females. In every case where a significant difference exists, the female score is significantly higher than the male score.

Except for the Healthy-Nutritious-Good for me average dimension, where female scores are significantly higher than male scores for both, Low and High Preventative Focus individuals, H3a is supported.

High Preventative Focus individuals show significantly higher scores for females on the following dimensions:

- Health (I take less medicine, I am in better health, no physical problems)
- Mood (cheers me up, makes me feel good)
- Natural ingredients

H3a: High Promotion Focus individuals show significant differences between males and females on different dimensions than Low Promotion Focus individuals do.

The highlighted cells in Table 4b indicate dimensions for which there is a significant difference between males and females. In every case where a significant difference exists, the female score is significantly higher than the male score.

Except for the Healthy-Nutritious-Good for me average dimension, where female scores are significantly higher than male scores for both, Low and High Promotion Focus individuals, H3b is supported.

High Promotion Focus individuals show significantly higher scores for females on the

following dimensions:

- Perceived weight.
- Food contains natural ingredients.

The conclusions of H3, H3a, and H3b are consistent with the findings of Bärebring, L., Palmqvist, M., Winkvist, A. et al., Haron, S. A. (2015), and Hiller et al. (2017), referred to in the literature review earlier in this paper. Females, in general, exhibit more effective preventive behaviors. Osborn et al. (2016) reported that gender, grade classification, weight perception, and worrying about weight were associated with BMI.

H4: Higher-income individuals tend to be more concerned about placing a greater emphasis on their perceived weight and eating food that is healthy, nutritious-good for them. No difference is expected in propensity toward a Preventative vs. Promotion Focus. See Table 5.

H4 is partially supported.

Based on Table 5, higher-income individuals were found to be significantly more concerned about placing a greater emphasis on their perceived weight and eating food that is healthy-nutritious-good for them. However, lower-income individuals were found to be significantly more likely to have a Preventative Focus. No statistically significant differences by income were found for those with a Promotion Focus.

Higher-income individuals were found to be significantly *less* concerned about a Preventative Focus, but they were found to have a significantly *higher* emphasis on eating food that is healthy-nutritious-good for them.

As noted earlier in the paper, Klink et al. (2023) found that while individuals in high-income countries generally understand dietary recommendations, they attribute diverse meanings to healthy eating and food, which likely influences their dietary behaviors. The study suggests that it is crucial to carefully phrase and consistently communicate dietary recommendations in a way that associates healthy eating with pleasure and immediate well-being. Ziso et al. (2022) emphasized the need for further research, particularly on the impact of perceived food environments on purchasing and consumption habits.

H5: Higher-education individuals tend to be more concerned about placing a greater emphasis on Preventative Focus and eating food that is healthy-nutritious-good for them.

Based on Table 6, H5 is partially supported.

As mentioned earlier, Wood and Shukla (2016) suggested that the promotion of healthy eating through social marketing and educational programs should be accompanied by actions to

dispel myths and assumptions about the causes of obesity. They emphasized that social marketers and public health professionals should work to improve health and life outcomes by encouraging or enabling behavior change for weight loss, and support population-wide interventions and policy initiatives to tackle obesity.

H6: Those who perceive that they have a weight problem are likely to have higher scores on the dimensions in this study.

Based on Table 7, H6 is supported. Most of the behavioral variables show significantly higher scores for those who believe that they have a weight problem. The perception of having a weight problem is indicated by these questions: I'm afraid I'm a little overweight, I have been trying to lose weight, I'm inclined to eat less, I avoid food that may cause me to gain weight, I'm very careful about what I eat for the sake of weight control. In addition, women tend to consider themselves overweight than men do, and that may explain why women have more healthy eating habits than men. (Wei & Sethna, 2016).

These findings on cognitive weight status are consistent with what (Wei and Sethna, 2016), stated, "Individuals who do not consider themselves overweight may not be motivated to engage in weight control behaviors and do not care about selecting certain food and controlling the intake, even in spite of their quantitative BMI score". Zimmerman and Shimoga (2014) found the effects of food advertising and cognitive load on food choices. They noted that "food marketing may have disparate effects across different populations."

Discussion: Conclusions and Recommendations

The analysis of consumer behavior concerning health-oriented food products has uncovered significant insights into the factors influencing consumer attitudes and behaviors. Key factors examined include perceived weight issues, educational background, income levels, and gender. Utilizing statistical methods such as independent samples t-tests and mean comparisons, this study has illuminated differences in attributes like Preventative Focus, Promotion Focus, and Purchase Intention.

The study reveals that Promotion Focus and Prevention Focus are crucial determinants in consumer decision-making related to food choices. Individuals with a low Promotion Focus tend to prioritize practical, utilitarian considerations, such as health benefits and familiarity with food

items, consistent with findings from Haron et al. (2015). In contrast, those with a high Promotion Focus are more inclined towards emotional and psychological benefits, including mood enhancement and weight control, aligning with Osborn et al. (2016).

Consumers who perceive themselves as having weight problems show a stronger inclination towards products deemed beneficial for weight management and overall health. This group demonstrates higher scores across various dimensions including Purchase Intention, Health average, Healthy-Nutritious-Good for Me, Mood average, Convenience average, Sensory average, Natural Ingredients, Price average, Weight Control average, Familiarity average, and Packaging average. This correlation underscores the profound impact of perceived weight concerns on the prioritization of health-oriented product attributes.

Higher-educated individuals display a greater Preventative Focus and place higher value on health attributes. They show a stronger appreciation for products aligned with preventative health measures, as evidenced by higher ratings for Health average and Healthy-Nutritious-Good for Me. The lower familiarity with certain products and perception of reduced advertising effectiveness among higher-educated consumers suggest that educational background influences both health awareness and reception of marketing messages.

Higher-income individuals exhibit a lower Preventative Focus but place significant emphasis on health attributes, showing a willingness to invest in premium products with perceived health benefits. They rate attributes such as Healthy-Nutritious-Good for Me and Natural Ingredients highly, reflecting a readiness to pay more for health benefits. In contrast, lower-income individuals emphasize preventative health measures and exhibit price sensitivity, indicating that marketing strategies should highlight cost-effectiveness and immediate benefits.

Gender differences reveal distinct consumer preferences and behaviors. Females generally show a higher Preventative Focus, greater emphasis on health attributes, and a more positive mood related to food products. They value convenience and natural ingredients more and are willing to pay a premium for health-oriented products. Males, however, demonstrate a stronger Promotion Focus and are more inclined towards sensory enjoyment and promotional benefits.

The study's findings align with previous research in several ways. The correlation between perceived weight issues and heightened sensitivity to health benefits corroborates earlier studies by Wood & Shukla (2016), which emphasize how self-perceived weight problems

influence food-related priorities. The distinctions in Preventative Focus and Promotion Focus resonate with Haron et al. (2015) and Osborn et al. (2016), reinforcing the role of these focuses in consumer decision-making.

The results effectively address the research questions by demonstrating factors like perceived weight issues, educational background, income levels, and gender impact consumer attitudes towards health-oriented food products. For instance, the study illustrates that consumers with perceived weight problems are more likely to prioritize health attributes, answering the question of how weight concerns affect food choices. Additionally, higher-educated consumers are shown to be more discerning about nutritional value, addressing the influence of educational background on health-related product preferences.

An unexpected finding is the lower Preventative Focus among higher-income individuals despite their willingness to invest in premium health-oriented products. This contrasts with the anticipated pattern of higher Preventative Focus correlating with higher income. Additionally, the pronounced Promotion Focus among males—who were less concerned with preventative health measures—was more significant than anticipated. Gender-based differences in health attribute preferences highlighted a greater focus on convenience and natural ingredients among females, which aligns with expectations but also underscores the need for nuanced marketing strategies.

Theoretical Implications: This study reinforces the theoretical understanding of Promotion Focus and Prevention Focus in consumer decision-making, particularly within the context of health-oriented food products. It validates existing theories on utilitarian versus emotional motivations and provides new insights into how perceived weight issues and educational background influence consumer behavior.

Managerial Implications: The findings highlight the need to tailor marketing strategies to different consumer segments based on perceived weight issues, educational background, income levels, and gender. Consumers with perceived weight problems prioritize health benefits and are willing to invest in products that offer weight management and wellness. Higher-educated individuals require more sophisticated, evidence-based marketing approaches, while lower-income consumers are more price-sensitive and focused on immediate benefits. Gender differences further necessitate customized marketing strategies to address specific preferences for health attributes and product features. Practically, the study offers actionable insights for

businesses to develop targeted marketing strategies. Companies can utilize these insights to refine product offerings and advertising campaigns, enhancing market positioning and consumer satisfaction by addressing the specific needs and preferences of different demographics. Marketing strategies should emphasize health benefits and weight management features, using engaging storytelling and testimonials to enhance credibility. Product packaging and advertising should highlight convenience and sensory appeal to align with the preferences of consumers with perceived weight issues.

For higher-educated individuals, marketing strategies should include sophisticated, informative approaches with detailed nutritional information and research findings. Effective communication of evidence-based claims is essential to engaging this demographic. Marketing efforts for lower-educated individuals should focus on clear, practical messaging highlighting immediate benefits and ease of use. Simple advertisements and promotions that emphasize the practical advantages of health-oriented products will resonate with this group.

For Higher-Income Consumers, health-oriented products as premium options with superior quality, emphasizing added value and luxury features to justify higher price points. Premium packaging and high-quality ingredients should be highlighted. For lower-income consumers, marketing strategies should emphasize affordability and value for money. Highlighting cost-effectiveness, promotions, and discounts can enhance accessibility and appeal. For females, emphasize health attributes, convenience, and natural ingredients in marketing campaigns. For males, focus on sensory enjoyment and promotional benefits, addressing their promotion focus and sensory preferences.

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Appendix: Tables with Captions

Table 1: Description of Variables and Constructs

Variable	Cronbach's Alpha
Good/Bad	
Desirable/Undesirable	
Worthwhile/Worthless	
Useful/Useless	
Evaluation average	0.902
It is very likely that I will buy this item	
I will purchase it the next time I go to the store	
I will definitely try this item	
I will buy it for other members of my family (kids) even if I may not eat it	
Purchase Intention average	0.915
Compared to others my age, I take less medicine	
Compared to others my age, I think I am in better health	
I really do not have any physical problems	
Health average	0.757
Weight level average	
Keeps me healthy	
Is nutritious	
Is good for my skin/teeth/nails etc.	
Health FCM average	0.847
Helps me cope with stress/life	
Cheers me up	
Helps me awake/alert	
Makes me feel good	
Mood average	0.796
Can be cooked very simply	
Can be bought in shops close to where I live or work	

Is easily available in shops and supermarkets	
Convenience average	0.821
Looks nice	
Has a pleasant texture	
Tastes good	
Sensory average	0.755
Contains natural ingredients	
Contains no artificial ingredients	
Natural Ingredients average	0.792
Is not expensive	
Is good value for money	
Price average	0.753
Is low in calories	
Helps me control my weight	
Weight Control average	0.906
Is what I usually eat	
Is familiar	
Familiarity average	0.803
Has the country of origin clearly marked	
Is packaged in an environmentally friendly way	
Packaging average	0.681
The claim in this ad got my attention	
The claim in the ad is convincing	
This claim helped me feel confident about how best to deal with food	
This claim helped me to decide if I am going to buy the item or not	
Ad Effectiveness average	0.862
The message in the ad is very true	
I find myself to agree to the message in the ad about food	

I‘d say the same things as the message to my friend if we discuss the food choices	
The message conveys my life philosophy	
Ad Message average	0.878

Table 2: Dependent Variable: Purchase Intention average

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.302	.172		7.578	<.001
	Ad Message average	.546	.056	.506	9.750	<.001

a. Dependent Variable: Purchase Intention average

Table 2a: Dependent Variable: Purchase Intention average – Prevention Focus

Prev Avg Lo-Hi		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
Prevention Focus lower than average	(Constant)	2.742	0.437		6.273	0.000
	Message average	0.524	0.075	0.517	6.947	0.000
	Health average	-0.178	0.073	-0.171	-2.423	0.017
	Price average	-0.187	0.090	-0.154	-2.072	0.040
Prevention Focus higher than average	(Constant)	0.565	0.350		1.616	0.109
	Message average	0.590	0.087	0.513	6.789	0.000
	Health average	0.178	0.088	0.153	2.029	0.045

a. Dependent Variable: purchase average

Table 2b: Dependent Variable: Purchase Intention average – Promotion Focus

Prom Avg Lo-Hi		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
Promotion Focus lower than average	(Constant)	1.115	0.260		4.294	0.000
	Message average	0.611	0.088	0.520	6.963	0.000
Promotion Focus higher than average	(Constant)	1.294	0.239		5.409	0.000
	Message average	0.315	0.114	0.311	2.769	0.006
	Ad effectiveness average	0.243	0.113	0.241	2.145	0.034

a. Dependent Variable: purchase average

Table 3: Credibility of Advertising Message

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
3	(Constant)	.916	.284		3.224	.001
	Mood average	.212	.081	.176	2.621	.009
	Familiarity average	.221	.063	.211	3.532	<.001
	Natural Ingredients average	.146	.064	.145	2.294	.023

a. Dependent Variable: Ad Message average

Table 3a: Credibility of Advertising Message – Prevention Focus

Preventative Lo-Hi		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
Prevention Focus lower than average	(Constant)	0.712	0.387		1.840	0.068
	Mood average	0.363	0.100	0.294	3.615	0.000
	Convenience average	0.256	0.094	0.222	2.740	0.007
Prevention Focus higher than average	(Constant)	1.241	0.376		3.304	0.001
	Familiarity average	0.256	0.091	0.246	2.812	0.006
	Weight Control average	0.219	0.088	0.217	2.481	0.014

a. Dependent Variable: Ad Message average

Table 3b: Credibility of Advertising Message – Promotion Focus

Promotion Avg Lo-Hi		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
Promotion Focus lower than average	(Constant)	0.819	0.362		2.263	0.025
	Familiarity average	0.363	0.085	0.350	4.289	0.000
	Healthy-Nutritious -Good for me average	0.194	0.078	0.203	2.491	0.014
Promotion Focus higher than average	(Constant)	1.237	0.386		3.206	0.002
	Mood average	0.293	0.121	0.222	2.416	0.017
	Weight Control average	0.207	0.095	0.200	2.170	0.032

a. Dependent Variable: Message average

Table 4: Independent Samples Test for Gender Differences

	Equal Variances:	t-test for Equality of Means					
			Significance				
		t	One-Sided p	Two-Sided p		Mean	Std. Deviation
Preventative Focus	assumed	-1.368	0.086	0.173	Male	2.86	0.68
	not assumed	-1.334	0.092	0.184	Female	2.98	0.63
Promotion Focus	assumed	-1.818	0.035	0.070	Male	3.80	0.61
	not assumed	-1.797	0.037	0.074	Female	3.94	0.59
Purchase Intention	assumed	-0.414	0.340	0.679	Male	2.88	0.96
	not assumed	-0.434	0.332	0.665	Female	2.94	1.11
Health average	assumed	-0.959	0.169	0.338	Male	3.37	0.96
	not assumed	-0.947	0.173	0.345	Female	3.48	0.92
Perceived Weight average	assumed	-2.199	0.014	0.029	Male	2.83	0.87
	not assumed	-2.241	0.013	0.026	Female	3.08	0.92
Healthy-Nutritious-Good for me average	assumed	-4.294	0.000	0.000	Male	3.60	0.77
	not assumed	-4.163	0.000	0.000	Female	4.00	0.70
Mood average	assumed	-2.532	0.006	0.012	Male	3.34	0.64
	not assumed	-2.648	0.004	0.009	Female	3.57	0.73
Convenience average	assumed	-2.729	0.003	0.007	Male	3.73	0.77
	not assumed	-2.713	0.004	0.007	Female	4.00	0.76
Sensory average	assumed	-1.120	0.132	0.264	Male	3.87	0.68
	not assumed	-1.110	0.134	0.268	Female	3.97	0.66
Natural Ingredients average	assumed	-2.377	0.009	0.018	Male	3.26	0.89
	not assumed	-2.373	0.009	0.019	Female	3.54	0.88
Price average	assumed	-1.755	0.040	0.080	Male	3.78	0.71
	not assumed	-1.828	0.034	0.069	Female	3.96	0.80
Weight Control average	assumed	-2.517	0.006	0.012	Male	3.27	0.92
	not assumed	-2.474	0.007	0.014	Female	3.56	0.87

Familiarity average	assumed	-0.133	0.447	0.894	Male	3.53	0.75
	not assumed	-0.141	0.444	0.888	Female	3.54	0.90
Packaging average	assumed	-1.513	0.066	0.131	Male	3.06	0.87
	not assumed	-1.555	0.061	0.122	Female	3.24	0.94
Ad Effectiveness average	assumed	-1.939	0.027	0.054	Male	2.74	0.87
	not assumed	-1.947	0.027	0.053	Female	2.96	0.88
Message average	assumed	-0.470	0.319	0.639	Male	2.98	0.79
	not assumed	-0.489	0.313	0.625	Female	3.03	0.89

Table 4a: Independent Samples Test for Gender Differences – Preventive Focus

		Preventative Focus	
		Low	High
	Equal Variances:	One-Sided p	One-Sided p
Purchase Intention	assumed	0.049	0.131
	not assumed	0.035	0.133
Health average	assumed	0.455	0.040
	not assumed	0.453	0.055
Perceived Weight average	assumed	0.004	0.364
	not assumed	0.003	0.365
Healthy-Nutritious-Good for me average	assumed	0.000	0.017
	not assumed	0.000	0.020
Mood average	assumed	0.087	0.016
	not assumed	0.067	0.020
Convenience average	assumed	0.001	0.287
	not assumed	0.001	0.295
Sensory average	assumed	0.010	0.306
	not assumed	0.007	0.319
Natural Ingredients average	assumed	0.110	0.014

	not assumed	0.103	0.019
Price average	assumed	0.195	0.052
	not assumed	0.179	0.051
Weight Control average	assumed	0.002	0.338
	not assumed	0.002	0.338
Familiarity average	assumed	0.176	0.172
	not assumed	0.158	0.161
Packaging average	assumed	0.045	0.412
	not assumed	0.044	0.404
Ad Effectiveness average	assumed	0.023	0.265
	not assumed	0.020	0.273
Message average	assumed	0.160	0.320
	not assumed	0.140	0.324

Table 4b: Independent Samples Test for Gender Differences – Promotion Focus

			Promotion Focus	
			Low One-Sided p	High One-Sided p
	Preventative Focus	Equal variances assumed	0.114	0.304
		Equal variances not assumed	0.105	0.322
	Promotion Focus	Equal variances assumed	0.131	0.258
		Equal variances not assumed	0.132	0.250
	Purchase Intention	Equal variances assumed	0.498	0.306
		Equal variances not assumed	0.498	0.297
	Health average	Equal variances assumed	0.090	0.323
		Equal variances not assumed	0.095	0.314
	Perceived Weight average	Equal variances assumed	0.091	0.039

	Equal variances not assumed	0.090	0.037
Healthy-Nutritious-Good for me average	Equal variances assumed	0.002	0.002
	Equal variances not assumed	0.003	0.001
Mood average	Equal variances assumed	0.025	0.089
	Equal variances not assumed	0.025	0.062
Convenience average	Equal variances assumed	0.021	0.051
	Equal variances not assumed	0.018	0.064
Sensory average	Equal variances assumed	0.081	0.452
	Equal variances not assumed	0.089	0.451
Natural Ingredients average	Equal variances assumed	0.065	0.050
	Equal variances not assumed	0.066	0.051
Price average	Equal variances assumed	0.025	0.396
	Equal variances not assumed	0.025	0.381
Weight Control average	Equal variances assumed	0.010	0.105
	Equal variances not assumed	0.013	0.109
Familiarity average	Equal variances assumed	0.164	0.302
	Equal variances not assumed	0.151	0.293
Packaging average	Equal variances assumed	0.076	0.208
	Equal variances not assumed	0.077	0.193
Ad Effectiveness average	Equal variances assumed	0.013	0.336
	Equal variances not assumed	0.011	0.340
Message average	Equal variances assumed	0.281	0.463
	Equal variances not assumed	0.269	0.463

Table 5: Independent Samples T-Tests of Effect of Income Differences

	t-test for Equality of Means			

			Significance				
		t	One-Sided p	Two-Sided p		N	Mean
Preventative Focus	Equal variances assumed	-3.954	0.000	0.000	High	126	2.78
	Equal variances not assumed	-3.952	0.000	0.000	Low	133	3.09
Promotion Focus	Equal variances assumed	-1.306	0.096	0.193	High	126	3.84
	Equal variances not assumed	-1.312	0.095	0.191	Low	133	3.94
Purchase Intention	Equal variances assumed	0.057	0.477	0.954	High	126	2.90
	Equal variances not assumed	0.057	0.477	0.955	Low	133	2.90
Health average	Equal variances assumed	-0.812	0.209	0.417	High	126	3.40
	Equal variances not assumed	-0.812	0.209	0.417	Low	133	3.50
Perceived Weight average	Equal variances assumed	2.077	0.019	0.039	High	126	3.11
	Equal variances not assumed	2.087	0.019	0.038	Low	133	2.88
Healthy-Nutritious -Good for me average	Equal variances assumed	1.735	0.042	0.084	High	126	3.95
	Equal variances not assumed	1.745	0.041	0.082	Low	133	3.78
Mood average	Equal variances assumed	-0.636	0.263	0.525	High	126	3.45
	Equal variances not assumed	-0.635	0.263	0.526	Low	133	3.51
Convenience average	Equal variances assumed	-0.267	0.395	0.790	High	126	3.89
	Equal variances not assumed	-0.267	0.395	0.790	Low	133	3.92
Sensory average	Equal variances assumed	1.401	0.081	0.162	High	126	4.00
	Equal variances not assumed	1.411	0.080	0.159	Low	133	3.88
Natural Ingredients avg.	Equal variances assumed	0.354	0.362	0.724	High	126	3.46
	Equal variances not assumed	0.355	0.362	0.723	Low	133	3.42
Price average	Equal variances assumed	-1.178	0.120	0.240	High	126	3.84
	Equal variances not assumed	-1.179	0.120	0.239	Low	133	3.95
Weight Control	Equal variances assumed	1.255	0.105	0.210	High	126	3.53

average	Equal variances not assumed	1.259	0.105	0.209	Low	133	3.39
Familiarity	Equal variances assumed	-1.380	0.084	0.169	High	126	3.45
average	Equal variances not assumed	-1.381	0.084	0.169	Low	133	3.60
Packaging average	Equal variances assumed	0.416	0.339	0.678	High	126	3.19
	Equal variances not assumed	0.417	0.338	0.677	Low	133	3.14

Ad Effectiveness average	Equal variances assumed	-0.305	0.380	0.760	High	126	2.85
	Equal variances not assumed	-0.306	0.380	0.760	Low	133	2.89
Message average	Equal variances assumed	-0.467	0.320	0.641	High	126	2.97
	Equal variances not assumed	-0.467	0.320	0.641	Low	133	3.02

Table 6: Independent Samples T-Tests of Effect of Education

		t-test for Equality of Means					
			Significance				
		t	One-Sided p	Two-Sided p		N	Mean
Preventative Focus	Equal variances assumed	-4.566	0.000	0.000	High	153	2.79
	Equal variances not assumed	-4.594	0.000	0.000	Low	110	3.15
Promotion Focus	Equal variances assumed	-1.478	0.070	0.140	High	153	3.86
	Equal variances not assumed	-1.468	0.072	0.143	Low	110	3.97
Purchase Intention	Equal variances assumed	-0.947	0.172	0.344	High	153	2.86
	Equal variances not assumed	-0.970	0.167	0.333	Low	110	2.98
Health average	Equal variances assumed	1.378	0.085	0.169	High	153	3.52
	Equal variances not assumed	1.362	0.087	0.175	Low	110	3.36
Perceived Weight average	Equal variances assumed	0.648	0.259	0.518	High	153	3.03
	Equal variances not assumed	0.632	0.264	0.528	Low	110	2.96
Healthy-Nutritious -Good for me	Equal variances assumed	2.624	0.005	0.009	High	153	3.97
	Equal variances not assumed	2.508	0.006	0.013	Low	110	3.72
Mood average	Equal variances assumed	-0.156	0.438	0.876	High	153	3.49
	Equal variances not assumed	-0.153	0.439	0.878	Low	110	3.50
Convenience average	Equal variances assumed	-1.335	0.092	0.183	High	153	3.86
	Equal variances not assumed	-1.338	0.091	0.182	Low	110	3.98
Sensory average	Equal variances assumed	-0.143	0.443	0.887	High	153	3.93
	Equal variances not assumed	-0.140	0.444	0.888	Low	110	3.95
atural Ingredients average	Equal variances assumed	0.592	0.277	0.554	High	153	3.47
	Equal variances not assumed	0.595	0.276	0.552	Low	110	3.40
Price average	Equal variances assumed	0.435	0.332	0.664	High	153	3.92

	Equal variances not assumed	0.427	0.335	0.669	Low	110	3.87
Weight Control average	Equal variances assumed	1.509	0.066	0.132	High	153	3.54
	Equal variances not assumed	1.457	0.073	0.147	Low	110	3.37
Familiarity average	Equal variances assumed	-2.413	0.008	0.016	High	153	3.43
	Equal variances not assumed	-2.439	0.008	0.015	Low	110	3.68
Packaging average	Equal variances assumed	-1.233	0.109	0.219	High	153	3.12
	Equal variances not assumed	-1.213	0.113	0.227	Low	110	3.26
Ad Effectiveness average	Equal variances assumed	-1.910	0.029	0.057	High	153	2.80
	Equal variances not assumed	-1.887	0.030	0.060	Low	110	3.01
Message average	Equal variances assumed	-1.124	0.131	0.262	High	153	2.95
	Equal variances not assumed	-1.134	0.129	0.258	Low	110	3.07

Table 7: Independent Samples T-Tests of Effect of Perceived Weight

		t-test for Equality of Means					
			Significance				
		t	One-Sided p	Two-Sided p		N	Mean
Preventative Focus	Equal variances assumed	0.990	0.162	0.323	High	129	2.96
	Equal variances not assumed	0.980	0.164	0.328	Low	149	2.83
Promotion Focus	Equal variances assumed	0.115	0.454	0.908	High	129	3.43
	Equal variances not assumed	0.116	0.454	0.908	Low	149	3.42
Purchase Intention	Equal variances assumed	3.905	0.000	0.000	High	129	4.02
	Equal variances not assumed	4.038	0.000	0.000	Low	149	3.62
Health average	Equal variances assumed	4.131	0.000	0.000	High	129	3.65
	Equal variances not assumed	4.209	0.000	0.000	Low	149	3.26
Perceived Weight	Equal variances assumed	3.398	0.000	0.001	High	129	4.05
	Equal variances not assumed	3.501	0.000	0.001	Low	149	3.69
Healthy-Nutritious-Good for me	Equal variances assumed	3.772	0.000	0.000	High	129	4.07
	Equal variances not assumed	3.887	0.000	0.000	Low	149	3.71

Mood average	Equal variances assumed	3.057	0.001	0.002	High	129	3.58
	Equal variances not assumed	3.099	0.001	0.002	Low	149	3.22
Convenience average	Equal variances assumed	2.369	0.009	0.019	High	129	3.99
	Equal variances not assumed	2.430	0.008	0.016	Low	149	3.73
Sensory average	Equal variances assumed	7.320	0.000	0.000	High	129	3.84
	Equal variances not assumed	7.498	0.000	0.000	Low	149	3.05
Natural Ingredients	Equal variances assumed	2.186	0.015	0.030	High	129	3.62
	Equal variances not assumed	2.227	0.013	0.027	Low	149	3.38
Price average	Equal variances assumed	2.778	0.003	0.006	High	129	3.31
	Equal variances not assumed	2.781	0.003	0.006	Low	149	2.98
Weight Control avg.	Equal variances assumed	2.591	0.005	0.010	High	129	2.96
	Equal variances not assumed	2.594	0.005	0.010	Low	149	2.65
Familiarity average	Equal variances assumed	2.285	0.012	0.023	High	129	3.05
	Equal variances not assumed	2.292	0.011	0.023	Low	149	2.79
Packaging average	Equal variances assumed	0.741	0.230	0.459	High	126	3.90
	Equal variances not assumed	0.745	0.229	0.457	Low	148	3.82
Ad Effectiveness	Equal variances assumed	1.287	0.100	0.199	High	129	3.01
	Equal variances not assumed	1.293	0.099	0.197	Low	149	2.91
Message average	Equal variances assumed	2.340	0.010	0.020	High	129	3.99
	Equal variances not assumed	2.357	0.010	0.019	Low	149	3.82

Correlates of Health Conditions among Oklahoma Women in Custody

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Abstract

This study explored the effects of different predictors on the number of health conditions among female inmates. The population for the given study was 544 female inmates among three minimum to medium security prisons in Oklahoma that are a part of the Oklahoma Department of Corrections (OK-DOC). The population was between the ages of 19 and 71, with a mean age of 39.03. This study's results indicate the profound effect sleep has on the overall health of an individual in prison. It also shows a correlation between depressive symptomatology and sleep quality. Conditions faced within correctional facilities can negatively affect the health of female inmates.

Key Words: depressive symptomatology, prison stress, low sleep quality

Introduction

Often when someone thinks about prison, the first thing that comes to mind is likely a men's correctional facility. The many forms of media that portray prison tend to show it from a man's perspective. This causes people to overlook the plight faced by incarcerated women. According to The Sentencing Project (n.d.), from the 1980s to 2013, the number of female prisoners increased by around 1.5 times as much as the number of male prisoners. It is nearly impossible for prisons to make proper adjustments to account for the vast influx of people.

When it comes to the prison populations throughout the world, the United States is first in both total prisoner amount, at over 2 million, and prisoner rate per 100,000 citizens. The United States has nearly 630 prisoners per 100,000 (Fair & Walmsley, 2021). These statistics are even more shocking when compared to the rest of the world. No other country even approaches 2 million in total population, and in terms of rate per 100,000, no other country cracks 600 (Fair & Walmsley, 2021). With this staggering number of prisoners, providing the necessary resources for each of them can be difficult. Many prisoners struggle to gain access to healthy human interaction, adequate amounts of sleep, and most importantly, proper healthcare (Ritacco, 2019). These factors compound and create a recipe that can lead to endless health conditions among inmates.

People are not born destined to become prisoners. Outside forces push people towards a

life of crime. This is often attributed to rough upbringings, with inconsistent familial support. One study cited that among a population of 3,849 inmates, 29% were directly abused and 41% grew up in a violent household (Williams et al., 2012). Childhood experiences and learned habits may have a life-long impact. This is often the root of many mental health disorders, and it can be difficult for individuals to get past their trauma. The lack of mental healthcare access prolongs these mental health conditions that many inmates face.

Martin and Martin's Model of Developmental Adaptation (2002) was used as the study's conceptual basis, guiding analyses relative to how past and present factors can predict health conditions. Past predictors refer to occurrences prior to the age of 18, such as ACEs (Adverse Childhood Experiences; Felitti et al., 2019) and drug and alcohol use. Previous research indicates that ACEs have a significant impact on mental health problems among female prison populations (Acoca, 1998; Annett et al., 2023; Mazher & Arai, 2025). Research in female prison populations reported that prior drug and alcohol use can predict health conditions such as infectious diseases, mental health conditions, malnutrition, and poor physical health (Alves & Costa Maia, 2017; Timko et al., 2018). Women in prison tend to experience higher levels of ACEs than those not in prison, and these negative childhood experiences may be linked to health conditions (Jones et al., 2020). In addition, one study concluded that women in jail or prison with a history of drug dependence have more chronic medical disorders and psychiatric disorders when compared to men (Binswanger et al., 2010). Based on past research, it can be assumed that ACEs and drug and alcohol use influence the health conditions of incarcerated women. Thus, these past predictors (i.e., ACEs, alcohol use, and substance use experienced before age 18) may result in health conditions for women in prison.

The study's present predictors include concurrent measures that also influence the outcome, overall health conditions. Thus, based on Martin and Martin's model, we included the present predictors, prison stress, severity of depression, and low sleep quality. A cross-sectional study of sixty women in prison discovered that stress scores were above normal markers, and 68.3% perceived that their overall health had become worse since incarceration (Augsburger et al., 2022). A survey of 176 women in two Idaho jails found that 76% of women reported poor quality of sleep and higher depressive symptomology and PTSD symptoms (Tussey et al., 2024). Tussey et al. confirmed that their study supports other literature with similar outcomes in prison populations in other countries. Thus, the current study included present assessments of prison stress, depressive symptomatology, and low sleep quality as associates of health conditions.

Hypotheses

H1: All study variables would be associated with the outcome, health conditions.

H2: Control variables (age, race, education, crime-type, and self-rated physical health) would associate with the outcome health conditions.

H3: Distal or past predictors, self-reported before 18 years of age, including adverse childhood experiences, drug use, and alcohol use, would be associated with later life health conditions.

H4: Present or proximal predictors, including prison stress, severity of depressive symptoms, and low sleep quality, will be associated with later life health conditions.

Method

Data were collected from 544 female inmates, nineteen to seventy-one years of age (M = 39.03; SD = 10.32). Participants were incarcerated across three minimum/medium correctional facilities managed by the Oklahoma Department of Corrections (OK-DOC). Participants were conveniently sampled from the prison census database maintained by the OK-DOC Evaluation and Analysis Unit. Participants were white (48.6%) and 51.4% were non-whites; 33.2% had high school diplomas, 9.3% had a college degree, and less than 1% held a master's or PhD. Of these participants, 53.6% were incarcerated due to a violent offense. Inclusion criteria included, per OK-DOC recommendations, participants were at least 18 years of age and read/wrote with a proficiency score of 6th grade or higher. Exclusion criteria, per OK-DOC recommendations, were used to protect the safety and well-being of inmates housed in medical or psychiatric units, currently serving time in solitary confinement, or sentenced to death row who might otherwise be vulnerable to threats of coercion. All exclusionary criteria were reviewed and approved via full board review by the Oklahoma State University IRB and the OK-DOC. Inmates were recruited through announcements circulated by prison administration (e.g., wardens, deputy wardens, unit managers), who also coordinated on-site data collection visits by trained research team members. All participants were asked to read and sign a university Institutional Review Board (IRB) approved informed consent before participating in data collection or completing a written self-report survey. Those identified by the prison administration as having reading difficulties and visual or auditory deficits were accommodated with a one-on-one private interview with a trained research team member. No monetary incentives were provided for participation.

Measures

Dependent Variable. Forty-five possible health conditions for which participants received medical care, treatment, or had a diagnosis were scored *0 = no and yes = 1* and summed up to create the outcome measure, health conditions. Five hundred and thirty-one

participants responded to the question regarding health conditions. This sub-sample had a mean of almost four conditions (M = 3.81) and ranged from 0 to 26 conditions; 49.3 % of the sample reported two or fewer health conditions. All analyses were run, including participants reporting at least three health conditions and our analyzed sample, list-wise deleted, had 176 participants. Miles and Shevlin (2000) report that this sample size with eleven predictors should allow for a power of .80 (p. 125).

Predictor Variables – Distal Past. To assess predictors before age 18, the analyses included a summary score for Adverse Childhood Experiences (ACEs), drug (Skinner, 1982), and alcohol use (Saunders et al., 1993). ACEs, a 10-item, *yes* =1 or *no* = 0, assessment (Felitti et al., 2019) measured types of childhood trauma, including personal physical abuse, verbal abuse, sexual abuse, physical neglect, and emotional neglect. Examples of questions asked included, "Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?" and "Did a household member go to prison?" The items were summed; higher scores reflect stronger childhood adversity. History of drug use before age 18 included 10 questions, scored *Yes* = 1 and *No* = 0. The items were summed to create the variable drug use before age 18, and examples of questions asked were, "Did you ever use drugs other than those required for medical reasons?" and "Did you ever experience withdrawal symptoms (felt sick) when you stopped taking drugs?" (α = .85; Skinner, 1982). Alcohol use before age 18 asked 10 questions, scored from 0 = *Never* to 4 = *four plus times per week*. The items were summed to create the variable alcohol use before age 18, and examples of questions asked were, "How often would you have one drink containing alcohol?" and "Were you or someone else ever injured as a result of your drinking?" (α = .94; Saunders et al., 1993).

Predictor Variables – Proximal Present included three assessments: prison stress, depressive symptomatology, and low sleep quality. Prison Stress was assessed with the 21 items from the Prison Readjustment Scale (Zamble & Porporino, 1988). Items were scored 1= *Never Bothers Me* to 5 = *Always Bothers Me* and summed to create the scale (α= .87). Respondents were asked to indicate how much they personally felt bothered by problems while serving time in prison, and examples of problem items included "Your relationship with prison staff" and "Not fitting in with other inmates." Depressive symptoms were assessed by the Patient Health Questionnaire-9 Scale (Kroenke et al., 2001; α = .89). The PHQ-9 is a nine-item self-reported measure of depression severity. Participants responded to questions about how they felt over the fourteen days. Examples of the self-reported items included "Feeling tired or having little energy," "Feeling bad about yourself or that you are a failure or have let yourself or your family

down," and "Thoughts that you would be better off dead or hurting yourself." Each item was scaled from 0=*not at all* to 3=*nearly every day,* and the nine items were summed. Higher scores reflected higher symptoms of depression severity. Low sleep quality was assessed by the Pittsburgh Sleep Quality Index (Buysse et al., 1989; Mollayeva et al., 2016). The index included 13 items (α = .73) summed with higher scores reflecting poor sleep quality. Self-reported items included, "Cannot get to sleep within 30 minutes" and "Have to get up to use the bathroom."

Demographic control variables included age, race, education (1 = *grade school* to 10 = *Ph.D.),* self-perceived overall health (1 = *poor* to 4 = *excellent*), and crime type (*violent* =1 and *nonviolent* = 0).

Data Analytic Technique

We used SPSS-IBM 28.01.1 to compute descriptive statistics and zero-order correlations for the study variables (see Table 1, Appendix A). Further, we employed SPSS 28.0.1.1 to test our hypotheses using bivariate correlations and hierarchical ordinary least squares linear regression (see Table 2).

Results

To address the floor effect of the dependent variable (49.3% or 262 participants reported 2 or fewer health conditions), we selected only those participants who had at least three health conditions. Our analyzed sample (N = 176) was based on listwise deletion of all study variables. Further, for all hierarchical regressions, no collinearity statistics such as Tolerance were found to be < .01 (Field, 2013); in fact, Tolerance statistics ranged from .564 to .993. In addition, Cook's D averaged .007 (SD = .019); no outliers influenced the regression models (Cook & Weisberg, 1982). Descriptive statistics (M and SD) and zero-order correlations for all study variables of the analyzed sample are reported in Table 1, Appendix A.

Hypothesis 1 – Zero Order Correlations with Health Conditions: As predicted by the theoretical and empirical literature reviewed in the introduction, the variables tended to correlate in the manner expected. For example, two control variables correlated with the dependent variable, health conditions. The older the participant, the more health conditions (r = .412, $p \leq$ .001), and low perceived health was correlated with more health conditions (r = .293, $p \leq$ .001). Further, depressive symptoms (r =. 226, $p \leq$ .001) and low sleep quality (r = .398, $p \leq$ .001) were also correlated with health conditions. Bivariate or zero-order correlations were not found for the other measures. Thus, Hypothesis 1 was partly supported. With the establishment of some significant zero-order associations as predicted, we next conducted a hierarchical regression

model with three blocks of predictors: control variables, distal or past predictors, and proximal or present predictors (see Table 2).

Hypothesis 2 – Control Variables: The first model included control variables age, race, education, crime type, and self-perceived overall health. This significant model ($F = 9.76$, $p < .001$) explained 22% of the variance in the dependent variable, health conditions. Two control variables were significant predictors: age ($\beta = .385$, $p < .001$) and low self-perceived overall health ($\beta = .203$, $p = .004$). Thus, holding the other control variables constant, both age and self-perceived overall health were significantly related to the dependent variable health conditions. With an increase in age, the number of health conditions increased, and with low self-perceived overall health, the number of health conditions decreased.

Hypothesis 3 – Past or Distal Predictors: The second model included all control variables from model one and added three measures that were self-reported by participants as having occurred before age 18: adverse childhood experiences (ACEs), drug use, and alcohol use. This model did not significantly explain more variance than model one ($F\Delta = .172$, $p \leq .915$; $R^2 = .225$) nor were any of the new predictors found to be significant.

Hypothesis 4 – Present or Proximal Predictors: The third model included all control variables from model one and the past predictors from model two. The third model added prison-stress, severity of depressive symptoms, and low sleep quality. This model significantly explained more variance than models one and two ($F\Delta = 9.565$, $p \leq .001$; $R^2 = .341$). Controlling for all other variables in the analyses, low sleep quality was significantly associated with health conditions ($\beta = .328$, $p < .001$).

The study hypotheses were partly supported by the results. Control variables age and self-perceived health were significantly associated with health conditions across the models. However, no past predictors (ACEs, drug use, alcohol use) were related to health conditions whereas of the present predictors (prison stress, depressive symptoms, and low sleep quality), low sleep quality was significantly associated with health conditions.

Discussion

The current study employed Martin and Martin's (2002) conceptual model of developmental adaptation to demonstrate how past (prior to age 18) and present factors associate with health conditions of female inmates. Most of the study hypotheses were affirmed and the hierarchical regression results demonstrated that low sleep quality influences female prisoners over and above other past and present predictors in the study's model.

The present study, utilizing hierarchical regression, examined multiple different past and present constructs and their associations with health conditions reported by women incarcerated

in Oklahoma. Analyses included control variables known to associate with the outcome. Using hierarchical regression (see Table 2, Appendix B) the study's first model included covariates or control

variables. One of the main variables controlled was age. It is reasonable to expect that increasing age has a high correlation with increased health issues. As people age, health conditions mount. Skarupski et al. (2018) show that aging prisoners face an increasing number of health conditions due to the prison lifestyle. Prisoners often don't have access to quality food, as well as the very limited healthcare available throughout the prison system. As expected, the study found a positive and significant correlation between age and health conditions. Another control variable was self-perceived overall health. As one would expect, a lower self-rated health correlated with a higher number of health conditions.

Based on the Martin and Martin model (2002), the study included independent variables from the distal or past and the proximal or present predictors. Both past predictors (ACES and both alcohol and substance use) used information provided by the women before the age of 18. One of the main predictors was Adverse Childhood Experiences (ACES; Felitti et al., 2019). A traumatic childhood can have a lasting impact on the adult life of a person (Dye, 2018). Disturbing events experienced as a child can manifest as mental and physical health conditions later in life. Further, mental health issues can in turn lead to an increased amount of health conditions.

Drug and alcohol use before the age of 18. Prolonged drug and alcohol use can lead to a multitude of health problems (Shulte & Hser, 2013). However, in this sample, these measures showed little correlation with the outcome variable. Two reasons may explain this lack of finding. First, in this sample, the average age of the respondents was 39 and these past predictors asked for reminiscence to age 18 or before. It may be that enough time has passed, and the association is no longer pertinent to the women. Second, the study's distal predictors model consisted of past predictors assessed before age 18 (ACEs, drug use, and alcohol use). The ability of these predictors to demonstrate an effect may have been offset by the control variables in the model. Specific control variables that may have offset the influence of past predictors were age and self-rated health. These two assessments were significantly related to health conditions, over and above past predictors.

In the last or third model of the hierarchical regression, proximal or present predictors (Martim & Martin, 2002) were included. These variables assessed the current-day life of the women involved in the study. One of the proximal variables used in this study was prison stress

(Zamble & Porporino, 1988). Stress is known to many as the silent killer (Balwan & Kour, 2021). It can have a profound effect on one's health. For those in custody, life can be extremely stressful. Despite this, the present study did not find a significant correlation between prison stress and overall health conditions. Two plausible explanations may support this lack of finding. First, it may be that life prior to prison lessened the stress of prison. One study noted moderate scores of prisoners regarding psychological wellbeing, family cohesion, and life purpose (Ghazanfari et al., 2023). Second, this may have been due to the influence of other measures in the model. For example, the associations of age and low sleep quality may have overpowered the small influence of prison stress.

The next present predictor used was the severity of depression. Mental health conditions can manifest into physical health conditions over time. The depressive symptomatology is vast and can include overeating, undereating, lack of physical activity, and so much more. Furthermore, depression will often overlap and intertwine with other mental health conditions that would be shown on the overall health conditions survey. In similar fashion to the prison stress measure, depressive symptomatology wasn't significantly correlated with overall health conditions.

However, the lack of quality sleep mattered in this study (see Table 2). Over and above the contribution of all other variables, low sleep quality was associated with health conditions. One article found shows that lack of sleep significantly contributes to mental health, increasing depressive symptomatology and anxiety disorders. (Hungin & Close, 2010). This was further corroborated by the correlation shown between sleep and depressive symptomatology within the zero-order correlations (Table 1). Further, studies show that low sleep quality can manifest itself through physical health conditions as well, contributing towards high blood pressure, diabetes, and other severe chronic conditions (Clement-Carbonell et al., 2021).

Limitations

Regarding external validity, self-reported data was a limitation for this study. The reliability of the data reported by the surveyed population can be questioned. It's impossible to completely confirm or deny the answers reported by someone answering a survey. Another limitation faced by the study is the location of the sample. The population analyzed was 176 inmates within three facilities managed by the Oklahoma Department of Corrections. The answers provided by these inmates don't necessarily apply to all female inmates within the United States. Regarding internal validity, the study design was cross sectional and cannot address causality but must rely on theoretical perspectives.

Conclusion

Based on the conceptual model of Martin and Martin (2002), the present study looked at past and present predictors of health conditions in Oklahoma females in custody while including possible confounds. The modeling demonstrated that the lack of quality sleep is significantly associated with an inmate's overall health, assessed by the number of health conditions. Thus, it is important to consider how to improve sleep quality for those in custody. Possible reform towards prison sleeping conditions could have a massive, positive impact on the overall health of inmates. This would enhance both mental and physical health.

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Appendix A

Table 1
Zero Order Correlations Between Study Variables (N=176), Means, and Standard Deviations

	1	2	3	4	5	6	7	8	9	10	11	12
1. Health Conditions	–											
2. Age	.41***	-										
3. Race	.07	-.01	-									
4. Education	.05	.22**	.07	-								
5. Crime-Type	-.02	.15*	.05	.04	-							
6. Overall Self-rated Health	-.29***	-.23***	-.01	.02	.01	-						
7. ACEs	-.03	-.15*	-.04	-.18**	.13*	-.01	-					
8. Drug Use	-.01	-.10	.01	-.02	.06	-.03	.08	-				
9. Alcohol Use	.01	.01	.01	-.04	.07	-.11	.14*	.36***	-			
10. Prison Stress	.11	-.01	.07	-.01	.14*	-.17*	.16*	.06	.19**	-		
11. Depressive Symptoms	.23***	-.02	-.01	-.09	.01	-.20**	.14*	.10	.29***	.46***	-	
12. Low Sleep Quality	.40***	.03	.05	-.07	-.05	-.23***	.12	.10	.07	.28***	.53***	-
Mean	6.59	41.13	2.75	5.17	.53	2.49	5.23	5.29	12.49	64.24	12.18	34.46
Standard Deviation	4.13	10.78	2.46	1.45	.50	.77	3.03	2.00	11.67	15.08	6.55	6.84

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$. (one-tailed tests)

Appendix B

Table 2

Hierarchical Regression Analyses for Predictor Variables of Health Conditions ($N = 176$)

Predictor Variables	Control Variables			Distal Predictors			Prximal Predictors		
	B	SE	β	B	SE	β	B	SE	β
Age	.15	.03	.39***	.15	.03	.39***	.15	.03	.39***
Race	.13	.11	.08	.13	.12	.08	.10	.11	.06
Education	-.10	.20	-.04	-.09	.20	-.03	-.03	.19	-.01
Crime Type	-.62	.57	-.08	-.67	.28	-.08	-.45	.55	-.06
Overall Health	-1.09	0.37	-.20**	-1.09	0.38	-.20**	-.66	.36	-.12†
ACEs				.05	.10	.04	-.01	.09	-.01
Drug Use				.07	.15	.04	.02	.14	.01
Alcohol Use				-.01	.03	-.03	-.02	.03	-.04
Prison Stress							-.01	.02	-.01
Depressive Symptoms							.03	.05	.05
Low Sleep Quality							.20	.05	.33***
$F\Delta$			9.76***			.17			9.56***
R^2			.22			.23			.34

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$. (two-tailed tests)

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 (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. Modeling 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 the association between 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 identifying 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.

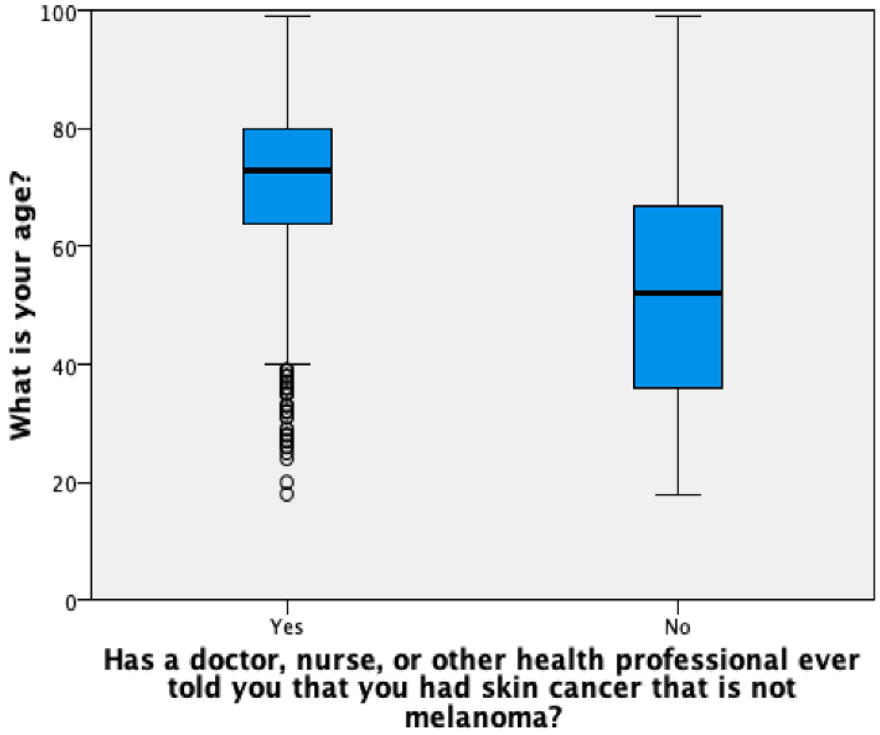

Figure 1. Association between age and NMSC diagnosis.

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, χ^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).

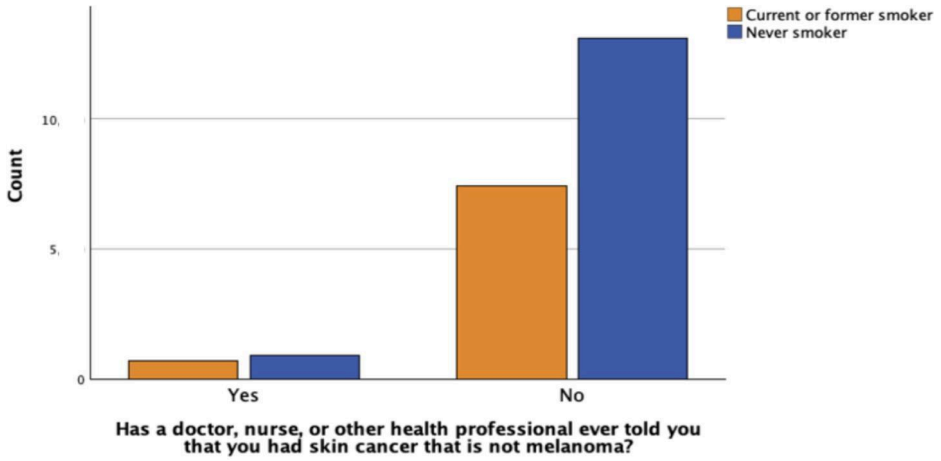

Figure 2. Association between smoking and NMSC diagnosis.

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.

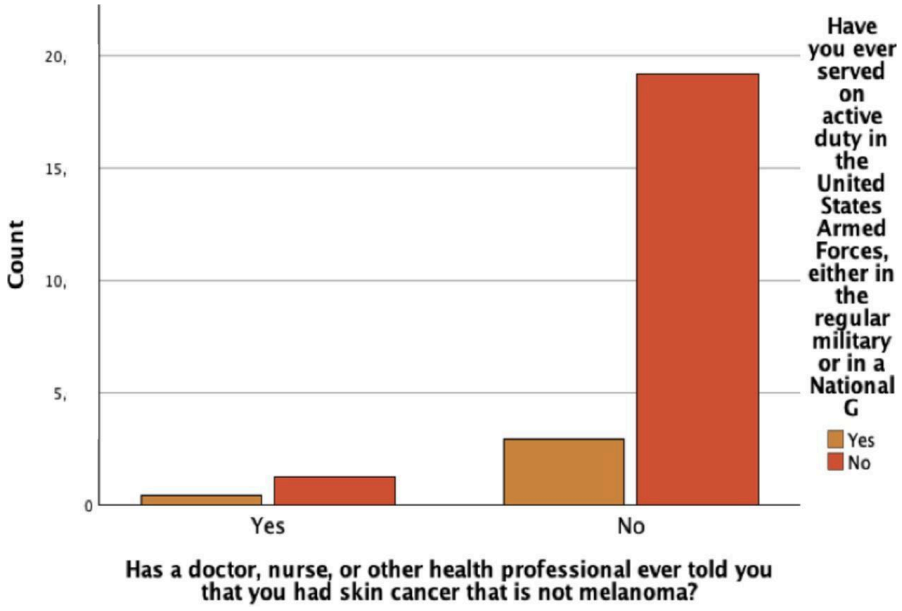

Figure 3. Association between history of service in the United States Armed Forces and NMSC diagnosis.

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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Beyond Gifted Education: The Limited Visibility of Twice-Exceptionality Across Educational Disciplines

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Abstract

Twice-exceptional (2e) students, those who are both gifted and have disabilities, occupy a unique and often overlooked space in education (Foley-Nicpon et al., 2011). 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 (Neuendorf, 2017) to examine how often and where the term appears in scholarly publications across gifted education, special education, educational psychology, and general education from 2010 to 2022. A sample of 100 sources was systematically analyzed by disciplinary field, publication type, geographic focus, and empirical status. Results revealed that the term "twice-exceptional" continues to operate in academic stealth mode, highly visible within gifted education but largely absent from special education and general education discourse. These findings suggest that without wider interdisciplinary visibility, the identification and support of 2e learners may remain fragmented (McDonald et al., 2013). The study calls for greater cross-disciplinary integration and consistent terminology to bring twice-exceptionality beyond gifted education and into full view across educational research and practice.

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

Introduction

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; Cannady, 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

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: a) Identification: Methods that consider interactions between exceptionality areas; b) Instruction: Opportunities that nurture strengths while addressing learning needs; and c) Support Services: Accommodations and interventions for academic and emotional success. (Council for Exceptional Children-The Association for the Gifted [CEC-TAG], 2022)

While this definition offers a comprehensive framework, awareness of its existence across and/or acceptance of it 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 the awareness 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, especially beyond the area of gifted education. This study employs quantitative content analysis as an empirical research method. Unlike a traditional literature review that synthesizes findings across studies, this investigation systematically codes and analyzes published documents as data to examine patterns in terminology usage, disciplinary representation, and research trends. The literature itself serves as the data source for quantitative analysis rather than as sources to be synthesized (Neuendorf, 2017). Using this methodology, the study addresses six 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? and 6) What populations of twice-exceptional subjects are being targeted for research studies, and where is such research occurring?

Literature Review

This review examines existing applications of content analysis methodology in gifted education to establish the methodological gap this study addresses. 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, 2007). 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). Neuendorf (2017) defined this methodology as a "systematic, objective, quantitative analysis of written communication" (p. 1), serving three primary purposes: describing message substance and form, making inferences about audiences, and assessing content effects (p. 41). Unlike qualitative approaches that synthesize findings thematically, quantitative content analysis involves coding and tabulating predefined terms or variables within a dataset to measure concept dissemination across fields over time. This approach enables systematic archival description of messages and facilitates longitudinal analysis (Neuendorf, 2017). Similar to survey research in its systematic approach, content analysis uses messages rather than human participants as units of data collection and analysis, with researchers recording objective observations without variable manipulation (p. 36).

Given this 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. Professional journal publications provide "unique and significant influence" on educational practice (Mastropieri et al., 2009, p. 96), making them critical sources for examining how concepts gain visibility across fields. By analyzing the presence and focus of the term "twice-exceptional" across disciplines, this study offers insight into the reach of 2e communication in

professional literature and identifies gaps that may hinder interdisciplinary collaboration and student support.

Definition and Scope

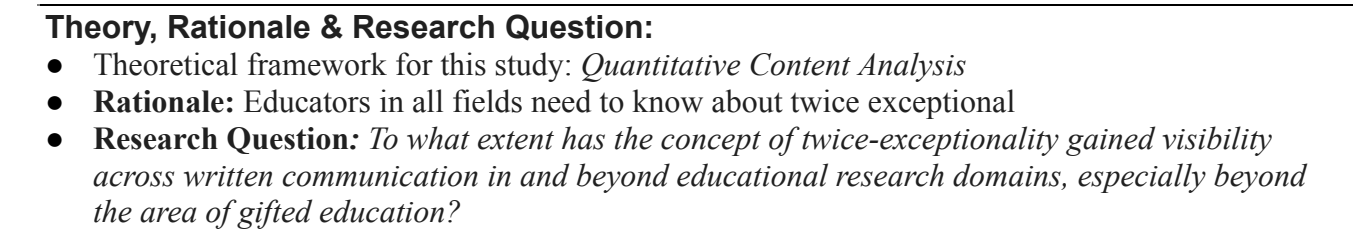
Content analysis systematically examines communication forms, (written, visual, or spoken texts), to uncover recurring patterns, themes, or underlying meanings. Researchers may focus on manifest content (clearly observable elements like words and images) or latent content (deeper, implicit meanings embedded within communication) in qualitative content analysis studies (Siegle, 2024). The quantitative variant involves recording tabulations or counts to measure the observed frequency of "pre-identified targets" (Kleinheksel et al., 2020, p. 7113). In this study, the predetermined target is the term "twice-exceptional" and its variants.

Application to the Current Study

This study determined how frequently and in what contexts the term "twice-exceptional" appears across educational subfields and publication types between 2010 and 2022. This period was selected to capture contemporary developments in twice-exceptionality research, reflecting shifts in educational policy, inclusive practices, and neurodiversity discourse. The 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. Figure 1 presents the procedural flow of the content analysis methodology adapted from Neuendorf (2017), illustrating the progression from theoretical framing to data tabulation. The following sections detail the data source, coding framework, and reliability procedures used in this investigation.

Figure 1

Flowchart for Quantitative Research Design (Neundorf, 2017)



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, special, general education, psychology, 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

Databases 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 grouping

- 2 counters were used; counting was done independently
- Inter-rater reliability between the two counters was 98-100% on all measures

Training and pilot reliability

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

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 aggregates written communication from professional education sources including peer-reviewed journals, dissertations, conference proceedings, and books. The search was limited to English-language publications from 2010 to 2022. The following search terms were used: a) "twice-exceptional," b) "twice exceptional" (without hyphen), and c) "2e AND gifted" to capture comparative citations. 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 10% random sample (n = 135) was selected using an online random number generator to ensure representativeness while maintaining analytical feasibility. 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) depth of engagement (twice-exceptionality as primary focus versus casual mention); b) publication year; c) field of publication (gifted education, special education, psychology, general education, or other); d) type of publication (peer-reviewed journal, dissertation, newsletter, conference proceeding, or book); e) scientific nature (empirical or non-empirical); f) research design (quantitative, qualitative, or mixed methods); g) geographic region of origin (United States, Americas without the US, Europe, Middle East, Asia, or Oceania); h) number of participants (for empirical studies); i) demographic characteristics of study populations; and j) authorship patterns. This coding scheme allowed for a comprehensive analysis of how twice-exceptionality appears across diverse contexts and disciplinary boundaries.

Coding Process 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 analysis, which involved counting and categorizing rather than qualitative interpretation. Prior to full-scale analysis, both researchers completed training on the coding framework and conducted a pilot study to establish reliability. Inter-rater reliability between the two coders was 98-100% on all measures, indicating strong consistency in data recording. Discrepancies were resolved through discussion and consensus. This rigorous approach ensured the accuracy and replicability of the findings.

The following section presents the findings from this analysis, highlighting patterns in term usage, disciplinary representation, and publication trends. These frequencies and distributions provide empirical evidence of twice-exceptionality's visibility across educational and non-educational research literature.

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

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 1 (Depth of Engagement in Journal Titles) and Table 2 (Years of Publication). Table 1 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 1

Depth of Engagement with the Term "Twice-Exceptional" in Peer-Reviewed Articles (2010–2022) (RQ 1)

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

*Note: The 100 entries in which twice-exceptional was the focus were examined.

Table 2 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 2

Years of Publication and Number of Twice-Exceptional References (RQ 1) (n=100)

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

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 3 (Fields of Publication of References) reveal significant disciplinary concentration in the twice-exceptionality literature. The highest number of references (n = 33) appeared in sources solely focused on twice-exceptionality, such as specialized newsletters and practitioner-oriented publications. 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 these fields being central to supporting students with disabilities.

This distribution highlights a persistent disciplinary gap. Although 2e learners require

support across multiple educational domains, the concept remains underrepresented in foundational fields like psychology and special education. The minimal presence in special education (n = 4) is particularly concerning given that disability identification and support are core functions of this discipline. Similarly, the limited representation in psychology (n = 7) suggests that the cognitive and social-emotional complexities of twice-exceptionality have not yet been integrated into mainstream psychological research on exceptionalities. Bridging this divide will require intentional cross-disciplinary collaboration and greater integration of 2e discourse into mainstream educational research, policy, and practice.

Table 3

Fields of Publication of References (RQ 2)(n=100)

Field of Publication	Number of References
Twice-exceptional-Specific	54
Gifted education	18
General education	11
Psychology	7
Special education	4
Other	6

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 (Types of Publications) 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 venue, reflecting growing scholarly interest and the formalization of 2e as a research focus. This suggests that twice-exceptionality is gaining credibility as an empirical research area worthy of academic investigation. Dissertations

(n = 21) and newsletters (n = 21) showed equal representation, indicating strong engagement from both early-career researchers and practitioner communities. Books (n = 8) and book chapters (n = 6) provide broader contextualization and are often used in professional development settings. In contrast, newspapers (n = 5) and miscellaneous sources (n = 2) highlight the limited mainstream public visibility of 2e issues.

The depth and scope of coverage varies considerably across publication types. Peer-reviewed journals typically present rigorous empirical or theoretical work with systematic research designs, comprehensive literature reviews, and peer-vetted findings. These articles contribute to the academic knowledge base and establish evidence-based practices. Dissertations, while scholarly and often more extensive than journal articles, may have limited accessibility and impact beyond the academic community. Newsletters, though more accessible to practitioners, tend to offer practical guidance, anecdotal insights, and brief summaries rather than in-depth empirical analysis. Books and book chapters provide comprehensive overviews suitable for professional development but may lack the timeliness of journal publications. Overall, the data suggests that while 2e is gaining traction in academic and practitioner spaces, its dissemination remains uneven. The limited presence in mainstream media (newspapers) underscores the need for broader public outreach to raise awareness among families, policymakers, and the general education community.

Table 4

Type and Number of Publications (RQ 3)(n=100)

Type of Publication	Number
Journals	37
Dissertations	21
Newsletter	21
Books	8
Book chapters	6
Newspapers	5
Other	2

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 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.

Table 5

Authors with Multiple References in the Sample (RQ 4)

Author	Number of References
Baum	4
Foley-Nicpon	3
Neumann	3
Rimm	3
Seney	3
Amend	2

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 Table 6 (Empirical Research Description) and Table 7 (Research Areas of Focus) and Table 8 (geographic analysis of the dissertation sample) provide answers to this research question. Table 6 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 dominate. 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.

Table 6

Empirical Research Description (RQ 5)

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 7

Table 7 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 underexplored. 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.

Table 7

Research Areas of Focus (RQ 5)

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%

Table 8 provides a geographic analysis of the dissertation sample revealed U.S. dominance (67%), with additional contributions from Oceania (13%), the Middle East (13%), and Europe (7%). Notably, no dissertations were identified from Asia, Africa, or South America, revealing significant gaps 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 8

Geographical Distribution of 2e Dissertation Research (n=15) (RQ 5)

Region	Number	Percentage
US	10	67%
Asia	0	-
Oceana	2	13%
Middle East	2	13%
Europe	1	7%

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 9 (Population Focus and Sample Sizes in Twice-Exceptional Research) answer research question 6. Table 9 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 participants. 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. Parent accounted for 10%, while only 7% of studies focused on college-aged 2e students, revealing 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. Note: Detailed information about individual empirical studies, including authors, sample sizes, methodological approaches, and countries of origin, is available upon request from the authors.

Discussion

The term "twice-exceptional" remains under the radar in educational literature. This quantitative content analysis of 100 relevant publications revealed that twice-exceptionality is

most frequently addressed in gifted education contexts, with limited representation in special education, educational psychology, and general education literature. For comparative context, database searches yielded 3,472 references to "twice-exceptional" (1,353 unique entries) between 2010 and 2022, compared to 172,525 for "gifted students," 842,275 for "learning disabilities," and 614,314 for "autism and children." 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.

These results suggest that despite growing research interest, twice-exceptionality remains a siloed concept largely confined to gifted education. 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). The concentration of scholarships within gifted education journals (n = 18), combined with minimal representation in special education (n = 4) and psychology (n = 7), indicates that the concept has not yet achieved meaningful interdisciplinary integration. When educators and researchers outside gifted education are unfamiliar with the term or its implications, 2e learners' risk being overlooked or mischaracterized.

The fragmentation of terminology across disciplines presents a barrier to collaboration and consistency in service delivery. Without 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 and frameworks could foster more cohesive practices and promote equity in educational access and outcomes. All scholars, including renowned researchers in the field, should seek to publish beyond gifted education journals to reach audiences in special education, educational psychology, and teacher preparation programs. Journals, academic institutions, and professional organizations could play a role in encouraging interdisciplinary research and promoting awareness of twice-exceptionality across educational domains.

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 or effectiveness. Future research should incorporate qualitative analysis to explore how 2e concepts are framed across

disciplines and whether publications offer meaningful insights into the unique needs of these learners. Twice-exceptional students differ meaningfully from both their gifted peers and those with disabilities, requiring uniquely tailored support that address their dual exceptionalities.

Table 9

Populations and Sample Sizes of Focus Research Studies (RQ 6)

Focus of Study/Number of Studies	Population	% 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	
Twice-exceptional college-aged students	2	7%
● 4-10 participants	2	
Parents of twice-exceptional students	3	10%
● 11-25 participants	2	
● 26-100 participants	1	
Teachers/School Professionals	7	24%

Conclusion

This study provides quantitative evidence that the term "twice-exceptional" remains largely concentrated within the field of gifted education (n=18 references), with minimal presence in special education (n=4) and educational psychology (n=7) literature. As a result, twice-exceptional education continues to function in stealth mode, 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, teacher educators, journal editors, and policymakers

must prioritize the integration of 2e frameworks into teacher preparation programs, disability studies curricula, and educational policy. While identifying and evaluating specific frameworks is beyond this study's scope, emerging models that bridge gifted and special education approaches offer promising pathways for creating unified language and instructional strategies to address the complex profiles of 2e students. Future research should examine which specific frameworks most effectively support 2e identification and instruction across educational contexts.

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 in a simple equation: 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!" For twice-exceptionality to emerge from stealth mode and gain visibility across educational scholarship and service systems, the field must move beyond gifted education and establish these "green" or "3" learners as a shared priority across all educational disciplines.

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Teaching the Teachers: Can AI Develop More Effective Support Plans from Human Insight?

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Abstract

Artificial intelligence (AI) is reshaping educational practice, offering school leaders new tools to support struggling teachers through strategic and ethical integration. This descriptive qualitative study explores how teacher leadership candidates utilize AI tools to design intervention and coaching plans that foster pedagogical growth and improve student achievement. Drawing from a Master of Teacher Leadership program cohort (N=23), the study analyzes candidates' perspectives on integrating AI into intervention planning for struggling teachers. Findings reveal that 44% of candidates actively used AI as a supplemental coaching tool, while 39% expressed concerns about preserving human mentorship and professional judgment. Notably, 52% demonstrated willingness to explore AI as a future coaching partner. Participants leveraged AI to generate differentiated strategies, scaffold lessons, and address classroom challenges, while maintaining that AI should enhance rather than replace teacher expertise. Results suggest that when thoughtfully implemented, AI can amplify instructional leadership through data-informed coaching, personalized support, and reflective practice, provided it is balanced with the relational and pedagogical foundations of effective teaching.

Keywords: Artificial Intelligence in Education, Instructional Leadership, Struggling Teachers, Professional Development, Ethical Use of AI in Education

Introduction and Background

The emergence of artificial intelligence (AI) in education has created new opportunities for instructional leaders to enhance teaching effectiveness and student learning outcomes across all levels of teacher experience. As schools face increasing demands for differentiation, efficiency, and evidence-based decision-making, AI technologies are becoming essential tools for supporting teachers who are struggling, new to the profession, or seeking to refine their practice (Zawacki-Richter et al., 2019; Holmes et al., 2021). For struggling teachers, AI-powered analytics can provide insights into student engagement patterns, assessment performance, and classroom dynamics, enabling instructional leaders to tailor coaching and intervention strategies that address specific instructional challenges (Lu et al., 2023). New teachers, often overwhelmed by the complexities of curriculum design and classroom management, can benefit from AI-driven mentorship platforms that generate lesson ideas, recommend research-based teaching strategies, and simulate classroom scenarios for reflective practice (Popenici & Kerr, 2017). Veteran teachers, meanwhile, can leverage AI to innovate instruction, analyze learning data, and stay current with pedagogical trends, thereby sustaining engagement and instructional relevance in a rapidly evolving educational landscape (Molnar & Kearney, 2022). For educational leaders, AI offers powerful opportunities to augment traditional coaching and supervision processes by providing real-time feedback, identifying instructional patterns, and supporting data-informed decision-making (United States Department of Education, 2023). When thoughtfully implemented, AI functions not as a replacement for human expertise but as a collaborative partner that enhances professional judgment, encourages reflective practice, and expands access to personalized learning for both teachers and students (Luckin, 2018). By modeling effective use of AI and integrating it into professional learning frameworks, leaders can cultivate a culture of innovation and continuous improvement that ultimately strengthens teaching quality and improves student outcomes (Williamson & Eynon, 2020; Fullan & Edwards, 2022). This study contributes to that understanding by examining how teacher leadership candidates navigate the integration of AI tools into coaching practice for struggling teachers.

Purpose and Research Question

Grounded in transformational leadership theory, this study positions educational leaders as agents of change who inspire and support teachers through innovative practice. The purpose of this descriptive qualitative study was to explore how teacher leadership candidates use AI tools to design coaching and intervention plans that foster pedagogical growth and improve student achievement. The guiding research question was: How do teacher leadership candidates use AI to develop support plans for struggling teachers, and what benefits and challenges do they perceive in this process?

Review of the Literature

The scholarly literature on AI in education increasingly emphasizes the intersection of AI, instructional leadership, and teacher capacity building. Across recent years, researchers have examined how AI can inform leader decision-making, expand access to professional learning, and support teachers through differentiated feedback and data-informed planning (Berkovich, 2025; García et al., 2024; Karakose, 2024; Sposato, 2025).

Conceptual Framework: AI-Enhanced Instructional Leadership

This study's conceptual framework integrates transformational leadership theory (Bass, 1985) and the Technological Pedagogical Content Knowledge (TPACK) model (Mishra & Koehler, 2006), anchored by the Integrating AI into Instructional Leadership Theory (Imoh et al., 2025). Together, these frameworks conceptualize how AI can enhance teacher development while reinforcing the ethical and relational dimensions of leadership.

Transformational leadership emphasizes individualized support, intellectual stimulation, inspirational motivation, and idealized influence dimensions, particularly relevant when supporting struggling teachers (Bass, 1985). Leaders who employ transformational practices create environments where teachers feel empowered to take risks, reflect critically, and grow professionally. TPACK ensures pedagogically sound technology use by requiring leaders to understand the dynamic interplay between content knowledge, pedagogical approaches, and technological affordances (Mishra & Koehler, 2006).

AI serves as a bridge between these models, enabling leaders to design data-informed coaching plans, promote reflective practice, and sustain instructional improvement. This framework assumes that AI should augment, not replace, a teacher's expertise, and that leaders play a central role in guiding equitable, human-centered implementation. The integration of these theoretical perspectives provides a lens for understanding how teacher leaders navigate the tension between technological efficiency and relational coaching.

AI in Instructional Leadership and Teacher Development

AI is a strategic asset for instructional leadership by helping leaders diagnose instructional needs, target supports and monitor progress at scale. Taxonomies of AI for school systems describe use cases ranging from data dashboards and early-warning indicators to automated evidence capture that streamlines observation and feedback (Sposato, 2025; Berkovich, 2025). Cross-national analyses show that AI-enabled tools can expand teacher leadership capacity by facilitating collaboration and responsive decision-making (Ghamrawi et al. 2024).

At the same time, digital leadership scholarship underscores the necessity of ethical guardrails, transparency, and continuous capacity building when leaders introduce AI for teacher development (García et al., 2024; Karakose, 2024). Conceptual models that blend transformational leadership with TPACK suggest that leaders can align AI-supported feedback and professional learning with pedagogically sound practice while reinforcing teacher autonomy (Imoh, et al., 2025; Mishra & Koehler, 2006; Bass, 1985).

AI for Teacher Support

A complementary strand focuses on how AI directly supports teachers' daily practice. Studies document that AI can automate low-value tasks such as grading and attendance, generate standards-aligned lesson materials, and surface student learning trends to inform differentiation (Kucharski, 2024; Nouri et al., 2024; Xue et al, 2025). Frameworks of AI-supported teaching identify core pedagogical roles of assessment, personalization, feedback, planning, and classroom management through which AI augments teacher decision-making without supplanting professional judgment (Shi & Choi, 2024).

Qualitative evidence indicates that teachers increasingly describe AI as a creative partner that sparks ideas and scaffolds planning, while maintaining the primacy of relational work with students (Krushinskaia et al., 2023; Tripathi et al, 2025). However, concerns persist that AI may diminish teachers' creativity, professional identity, and authentic pedagogical decision-making (Stevenson et al., 2023; Taylor & White, 2019). Policy guidance reinforces a human-centered stance by emphasizing equity, privacy, and teacher agency in AI integration (UNESCO, 2025; World Economic Forum, 2025).

AI as a Coaching Tool

Emerging evidence highlights AI's role in extending instructional coaching. AI-enabled coaching platforms combine teacher self-reflection with automated analysis and curated resources to generate targeted, timely feedback, expanding access to coaching when staffing or geography limits traditional models (Edthena, 2025; Trust & Whalen, 2021). Field reports and practitioner studies describe district-level improvements in engagement and instructional clarity following the introduction of AI-supported coaching workflows (Education Week, 2025; Getting Smart, 2025).

Synthesis work suggests that AI can scale coaching while maintaining fidelity to evidence-based practices, provided leaders intentionally balance automation with relational mentoring (Lundberg, 2025; ISTE, n.d.). However, questions remain about how teacher leaders actually integrate AI into coaching cycles, what specific challenges they encounter, and whether AI-generated support plans differ

meaningfully from traditional approaches. Together, these studies suggest that AI is most impactful when it supplements human coaching, enabling leaders to focus on building trust, modeling, and engaging in reflective dialogue, while AI assists with analysis and resource curation.

Methodology

This study employs a descriptive qualitative research design to explore teacher leadership candidates' perspectives on the use of artificial intelligence (AI) in creating intervention plans and supporting struggling teachers. Descriptive qualitative research focuses on providing a rich, detailed account of phenomena from participants' perspectives, addressing the "who, what, and where" questions about events while maintaining less theoretical emphasis than other qualitative methods (Sandelowski, 2000). This approach was selected to capture educators' nuanced experiences and emerging practices as they navigate AI integration in instructional contexts.

Content of the Course

This course focuses on curriculum and assessment for ESL education. Course readings, assignments, and class discussions will guide exploration of the relationships among standards, lesson planning, and assessment. A key component of the course is to discuss issues and concepts of assessment and think about how English language teachers' oral, reading, and writing development is assessed, using as guidelines the Texas English Language Proficiency Standards (ELPS) or similar standards from another state. The course also provides a general background in teaching and assessing ESL-Special Education students.

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Participants

The participants in this study were graduate students enrolled in the Master of Teacher Leadership program at a regional institution in southeast Texas. The sample was drawn from the Spring 3 2025 cohort of ENSL5302, a five-week online course designed to synthesize learning and application of leadership principles in education. A purposive sample of the total enrollment of 23 students was

selected to ensure representation across diverse backgrounds and instructional experiences. The participants' demographics mirrored those of the university's online graduate student body.

Data Collection and Analysis

The study received approval from the university's Institutional Review Board under an educational research exemption, as it involved analysis of existing coursework collected for legitimate educational purposes. During the fifth week of the ENSL 5302 course, data were collected through a required reflective writing assignment in Module 5, in which 23 participants responded to open-ended research questions about using AI to develop plans for struggling teachers, offering explanations and illustrative examples aligned with course learning objectives. Candidates were asked to: "Describe how you used AI tools to develop a support plan for a struggling teacher. In your response, address the following: (1) Which AI tool(s) did you use and why? (3) What elements of the support plan did AI help you create? (4) What benefits did you experience in using AI for this task? (5) What challenges or limitations did you encounter? (6) How did you balance AI-generated suggestions with your own professional judgment? (7) Would you use AI for coaching or supporting teachers in your future leadership practice? Why or why not? All responses were downloaded, assigned pseudonyms, and stripped of identifying information prior to analysis.

To ensure a systematic approach, the principles of comparative analysis were applied, with coded textual responses categorized into emergent themes. All three researchers independently read all 23 responses in their entirety, taking initial notes on patterns and areas of interest. The researchers then applied descriptive codes to meaningful units of text. Researchers met to cluster related codes into potential themes. Through iterative discussion and comparison, codes were organized into broader categories reflecting participants' experiences in the use of AI for coaching and plan development, effects on instruction, leadership, and future use of AI as a tool.

The methodological approach provided an in-depth understanding of how coursework and AI are used to develop interventions or coaching plans and stages to grow a teacher's pedagogical practice. These themes also recognize the importance of balancing AI using professional expertise to maintain authenticity and relational aspects of teaching along with the opportunities and challenges of integrating AI into educational leadership.

To enhance trustworthiness, the research team employed peer debriefing throughout the coding process. Triangulation occurred through comparison of findings with course artifacts (assignment) and existing literature on AI in educational leadership.

Findings

Analysis revealed four interconnected themes describing how teacher leadership candidates engaged with AI tools to support struggling teachers: (1) limited but purposeful AI use, (2) AI as a supplemental coaching tool, (3) concerns about authenticity and professional identity, and (4) cautious optimism about future applications. Table 1 provides an overview of these themes with frequencies and representative examples. Each theme is presented below with supporting evidence from participant reflections.

Table 1

Summary of Themes, Frequencies, and Representative Examples

Theme	Frequency	Key Characteristics	Representative Quote
Theme 1: Limited but Purposeful AI Use	48% (n=11) used AI extensively; 52% (n=12) minimal/no use	Selective use for discrete tasks; lesson planning, assessment design, coaching prompts; variation based on comfort and beliefs	"I used ChatGPT to generate three different versions of a guided reading lesson... This would have taken me hours to create from scratch, but AI gave me a starting framework that I could then adapt."
Theme 2: AI as Supplemental, Not Primary, Coaching Tool	87% (n=20) emphasized this perspective	AI supports technical tasks; human judgment is essential for relational work; AI cannot replace empathy, trust-building, or contextual understanding.	"AI helped me organize my thinking and generate resources, but the actual coaching conversation—the trust-building, the careful questioning, the reading of body language—that is where the real work happens."
Concerns About Authenticity and Professional Identity	61% (n=14) expressed concerns	Worry about generic materials; fear of formulaic coaching; concern about teacher dependency on AI; tension between efficiency and authenticity.	"If we start relying too heavily on AI to plan our lessons and design our assessments, are we still teachers? Alternatively, are we becoming technicians who implement what a machine tells us to do?"
Theme 4: Cautious Optimism About Future Applications	65% (n=15) expressed interest	Recognition of potential with awareness of risks; calls for training, ethical guidelines, support structures; specific future applications identified	I am definitely interested in using AI for coaching, but I need more training on how to do it effectively and ethically... Right now, I feel like I'm fumbling in the dark."

Cross-Cutting Patterns in AI Use

Across these examples, several patterns emerged:

1. **Iterative Refinement**: Effective AI use involves multiple prompts and revisions rather than accepting initial outputs uncritically.
2. **Structural Scaffolding**: AI excelled at providing organizational frameworks and comprehensive checklists that coaches then adapted.
3. **Research Base**: AI surfaced evidence-based strategies that coaches might not have recalled or known, expanding their professional knowledge.
4. **Contextual Limitations**: AI consistently failed to account for school-specific factors (available resources, teacher relationships, cultural context) that significantly shaped implementation.
5. **Human-AI Division of Labor**: Participants used AI for information processing, structure, and idea generation, while reserving relationship management, emotional support, and contextual decision-making for themselves.

These examples provide concrete illustrations of how teacher leaders balanced AI's capabilities with human expertise, offering a nuanced picture of AI integration that extends beyond general statements about "using AI to support teachers.

Theme 1: Limited but Purposeful AI Use for Teacher Support

Approximately half of the participants (n=11, 48%) reported using AI tools to generate specific elements of their support plans, differentiated lesson plan examples, formative assessment strategies, and coaching conversation prompts. However, usage was selective and strategic rather than comprehensive. Participants described using AI for discrete, time-intensive tasks while reserving relational and contextual decision-making for themselves.

One candidate explained: "I used ChatGPT to generate three different versions of a guided reading lesson, one for struggling readers, one for grade-level, and one for advanced. This would have taken me hours to create from scratch, but AI gave me a starting framework that I could then adapt based on what I know about this teacher's classroom and students."

Another candidate noted: "I asked Claude to help me develop observation feedback questions focused on student engagement. It gave me a bank of 20 questions that I refined based on the specific

concerns I had observed in this teacher's classroom. AI helped me think more systematically about what to look for and how to phrase my feedback in a growth-oriented way."

However, 12 participants (52%) reported minimal or no AI use, citing lack of familiarity, concerns about appropriateness, or preference for traditional planning methods. One teacher leader candidate stated: "I tried using AI but felt like it was giving me generic suggestions that didn't account for the real challenges this teacher faces in classroom management with high-needs students, limited planning time, and pressure from administration. I ended up relying more on my own experiences and conversations with colleagues."

The variation in AI adoption appeared related to participants' prior technology use, comfort with ambiguity, and beliefs about the role of human judgment in coaching. Those who used AI tools most extensively tended to frame them as "thought partners" or "efficiency tools" rather than decision-makers.

Theme 2: AI as a Supplemental, Not Primary, Coaching Tool

Across all participants, a consistent perspective emerged: AI could enhance but never replace the human dimensions of instructional coaching. Even those who used AI extensively emphasized that technology served a supporting role in a fundamentally relational process. This theme appeared in 20 of 23 responses (87%).

A candidate expressed: "AI helped me organize my thinking and generate resources, but the actual coaching conversations, the trust-building, the careful questioning, the reading of body language and emotional responses, that's where the real work happens. AI can't see the tears in a struggling teacher's eyes or know when to push versus when to provide reassurance."

Another candidate explained: "I see AI as scaffolding for the technical aspects of coaching, planning lessons, analyzing data patterns, and finding research-based strategies. However, the motivational aspect, the relationship building, partnered with the understanding of this specific teacher in this specific context, requires human judgment and empathy that AI just doesn't have."

Participants value AI's capacity to surface patterns in student performance data, generate multiple instructional approaches, and provide research-based vocabulary for coaching conversations. However, they consistently positioned these capabilities as inputs to human decision-making rather than replacements for professional expertise.

One candidate noted: "AI can show me patterns in student performance, but it can't see the personalities in my room or understand why this particular teacher is struggling right now—maybe it's

personal issues, maybe it's conflict with a colleague, maybe it's just burnout. That contextual understanding has to come from relationships and observations.

Theme 3: Concerns About Authenticity, Creativity, and Professional Identity

A substantial number of participants (n=14, 61%) expressed concerns that over-reliance on AI might diminish teacher creativity, authenticity, and professional identity. These concerns manifested in three distinct ways: (1) worry that AI-generated materials lack a genuine connection to specific students and contexts, (2) fear that AI might produce formulaic or impersonal coaching approaches, and (3) concern that struggling teachers might become dependent on AI rather than developing their own pedagogical expertise.

A candidate articulated the authenticity of concern: "When I used AI to generate sample lessons, they were technically correct and aligned to standards, but they felt generic. They didn't have the personality and passion that make a lesson come alive. I worried that if I gave these to a struggling teacher without heavy modification, they would be delivering someone else's teaching or, really, a machine's teaching rather than developing their own voice."

Another future educational leader expressed identity concerns: "Teaching is a creative, deeply personal profession. If we start relying too heavily on AI to plan our lessons and design our assessments, are we still teachers? Or are we becoming technicians who implement what a machine tells us to do? I want to help struggling teachers find their own teaching identity, not just follow AI's suggestions."

Several participants worried about creating dependency: "My fear is that if I give a struggling teacher AI-generated lesson plans as a support, they might just keep using AI instead of developing their own planning skills. It's like giving someone a fish versus teaching them to fish, except in this case, we're teaching them to ask a computer for fish."

Despite these concerns, most participants acknowledged that thoughtful, bounded AI use could actually support authenticity by freeing time for creative adaptation and relationship-building. One participant noted: "If AI handles the time-consuming technical work. Finding resources, formatting documents, generating initial drafts, then the teacher has more mental energy for the creative work of adapting materials to their students' needs and interests."

Theme 4: Cautious Optimism and Interest in Future AI-Assisted Coaching

Despite concerns and limited current use, most participants (n=15, 65%) expressed openness to incorporating AI into their future leadership practice, provided appropriate training, ethical guidelines, and support structures were in place. This cautious optimism was characterized by recognition of AI's

potential balanced with awareness of risks and limitations.

One teacher leadership candidate stated, "I'm definitely interested in using AI for coaching, but I need more training on how to do it effectively and ethically. I want to understand what AI can and can't do, how to write effective prompts, and how to critically evaluate what AI produces. Right now, I feel like I'm fumbling in the dark."

Another participant explained: "I can see AI being incredibly useful for new teacher leaders who are still building their coaching skills. AI could provide a knowledge base and suggest coaching strategies while they're developing their own expertise. But it would need to be implemented carefully with mentorship and reflection built in."

Several participants identified specific future applications they found promising:

- "I'd love to use AI to help analyze classroom observation data and identify patterns I might miss, like how many open-ended questions a teacher asks versus closed questions, or how much wait time they provide."
- "AI could be really helpful for generating differentiated professional development if I'm working with ten struggling teachers with different needs, AI could help me create personalized learning plans for each one."
- "I think AI could help me prepare for difficult coaching conversations by role-playing different scenarios and helping me think through how to respond to various teacher reactions."

However, optimism was consistently tempered with calls for ethical guidelines, professional development, and ongoing dialogue about appropriate use. One candidate summarized: "AI is a tool, and like any tool, it can be used well or poorly. We need clear guidance on when to use it, how to use it responsibly, and how to maintain the human heart of teaching and leading."

Discussion

These findings contribute to growing scholarship on AI-enhanced instructional leadership by revealing how emerging leaders navigate the tension between technological efficiency and relational coaching. Results align with and extend existing literature in several key areas.

Alignment with Existing Research

The finding that participants viewed AI as supplemental rather than primary reinforces Berkovich's (2025) observation that educational leaders position AI as a capacity-building tool rather than a replacement for human judgment. Similarly, participants' concerns about authenticity echo

Stevenson, et al. (2023) finding that teachers worry about AI eroding professional identity and creativity. The selective, purposeful use patterns observed in this study parallel Nouri, et al. (2024) conclude that teachers strategically adopt AI for efficiency while maintaining control over pedagogically significant decisions.

However, this study extends existing research by documenting specific ways in which teacher leaders integrate AI into coaching cycles and by revealing the sophisticated reasoning they employ when balancing technology use with relational practice. Participants demonstrated what might be called "adaptive AI literacy," the ability to critically evaluate AI outputs, recognize contextual limitations, and strategically deploy AI for well-defined purposes while preserving human judgment for complex, relational work.

Implications for TPACK and Transformational Leadership

Findings suggest that effective AI integration in instructional leadership requires simultaneous development of technological, pedagogical, and content knowledge (Mishra & Koehler, 2006). Participants who used AI most effectively demonstrated understanding of both the tool's technical capabilities and its pedagogical limitations. They recognized that AI could generate standards-aligned content (technological knowledge) but could not account for classroom context or teacher-student relationships (pedagogical knowledge). This integration reflects the dynamic, situated nature of TPACK as applied to leadership practice.

Additionally, participants' emphasis on relationship, context, and individualized support aligns with transformational leadership principles (Bass, 1985). Even when using AI tools, participants-maintained focus on individualized consideration (understanding each teacher's unique needs), intellectual stimulation (encouraging teachers to develop their own pedagogical approaches), and inspirational motivation (building confidence and agency). AI served as a tool for implementing transformational leadership practices, such as providing timely, differentiated feedback, rather than replacing them.

The Paradox of AI in Teacher Support

A notable tension emerged in the findings: participants simultaneously recognized AI's potential to save time and improve support quality while worrying that AI use might undermine the authentic, creative, relational dimensions of teaching. This paradox reflects broader debates in educational

technology about whether tools enhance or constrain human capability (Luckin, 2018; Williamson & Eynon, 2020).

The design participants offered a strategic, bounded use of AI focused on technical tasks, while preserving human judgment for relational work. It suggests a middle path. Rather than total adoption or rejection of AI, participants advocated for intentional integration guided by clear purposes and ethical boundaries. This perspective aligns with UNESCO's (2025) human-centered approach to AI in education and Walter's (2024) framework for building teacher capacity through purposeful technology integration.

Readiness and Professional Development Needs

The variation in AI adoption (48% use vs. 52% minimal/no use) and Candidates' calls for additional training highlight significant professional development needs. Despite completing an AI tutorial and guided practice, many candidates remained uncertain about how to use AI effectively and ethically for coaching. This finding suggests that single-session introductions are insufficient; instead, leaders need ongoing, practice-based professional learning that includes:

1. Technical skill development (prompt engineering, critical evaluation of outputs)
2. Pedagogical reasoning (when AI is appropriate, how to adapt AI outputs)
3. Ethical considerations (privacy, bias, maintaining teacher agency)
4. Reflective practice (examining one's own beliefs about technology and teaching)

This multilayered approach aligns with Chen and Adams' (2023) professional development model for AI integration and Tammets and Ley's (2023) framework for designing pedagogically adaptive AI learning experiences.

Limitations

This study's findings should be interpreted within several limitations. First, the small sample size (n=23) and single-institution context limit generalizability. Participants were drawn from one university program in a specific geographic region, and findings may not transfer to other leadership preparation contexts with different program structures, participant demographics, or regional technology access.

Second, data were collected from a single reflective assignment completed at one point in time. Self-reported reflections may not fully capture participants' actual practices or may present idealized versions of their AI use. Longitudinal research tracking how participants actually integrate AI into leadership practice over time would provide more robust evidence of behavioral change and sustained implementation.

Third, the study did not include direct analysis of the AI-generated support plans themselves, only participants' descriptions of their process and perceptions. Future research should examine the quality, comprehensiveness, and pedagogical soundness of AI-supported versus traditionally developed coaching plans.

Fourth, while the research team employed multiple trustworthiness strategies (peer debriefing, audit trail, member checking), the instructor-researcher relationship may have influenced participants' responses. Participants may have provided socially desirable responses or emphasized aspects of AI use they believed the instructor valued. Alternative data-collection methods, such as interviews conducted by external researchers, might yield different insights.

Finally, this study examined AI use in a controlled course context with specific scaffolding and support. How teacher leaders use AI when facing authentic, high-stakes coaching situations in their schools without the safety of a learning environment remains an open question.

Conclusions and Implications

This study examined how teacher leadership candidates use AI to develop support plans for struggling teachers, revealing a landscape of cautious, strategic adoption characterized by recognition of both promise and peril. Participants demonstrated trailblazing thinking about when AI could enhance their coaching practice and when human judgment remained irreplaceable. These findings carry important implications for educational leadership preparation, professional development, and policy.

Implications for Leadership Preparation Programs

Leadership preparation programs should integrate AI literacy throughout their curricula rather than treating it as an isolated technology topic. Programs might:

- Embed AI use across multiple courses, allowing candidates to experience AI in diverse leadership contexts (supervision, professional development design, data analysis, communication)
- Provide explicit instruction in prompt engineering and critical evaluation of AI outputs
- Facilitate structured reflection on ethical dilemmas associated with AI use in schools
- Model responsible AI use by instructors, demonstrating how educational leaders can leverage AI while maintaining pedagogical integrity
- Create opportunities for candidates to receive feedback on their AI-supported coaching plans from both instructors and practicing leaders

Implications for Professional Development

School districts implementing AI tools for instructional leadership should provide comprehensive, ongoing professional development that addresses technical skills, pedagogical reasoning, and ethical considerations. Effective professional development should:

- Move beyond one-time workshops to sustained, job-embedded learning experiences
- Include opportunities for leaders to experiment with AI in low-stakes environments and receive feedback
- Facilitate collaborative inquiry where leaders share AI-supported coaching strategies and critically evaluate their effectiveness
- Address concerns about authenticity and professional identity directly, validating leaders' commitments to human-centered practice while exploring how AI can support (not replace) those commitments
- Provide clear guidelines on appropriate and inappropriate AI uses, privacy protections, and strategies for maintaining teacher agency

Implications for Policy and Practice

Educational policymakers and district leaders should establish clear ethical guidelines for the use of AI in teacher evaluation and support. Policies might address:

- Transparency: When and how AI is used in teacher support processes
- Privacy: How teacher data used by AI systems is collected, stored, and protected
- Human oversight: Requirements that all AI-generated feedback or recommendations be reviewed and contextualized by human coaches before being shared with teachers
- Teacher voice: Mechanisms for teachers to understand, question, and appeal AI-supported recommendations

Future Research Directions

This study opens several avenues for future inquiry:

1. **Longitudinal studies**: Track how teacher leaders' AI use evolves as they transition from preparation programs into leadership roles and gain experience with authentic coaching challenges.

2. **Comparative effectiveness of research**: Examine whether AI-supported coaching produces different outcomes (teacher growth, student achievement) compared to traditional coaching approaches.
3. **Quality analysis**: Systematically analyze the pedagogical soundness, comprehensiveness, and contextual appropriateness of AI-generated versus human-developed support plans.
4. **Implementation studies**: Examine factors that facilitate or constrain effective AI integration in school leadership practice, including organizational culture, resource availability, and leadership support.
5. **Critical perspectives**: Explore potential unintended consequences of AI use in teacher evaluation and support, including surveillance concerns, professional risks, and shifts in power dynamics.

Final Thoughts

As AI tools become increasingly prevalent in educational settings, the question is not whether leaders will use AI, but how they will use it and what results they will achieve. This study suggests that teacher leaders can thoughtfully integrate AI into coaching practice in ways that enhance efficiency and expand their capacity to support struggling teachers. At the same time, they maintain vigilant attention to the human heart of instructional leadership. The most promising path forward involves strategic, bounded AI use that honors both the potential of technology and the irreplaceable value of human relationships, contextual understanding, and professional wisdom. By approaching AI as a tool to augment rather than replace human expertise, educational leaders can harness technological innovation in service of the deeply human work of supporting teacher growth and improving student learning.

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