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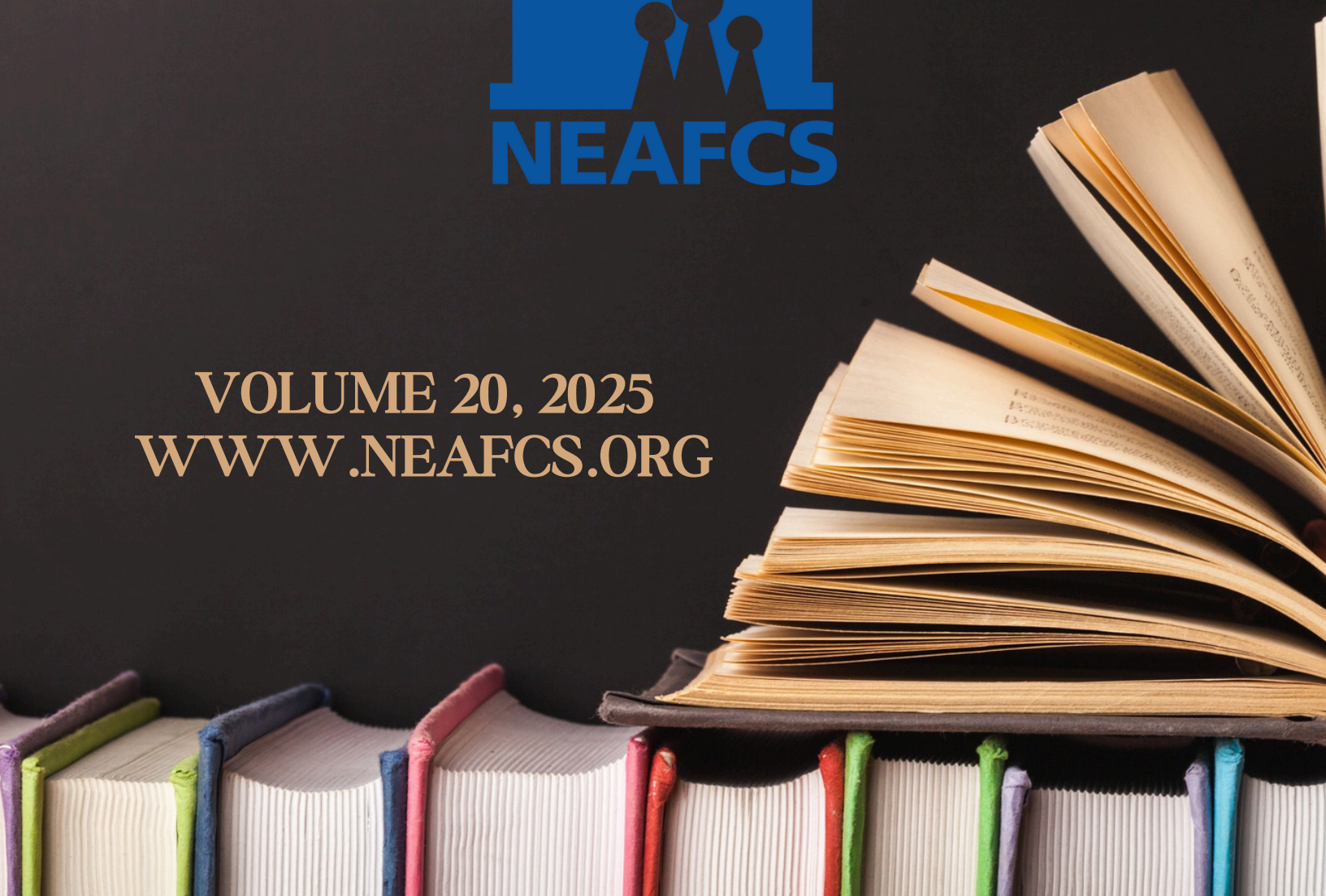

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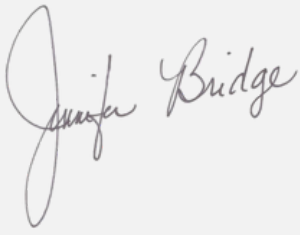
President's Message

On behalf of the 2024-25 NEAFCS Executive Board, the editors and the committee of the Journal of the National Extension Association of Family and Consumer Sciences (JNEAFCS), I am pleased to share the 2025 JNEAFCS. Through the dedication of our professional members, this refereed, research-based journal is one of our associations' leading resources and a benefit to all our members. The JNEAFCS highlights research, best practices, and implications for Extension Family and Consumer Sciences professionals. The journal serves as a great tool to help you stay current with programming, research and methodology that is specific to our learning and teaching environments.

As you read the 20th volume of JNEAFCS, you will be inspired by the work of your colleagues throughout the U.S. Each of us is engaged in a body of work, research, and impacts that could be shared with our members in the future. Please make one of your professional goals to submit an article for a future journal.

JNEAFCS, an online resource, can be shared as a link with a personal note to your administrators, local and state policymakers, advisory groups, and peers. By sharing our journal, you can help connect our efforts to the amazing impact we have across the nation. Extension work makes a difference, and no one tells our story better than us!

Thank You to our co-editors Ashley Dixon, University of Arizona Cooperative Extension and Rebecca Ackah of the University of Georgia Cooperative Extension for their dedication and hard work in creating this top-notch journal. We also extend our appreciation to the members of the journal committee, peer reviewers, contributors, and to our Vice President Troy Anthony Anderson. Because of their dedication and attention to detail we have an outstanding resource to help preserve our research and resources for the future!



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from the Editors

Dear Colleagues and Readers,

This issue is a special one for us. For the first time in more than five years, the journal has been published on schedule. This is a milestone that fills us with both pride and gratitude. The journey to this point has taken patience, persistence, and a community of dedicated colleagues who believed in what this journal could become.

Serving as your co-editors has been a privilege. Together, we have witnessed the journal grow into a space where new voices are welcomed, ideas are challenged, and scholarship is celebrated. As we, Ashley and Rebecca, retire from our roles on the journal committee, we look back with deep appreciation for the years of service and the many relationships this work has brought into our lives. These include, the relationship we have formed within the editorial committee and especially the relationship we have built with one another.

We could not have reached this moment without the extraordinary support of so many. To Troy Anderson, Vice President of Member Resources, for championing this work; to our Apprentice Staff, who reminded us of the joy of learning; to the Academic Integrity Officers, who guard the trust and standards of our profession; to the peer reviewers, who give generously of their time and expertise; and to the national office, whose steady support makes it all possible . . . Thank You. Most of all, thank you to the members past and present who shared this journey with us.

We leave our posts with hearts full of gratitude and confidence in the journal's bright future. It is our hope that it will continue to be a home for ideas that inspire, challenge, and shape the path ahead.

With warm regards,

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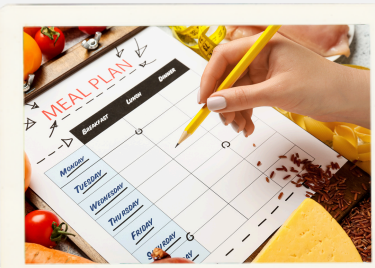

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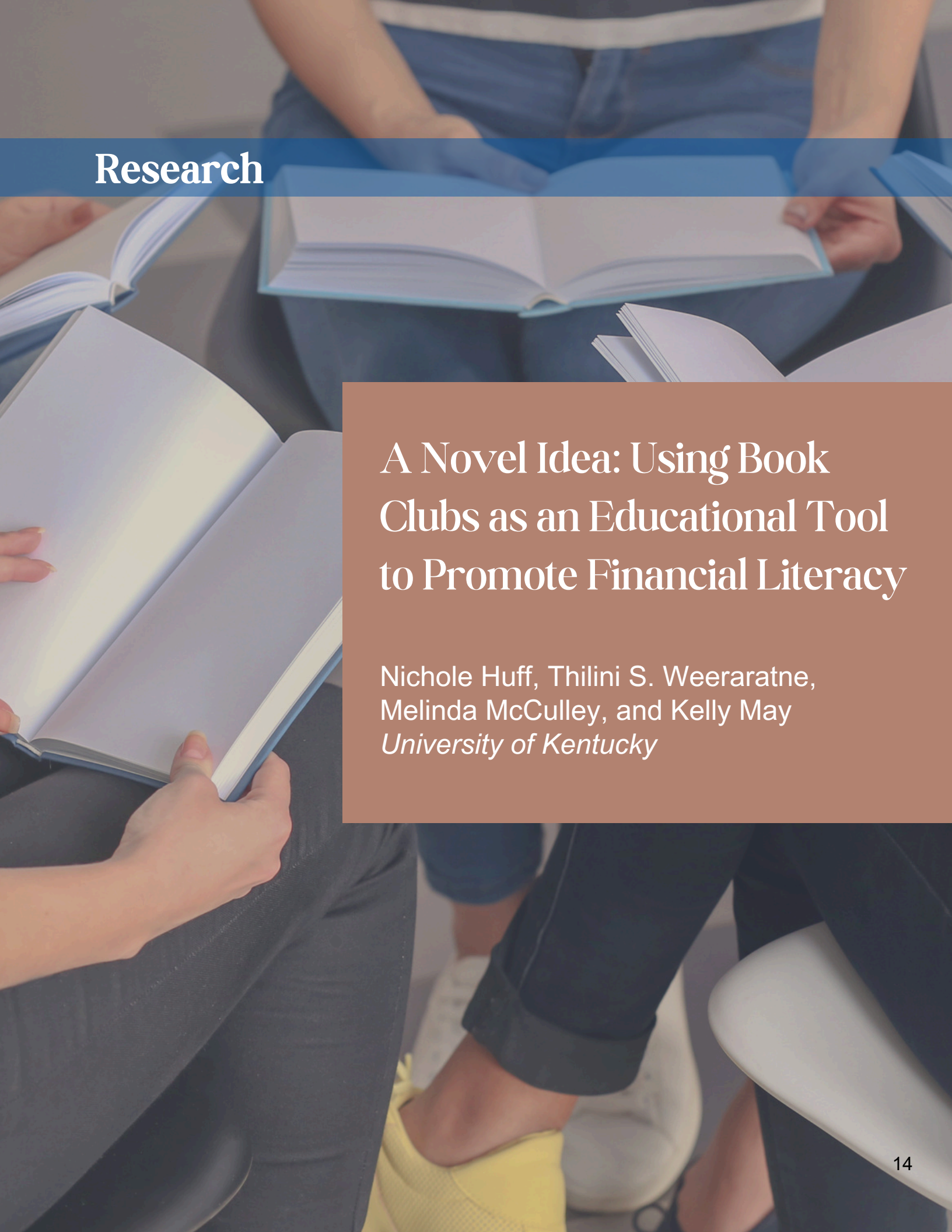

A Novel Idea: Using Book Clubs as an Educational Tool to Promote Financial Literacy

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University of Kentucky

Abstract

Finding novel ways to engage clients is challenging, especially when delivering online Extension education. This article discusses how a statewide Family and Consumer Sciences (FCS) Extension programming effort utilized an online book club to promote financial literacy. Three separate virtual book clubs were held on topics including retirement planning; identity theft and consumer protection; and the systemic impacts of poverty. Results suggest online book clubs can be an engaging, effective tool to promote financial literacy. Strategies for promoting online engagement, as well as implications for FCS professionals across content areas, are discussed.

Introduction

The complexity in day-to-day financial needs requires individuals to make various money-related decisions, from deciding on everyday purchases to planning for retirement. The pandemic and ensuing inflationary times have magnified the importance of financial literacy, emphasizing the need for emergency savings and a plan for unexpected financial events (Xu & Yao, 2022). As such, public awareness about the need for financial education has grown, evidenced by the increased availability of school- and community-based financial education programs (Smith et al., 2024). While many of these efforts target youth and young adults, there is less documented research about programs designed to improve adult financial literacy. To increase the appeal and accessibility of financial education, professionals have explored more innovative programming modalities, including the implementation of online platforms to disseminate knowledge (e.g., Downey et al., 2021; Huff et al., 2024).

Purpose

The purpose of this article is to evaluate the impact of three statewide virtual book clubs sponsored by the University of Kentucky FCS Extension Service, each focused on increasing various aspects of financial literacy through Extension education. Implications for FCS professionals, strategies for enhancing online program engagement, and suggestions for replicating similar programming efforts will be discussed.

Book Clubs as Learning Tools

Several disciplines have explored the potential of book clubs to enhance students' academic and social-emotional development in secondary education (e.g., Polleck, 2022; Randall & Marangell, 2020). The use of face-to-face and virtual book clubs in post-secondary and professional degree settings have also demonstrated promise in various fields such as business (Switzer & Barclay, 2012), public health (Rich, 2021), and medicine (Jordan et al., 2021), among others, as tools to improve students' critical thinking and reasoning skills, empathy, and the practical application of knowledge.

In adult learning settings, book clubs have been used effectively to promote employee wellbeing; develop professional skills within unique disciplines; and foster community-based outreach. For instance, Perumal et al. (2023) implemented book clubs as a morale booster within their Community Mental Health Team to enhance employees' social process of learning, improve employee satisfaction, and prevent employee burnout. Organizations that serve FCS professionals, like the National Extension Association of Family and Consumer Sciences (NEAFCS), have also utilized book clubs in recent years to promote networking and personal or professional growth. For example, in 2024 NEAFCS launched its first Leadership Book Club over Zoom, which focused on four pillars of leadership (Bridge, 2024).

Using book clubs as a conduit for learning in FCS Extension programming also has demonstrated impact among participants. For example, virtual book clubs have been used in FCS education to address nutrition misinformation (Norman-Burgdolf et al., 2024) and as a strategy to improve racial literacy (Stanton et al., 2023). Research by Stanton et al. (2023) support similar findings that suggest using book clubs in non-formal learning settings can facilitate critical thinking among participants, promote social connections, and enhance cultural change (Grenier et al., 2021).

The Big Blue Book Club (BBBC) began in 2021 as a statewide programming effort during the pandemic to enhance distance learning using an innovative delivery method. University of Kentucky Family and Consumer Sciences (FCS) Extension created the program in response to agent concerns about the general morale of local clientele who had been isolated during the pandemic. The program presented research-based FCS content that was responsive to community needs. After the first installment, evaluation data suggested the BBBC and its novel delivery methods resonated with clientele; thus, it has continued to be a regular component of state-supported FCS programming. To date, the BBBC has offered ten unique installments of its online book club that span the scope of FCS programming. Of the 10 selections, three have specifically pertained to financial education.

Background and Program Design

Conceptual Framework

To conceptualize the current study, the authors applied the *Webinar Evaluation Rubric for Extension Teaching* as the framework for evaluating the learning experiences provided through three financial installments of the BBBC (Matthes & Robideau, 2017; Robideau & Matthes, 2021). The rubric provides a conceptual and procedural tool for instructional design and learner-centered pedagogy designed to evaluate seven components of webinar teaching: (1) technology; (2) content; (3) organization; (4) delivery; (5) visual aids; (6) participant interaction; and (7) evaluation. See Table 1 for a detailed map of how the three book clubs were each assessed using this framework.

BBBC Book Club Design

To identify book club topics, FCS Specialists relied on statewide Kentucky Extension Service community needs assessments to highlight areas of specific need across the state (UKCES, 2019, 2023). Consistently, financial literacy skills were identified as key concerns. As such, three BBBC financial installments were collaboratively developed and led by state-level FCS Specialists for *Family Finance & Resource Management* and *Instructional Support* in 2021, 2022, and 2024. Specific book selections were chosen from recommendations offered by national Extension colleagues who also specialize in financial education. Each installment was held over a three-week period, with weekly one-hour live webinars hosted on Zoom. County Agents promoted and recruited locally for each series. The state FCS office provided 200-250 books at no cost to registered participants for each book club. Further, many county offices supplemented with additional free books for registered constituents, and the state's library system was notified of each selection so that the books could be available for checkout in local libraries.

Each book club was divided into three sections, with weekly reading guides emailed to participants ahead of the scheduled Zooms. During the live sessions, FCS Specialists presented educational content that emphasized learning concepts presented within the texts. Author interaction was employed as an engagement strategy during two of the three book clubs, with nominal honorariums offered for their time. (For more detailed explanations of the engagement strategies used across the BBBC, see Discussion Section and Table 1.)

Book Club One. The first financial literacy book club was held February/March 2021, with synchronous morning and evening sessions. Book Club One was not recorded or archived. It featured the book, *Flipping a Switch: Your Guide to Happiness and Financial Security in Later Life* (O'Neill, 2020), and kicked off during America Saves Week to highlight the importance of saving for retirement. The author, an Extension Professor Emerita, joined each of the six sessions to present material from the book as she engaged in live dialogue and question-and-answer (Q&A) with participants.

Book Club Two. The second financial literacy book club was held in April 2022 (Financial Literacy Month) featuring the book, *The Less People Know About Us: A Mystery of Betrayal, Family Secrets, and Stolen Identity* (Betz-Hamilton, 2019). The focus of Book Club Two was consumer protection, including identity theft and financial fraud. Each weekly live webinar was recorded and archived on YouTube for asynchronous

viewing. The author joined during Session Three for discussion and Q&A.

Book Club Three. The third financial literacy book club was held in April 2024, also beginning during America Saves Week. It featured the book, *Heartland: A Memoir of Working Hard and Being Broke in the Richest Country on Earth* (Smarsh, 2019). It examined community impacts of systemic poverty and included financial education focused on managing money and resources during tough financial times. It did not include any direct author participation due to speaker fee affordability. Live webinars were recorded and posted to YouTube.

Program attendees were invited via email to complete online evaluation surveys through Qualtrics XM after each series to measure progress towards learning objectives and intended behavior changes. Descriptive statistics and a snapshot of qualitative results for each book club are presented below.

Findings

Participation. Registration across the three book clubs averaged M = 481 registered participants per installment (total N = 1,444) with a low of 289 for Book Club One and a high of 604 for Book Club Three. In all, 738 unique participants representing 110 Kentucky counties (92%) and four states have been involved in some element of BBBC financial programming. See Table 2 for detailed registration and participation rates.

Book Club One. Participation ranged from 74-167 per week (M = 122). Post-program evaluation results (N = 71; 58% response rate of mean) indicated 93% of participants set a future financial goal as a result of the book club, such as: “work towards an actual retirement date,” “begin estate planning,” “review investment strategies,” “reduce expenses and set a budget,” “make an appointment with a financial advisor,” “increase retirement contributions,” and numerous others. Further, 86% of participants reported discussing the material with someone outside the book club, suggesting a social multiplier effect exists. Finally, 96% indicated they gained knowledge/skills about the topics presented and are likely to apply the knowledge/materials; 90% indicated they felt more confident in their general knowledge related to financial management in later life; and 96% could identify at least one new strategy to reduce expenses, manage money, or downsize in retirement. See Table 3 for a summary of evaluation data.

Qualitative responses suggested participants resonated with the information and that it helped retirement seem more financially attainable, as illustrated by this excerpt: *“Retirement has always felt so far into the future. I have always been a bit hesitant about looking at retiring since I am single and have no other income or significant other to fall back on. This book and the sessions have made me much more confident in even looking at retirement.”*

Book Club Two. Average live attendance across Book Club Two was M = 80.33 (SD = 15.95), with an additional 92 average asynchronous views per session. Weekly session evaluations were used in Book Club Two to gauge participants’ experience with the interactive teaching tool Mentimeter (see Huff et al., 2024, for summary of results). Post-program evaluation results collected after the final session (N = 63; 79% response rate of mean) — which assessed progress towards learning objectives — indicated 98% of participants found the topics useful; 95% indicated they gained new knowledge/skills and are likely to apply the material/knowledge gained; 92% reported that they plan to take steps to better protect themself from fraud and identity theft; and 87% plan to check their credit report as a result of participating in the program. Further, 89% discussed the material with someone outside of the BBBC. See Table 4 for an evaluation summary.

Captured qualitative feedback reiterated the importance of the topic: “*Familial identity theft is a problem in all age brackets. We tend to think of elderly people being targeted but this proves anyone can be at risk.” “Fraud is so common. We must be vigilant so that we don't become victims.” “I liked getting information on how to check credit and protect self in the future.” “Identity theft and fraud are not entirely in our control to prevent, but there are steps we can take to minimize our risk.”*

Book Club Three. Average live attendance across Book Club Three was M = 75.67 (SD = 17.70), with an additional 114 average recorded views per session. Post-program evaluation results (N = 77; 103% response

rate of mean) indicated 91% of participants better understand that money is only one source of capital that contributes to overall financial well-being; 73% felt more confident that they can identify ways to break generational financial patterns; and 68% felt more confident making wise financial choices. Finally, 77% reported discussing the material with someone outside of book club and 72% planned to share the book with someone they know — again suggesting a social multiplier effect may exist from participation in a financial literacy book club. See Table 5 for a summary of evaluation data.

Qualitative themes noted the relatability of the book, which at times was emotionally difficult for participants as it paralleled experiences growing up in rural areas including the historically impoverished Appalachia regions of Kentucky. When asked how their perception of financial well-being changed after Book Club Three, responses spoke to the power of resiliency and building varying forms of capital in addition to financial means (e.g., human and social capital). While several participants expressed positive sentiments *(e.g., "It was really an eye-opening book. Thank you so much for sharing the book with us.")*, others found it the most challenging of the three financial book clubs. For example: *"It hit home. I grew up that way. Everyone working but very difficult to get ahead financially." "My ability to identify with the issues faced by the main character as being similar to the plight of those living in Eastern Kentucky." "This book was difficult to read due to bringing back memories." "This was definitely a hard read. But it gave me more compassion and empathy for those who struggle financially."*

Limitations

While the presented results demonstrate the efficacy of online book clubs to promote financial literacy skills in Extension education, there are limitations to the study. First, the installments and subsequent evaluations were not identical in design or implementation. As detailed in Table 1, engagement strategies and instructional design evolved based on lessons learned and participant feedback across the BBBC series. Second, while all participants were invited to complete the program evaluation, it was voluntary. Collecting program evaluation across a series of online sessions can be challenging. For example, is it better to gauge feedback after each session, after the series, or both? How should educators account for attrition in attendance and/or response rates, especially when protecting respondents' anonymity (e.g., matched evaluation/survey data)? Third, numbers declined from registration to program attendance to evaluation response rates. While there are probable explanations (e.g., inflated registration rates as people hope to obtain one of the free books offered to the first 200-250 participants; selecting a time that works for most participants, especially in a state like Kentucky where constituents are split between Eastern and Central Time Zones; gathering evaluation data from participants who watched asynchronously or who did not attend all sessions), further research is needed when considering future program design and evaluation methods.

Discussion

Research suggests webinar-based Extension education can significantly increase participants' financial knowledge and promote positive financial behaviors (Johnson & Schumacher, 2016). As demonstrated through this study, using a webinar-based online book club also can be an effective and novel tool to promote financial literacy through Extension education. The continued success of the BBBC is due, in part, to the team's intentional consideration of online engagement. The suggestions below offer implications and lessons learned for other professionals, regardless of FCS content area, when considering the implementation of similar programming.

Fostering Online Engagement

Email. Two weeks before the start of each installment, participants were emailed a reading guide that (1) highlighted the topics planned for weekly discussion and (2) overviewed various ways to join the conversation synchronously or asynchronously (e.g., Zoom, YouTube, Facebook). After each session, participants received follow-up information that included Extension resources to supplement the content, as well as information on accessing session recordings (for Book Clubs Two and Three).

Social Media. The BBBC created a Facebook group for program participants to extend learning beyond one-hour sessions, offering additional opportunities to engage with Specialists and peers throughout each series. Participants have noted that this online community has fostered virtual relationships across the state and between counties, thus realizing one of the original pandemic-era goals of the book club (i.e., to enhance feelings of connectedness).

Technology. As the BBBC has evolved, Specialists have explored novel methods of engaging participants during weekly book clubs. For example, the online audience response system, Mentimeter, was used intermittently throughout the second and third financial installments to promote online user engagement (Huff et al., 2024), and in other BBBC series (e.g., nutrition; Norman-Burgdolf et al., 2024). Other approaches have included embedded Zoom features, such as chat, Q&A, and live polling.

Hybrid Modalities. Many counties offered in-person viewing options for Book Clubs Two and Three using "watch party" formats. The state program was streamed virtually, while agents were in person with local attendees to foster additional discussion afterwards in smaller settings. This approach has strengthened BBBC effectiveness, fostered a greater sense of community, and introduced new users to Extension offices and local resources. As one county FCS Agent noted after Book Club Three, *"[We] had the best time with this Big Blue Book Club; the watch party component was an awesome addition! We enjoyed conversation with each other after each Zoom webinar ended and the group formed a great friendship over the three weeks."* This modality leverages the subject matter expertise of State FCS Specialists and the accessibility/personability of County FCS Agents (i.e., "high tech, high touch").

Conclusion

Confidence in the validity of the BBBC's program delivery method is generated by the high retention rate of participants. Throughout five years of collective BBBC programming (regardless of FCS topic), nearly 300 participants have returned for every installment in some capacity. As one participant shared after Book Club Two, "*It was my first time participating in any book club. I really enjoyed the book, participating with a group, and the way the Zoom was presented. I plan to do another one."* By selecting books focused on varying financial literacy concepts, we provided direct, relatable programming that addressed community-identified concerns in an approachable manner. As demonstrated by the impact of the BBBC, this innovative programming method can be used across FCS content areas (e.g., nutrition, parenting, mental health, financial literacy) as it tackles timely interests of local communities. This "novel" delivery method can be translated across Extension program areas and in other regions and states.

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Tables

Table 1. Mapping Online Financial Book Clubs Using the "Webinar Evaluation Rubric for Extension Teaching" (Robideau & Matthes, 2021).

Component	Description of Webinar Teaching Component	Book Club 1	Book Club 2	Book Club 3
Technology	Overviews webinar tools for participants, frees the teaching environment from distractions, and provides clear instructions on how to access supplemental materials. Materials are accessible to all.	-Welcome email, reading guide and links to join live sessions -Weekly emails sent with supplemental materials -Live ASL interpreter during sessions, in addition to platform captioning options	-Same as Book Club 1 -Participants asked to have personal computing device (e.g., PC, smart phone, tablet) for optional in-session polling -Mentimeter instructions provided at session start -Links to recordings provided	-Followed Book Clubs 1 & 2
Content	Presenters are introduced by providing credentials relative to the content, and the webinar information shared matches the clearly defined objectives.	-Presenters introduced at the beginning of each session -Session objectives defined at beginning of each webinar	-Followed Book Club 1 Format	-Followed Book Clubs 1 & 2
Organization	Webinar follows a defined outline; content is chunked into small segments; presentation stays on task.	-Outlines defined and followed -Concepts presented in absorbable chunks	-Followed Book Club 1 Format -Mentimeter used to reinforce learning objects/enhance flow	-Followed Book Clubs 1 & 2
Delivery	Variety of presentation methods used throughout webinar; presenter provides time for participants to reflect/absorb content; transitions are smooth.	-Author presented all content -Readings/content divided into three manageable sessions	-Author joined for last session -Readings/content divided into three manageable sessions	-Team of Specialists used to vary presentation of content -Readings/content divided into three manageable sessions
Visual Aids	Text used to emphasize information. Presenters scaffold information. Variety of relevant visuals used to enhance understanding/maintain focus.	-Presenter designed slides to emphasize information -Graphics & imagery used -Concepts scaffolded	-Followed Book Club 1 Format -Added use of Mentimeter to promote audience attention and understanding	-Followed Book Clubs 1 & 2
Participant Interaction	Presenters use active learning approaches; clearly communicates participation/interaction expectations; provides opportunities to ask questions.	-Discussion prompts used -Q&A and chat pods used -Dedicated time(s) of Q&A	-Followed Book Club 1 Format -Added use of Mentimeter to boost participant interaction	-Followed Book Clubs 1 & 2
Evaluation	Participant experience is evaluated to assess the quality of webinar & content.	-Evaluation survey offered after webinar series	-Evaluations offered weekly (to also assess Mentimeter use)	-Evaluation survey offered after webinar series

Table 2. Online Financial Book Club Registration and Participation Rates

Book Club Installment	Registered Participants	New Participants	Total Live Attendees	Total Recorded Views
	N	*n (%)*	*N*	*N*
Book Club 1: 2021	289	120 (42%)	282	-
Book Club 2: 2022	551	378 (69%)	241	513
Book Club 3: 2024	604	370 (61%)	227	174

Tables

Table 3. Summary of Post-program Evaluation Results After Participation in Book Club One

Evaluation Statement	*N*	Yes/ Agreed	Neutral/ Maybe	No/ Disagreed
I gained knowledge/skills about the topics presented.	69	96%	4%	0%
I am likely to apply the material/knowledge gained.	69	96%	4%	0%
I feel more confident in my general knowledge related to financial management in later life.	68	90%	7%	3%
I feel confident in my ability to set future financial goals.	69	87%	9%	4%
I can identify at least one new strategy to reduce expenses, manage money, or downsize in retirement.	69	96%	3%	1%
I can identify at least one new strategy to protect myself from fraud in retirement.	69	93%	4%	3%
I discussed the reading material with someone outside of the webinars or Facebook group.	69	86%	7%	7%

Note. *N* = Total responses per statement, which may vary across the evaluation.

Table 4. Summary of Post-program Evaluation Results After Participation in Book Club Two

Evaluation Statement	*N*	Yes/ Agreed	Neutral/ Maybe	No/ Disagreed
I gained knowledge/skills about the topics presented.	61	95%	5%	0%
I am likely to apply the skills/knowledge gained.	63	95%	5%	0%
I feel more confident in my general knowledge related to financial management.	60	80%	15%	5%
I feel confident in my ability to spot signs of identity theft and fraud.	60	75%	13%	12%
I found the topic “Identity Theft and Consumer Protection” useful.	62	98%	2%	0%
I understand factors to consider when using credit wisely.	60	85%	7%	8%
I plan to check my credit report.	60	87%	13%	0%
I plan to take steps to better protect myself from fraud and identity theft.	60	92%	8%	0%
I discussed the reading or topic with someone outside of the book club.	61	89%	3%	8%

Note. *N* = Responses per statement, which may vary across the evaluation.

Tables

Table 5. Summary of Post-program Evaluation Results After Participation in Book Club Three

Evaluation Statement	*N*	Yes/ Agreed	Neutral/ Maybe	No/ Disagreed
I gained knowledge/skills about the topics presented.	75	64%	29%	7%
I feel more confident in my ability to recognize unhealthy generational patterns.	73	77%	21%	3%
I feel more confident that I can identify ways to break generational financial patterns.	75	73%	24%	3%
I better understand that finances are only one source of capital that contribute to overall financial well-being.	74	91%	8%	1%
I feel more confident in my ability to make wise financial choices for myself.	74	68%	31%	1%
I plan to share the book with someone I know.	76	72%	24%	4%
I discussed the reading or topic with someone outside of the book club.	75	77%	9%	13%

Note. *N* = Responses per statement, which may vary across the evaluation.

Consumer Perceptions of the Health Benefits of Sweet Corn

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Abstract

Promoting vegetable intake, including starchy vegetables, is a step towards health-enhancing plant-based dietary patterns and the reduction of chronic disease. This study explored consumer perceptions of sweet corn and purchasing behaviors. A nationally representative sample (n=1502) reported positive perceptions of sweet corn; most agreed that sweet corn promotes overall health and well-being and may reduce the risk of chronic disease. However, fewer than 50% of consumers were aware that sweet corn contains zeaxanthin and lutein, carotenoids that support eye and cognitive health. There is an opportunity to promote the health benefits of sweet corn and thereby support vegetable consumption.

Introduction

Plant-based dietary patterns emphasizing vegetables, fruits, whole-grain cereals, legumes, and nuts are recommended for the prevention of chronic disease (USDA & USDHHS, 2020). However, the obesogenic, inflammatory American dietary pattern, laden with animal-sourced and ultra-processed foods, continues to prevail. The intake of vegetables by the American population is particularly poor, with 90% falling below recommendations (USDA & USDHHS, 2020). Surprisingly, this deficit also includes starchy vegetables, such as sweet corn, even though the recommended intake of this vegetable subgroup is only 5 cups a week compared to 2½ cups per day for total vegetables in a 2000 kcal Healthy US-Style Dietary Pattern (USDA & USDHHS, 2020). There is a pressing need for Family and Consumer Sciences (FCS) Extension programming to promote and support increased vegetable intake, including starchy vegetables.

In recent years, FCS nutrition educators may have become cautious about the promotion of starchy vegetables due to the pervasive consumption of fried potatoes (fries) and potato chips, but possibly also the lack of awareness of the nutrient density, bioactive components, and potential to improve diet quality by consuming starchy vegetables (Agarwal & Fulgoni III, 2021). Sweet corn, for example, at only 86 kcal for a medium cob, provides 3 g of protein, 2 g of dietary fiber, and a significant source of potassium at 270 mg (USDA, 2023), a short-fall nutrient critical for the prevention and management of hypertension (Chia et al., 2025). Perhaps more importantly, sweet corn is a source of zeaxanthin and lutein (USDA, 2023), carotenoids critical to eye health and the prevention of age-related macular degeneration (Mrowicka et al., 2022). Additionally, lutein and zeaxanthin are unique xanthophyll carotenoids taken up by the brain. Higher blood levels of these carotenoids are associated with better cognitive function, memory, and executive function (Feeney et al., 2017) and are inversely related to the risk of Alzheimer's disease (Qu et al., 2021). Corn is one of the few concentrated food sources of zeaxanthin (Eisenhauer et al., 2017) and is the main dietary source in the U.S. diet (Perry et al., 2009).

In U.S. dietary recommendations, sweet corn has traditionally been characterized by its carbohydrate content compared to most other vegetables, with little emphasis on its overall nutrient and bioactive contents or its whole-grain botanical classification. A recent assessment of foods using nutrient profiling models recommended that sweet corn and other starchy vegetables be reassigned to a "higher quality" carbohydrate food category for dietary guidance, the same designation given to non-starchy vegetables, legumes, whole fruits, and whole grains (Drewnowski et al., 2022). Additionally, the glycemic index of whole sweet corn, a numerical scale comparing blood glucose response to a carbohydrate-containing food, is lower than many breads and cereals typically consumed in North America (Atkinson et al., 2021). Similar to diets high in fiber and whole grains, diets of lower glycemic index may have positive effects on chronic disease-related health outcomes (Jenkins et al., 2024). The prudent inclusion of starchy vegetables, such as sweet corn, into one's dietary pattern may enhance diet quality by increasing total vegetable intake. Perhaps most importantly, sweet corn consumption may improve the dietary intake of bioactive carotenoids required for eye and brain health.

The typical inflammatory American diet is associated with a plethora of adverse health outcomes, including type 2 diabetes,

cardiovascular disease, and all-cause mortality (Yuan et al., 2022). Commonly consumed ultra-processed foods, specifically, are associated with common mental disorders such as anxiety and depression (Lane et al., 2024; Pagliai et al., 2021) as well as dementia (Henney et al., 2024). A shift to consuming more whole and minimally processed foods, such as sweet corn (da Silva Oliveira & Silva-Amparo, 2018), is needed. However, the per capita intake of sweet corn, traditionally considered a staple vegetable in the US, is on the decline (Shahbandeh, 2024), and little recent research has examined sweet corn purchasing behaviors of consumers (Johnson et al., 2024). To determine possible contributors to this decline and inform educational programming to promote vegetable consumption, this study sought to explore consumer perceptions of sweet corn, with a focus on perceived health benefits and purchasing behaviors.

Objective

Current popular diet trends promote high protein (Ko et al., 2020), and cohort studies of U.S. adults reflect this trend, showing increasing dietary energy from protein and fat and decreasing energy from carbohydrates (Gu et al., 2024; Shan et al., 2019). Given this environment, we hypothesized that many consumers would have negative perceptions of the health effects of sweet corn, particularly related to its carbohydrate content. Furthermore, we hypothesized that most consumers would be unaware of the potential health benefits of the bioactive carotenoid contents of sweet corn. The primary aim of this study was to explore the consumer perceptions of the health benefits of consuming sweet corn. Additionally, various aspects of sweet corn purchasing behaviors, preferences, and past experiences with sweet corn quality were explored to gain insight into other potential factors that may be contributing to declining intake.

Methods

A survey of consumer perceptions of sweet corn was developed. In part one of the survey, 13 items focused on perceived health benefits using the following scale: strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, and strongly disagree, which were balanced answer options to reduce bias (Table 1). Items on health benefits were positive statements based on the current health research, discussed above, and explored consumers' perceptions on whether sweet corn contributes to overall health and well-being, glycemic control, and reduced risk of cardiovascular disease. Additionally, items on lutein and zeaxanthin content and eye health, vitamins and mineral provision, anti-inflammatory properties, dietary fiber and digestive health, and energy and weight management were included. Consumer perceptions of the nutrient contents of frozen and canned versus fresh on the cob were also queried. Part two of the survey focused on sweet corn consumption patterns, quality characteristics of sweet corn on the cob, and sweet corn purchasing preferences and experiences. These items were developed in consultation with a multi-state team of sweet corn research scientists and industry representatives to ensure content validity. Following pilot testing in August 2024, an anonymous nationally represented sample of the U.S. population across gender, race, ethnicity, age, and region was administered by Qualtrics^{XM} Research Services, which controlled for social desirability and sampling biases. Surveys flagged for response pattern bias were excluded. The survey was approved as exempt by the University of Florida's Research Division of Research Operations on June 6, 2024 (Protocol#: ET00041543).

Results

Data was collected from August – September 2024. The demographics of the study population are presented in Table 2. Respondents equally represented the four regions of the United States, Midwest (n = 378; 25%), Northeast (n = 374; 25%), South (n = 375; 25%), and West (n = 375; 25%). For the consumer perceptions of the health benefits of sweet corn, responses to the Likert-like scale, from strongly agree to strongly disagree, are presented in Table 1. Regarding health benefits, most (64%) agreed (sum of strongly agree and somewhat agree) that sweet corn promotes overall health and well-being, and 60% said that consuming sweet corn regularly contributes positively to overall health. A majority (61%) agreed that consuming sweet corn, with its

lower glycemic index than many breads and cereals, may help manage blood glucose levels. A total of 72% of the respondents agreed that sweet corn provides essential vitamins and minerals. Most respondents (57%) agreed that sweet corn contains antioxidants, which may help to reduce the risk of cardiovascular disease. Fifty-one percent agreed that sweet corn contains phytonutrients with potential anti-inflammatory properties, but only 47% agreed that sweet corn contains lutein and zeaxanthin, which support eye health. Many respondents (73%) agreed that sweet corn is a good source of dietary fiber, which helps to support digestive health and regularity. In terms of energy and weight management, 65% of respondents agreed that sweet corn provides energy for physical activity and overall vitality. Additionally, 54% agreed that consuming sweet corn may support healthy weight management, while 11% somewhat or strongly disagreed with this statement. Regarding whether consuming sweet corn may help reduce the risk of cognitive decline, 50% of respondents selected “neither agree nor disagree,” and 12% disagreed (somewhat or strongly disagreed) with this statement. Finally, 55% agreed that frozen sweet corn provides similar nutritional and health benefits as fresh corn, while 44% agreed that canned sweet corn provides similar benefits.

Regarding the findings on sweet corn consumption patterns, quality characteristics, and purchasing preferences and experiences, most respondents (66%) reported they ate sweet corn at least 2-3 times a month, with 7% reporting an intake of 3 or more times per week. Conversely, 18% of respondents who reported “never” or “once or twice a year” for sweet corn consumption were directed to an item querying some reasons people may choose not to eat sweet corn (fresh, frozen, or canned). Table 3 shows the responses of this subsample of 263 respondents who do not typically eat sweet corn. Personal taste preferences, followed by availability of fresh sweet corn and digestive issues, were the most frequently noted reasons for not consuming sweet corn.

Ten questions were specifically focused on fresh corn on the cob. In response to “What influences your decision to buy fresh sweet corn on the cob?” freshness (75%), taste (62%), price (55%), and availability (52%) were noted by most consumers, with appearance (47%) and nutritional value (30%) less often influencing their decision to purchase sweet corn on the cob. Most (68%) agreed that the quality of sweet corn on the cob at their grocery store was consistently high and maintained its quality after purchase (81%). As an indicator of sustainability, 79% prefer corn on the cob in husk rather than packaged in plastic wrap (tray packs), and 91% indicated they eat fresh sweet corn on the cob when it is in season. Most respondents indicated buying fresh sweet corn on the cob from the grocery store, although some commented that they sourced it from their personal garden, family, friends, or directly from a farm. A total of 78% were ‘somewhat’ or ‘definitely’ more likely to buy locally sourced or organic sweet corn. Only 35% indicated that they had ever eaten raw (uncooked) sweet corn, and of those that had not, noted reasons such as: “Never thought about eating raw corn,” “I do not think it would taste good,” “It seems like it would be too hard,” “Not good for you to eat raw,” and “Not appealing.” Finally, the quality of sweet corn on the cob was queried by providing a list of concerns consumers may have experienced. The most frequent quality problems noted were lack of sweetness and flavor, and kernel issues, such as dry and shriveled (see Table 4). A radar chart in Figure 1 depicts the qualities of sweet corn on the cob important to survey respondents on a scale from 0 (not important) to 10 (very important). In brief, eight qualities of sweet corn on the cob were ranked with a mean of 7.4 or higher out of 10.

The prices of fresh, canned, and frozen sweet corn were considered budget-friendly by 81%, 78%, and 76% of respondents, respectively. Of those that typically ate sweet corn, 82% of survey respondents, 78% were either ‘very likely’ or ‘somewhat likely’ to purchase sweet corn during their next grocery trip. Notably, 73% planned to incorporate sweet corn (canned, frozen, or corn on the cob) into their meals in the upcoming week.

Discussion

Survey respondents, representative of the U.S. adult population, reported positive perceptions of the health benefits of sweet corn, including many agreeing with sweet corn’s role in managing blood glucose and supporting healthy weight management, health outcomes that require confirmatory health research. Phrasing of the health items may have contributed to bias by leading

responders toward positive responses. Future studies could be structured with more neutral language and query potential concerns. We hypothesized that consumers might harbor negative perceptions of sweet corn due to its carbohydrate content, given popular diet trends for high-protein and low-carbohydrate foods. In general, this hypothesis was not supported by the findings. For those respondents who typically did not eat sweet corn, just 16% indicated high carbohydrate content, and 17%, high sugar content. Additionally, only 5% selected “high glycemic index” as a reason not to eat corn, which is in line with studies that show sweet corn has no more than a medium glycemic index (Atkinson et al., 2021).

Our second hypothesis focused on whether consumers would be unaware of the health benefits of the bioactive constituents of sweet corn. Over 50% agreed that sweet corn contains phytonutrients with potential anti-inflammatory properties and that sweet corn contains antioxidants, which may help to reduce the risk of cardiovascular disease, findings that did not directly support our hypothesis. However, in alignment with our hypothesis, less than 50% of respondents agreed that sweet corn contains lutein and zeaxanthin, which support eye health. Additionally, most respondents were unsure or disagreed that consuming sweet corn may help reduce the risk of cognitive decline, a risk associated with blood levels of lutein and zeaxanthin (Wang et al., 2023). Although there is convincing evidence for lutein intake and the prevention of degenerative eye disease (Mrowicka et al., 2022), only associations with dietary patterns higher in lutein and zeaxanthin (Holthaus et al., 2024) and brain health are currently supported by research evidence (van Soest et al., 2024). Interventional dietary studies, including sweet corn, are needed to provide direct evidence of brain health benefits. Although corn is the main source of zeaxanthin in the U.S. diet (Perry et al., 2009), important to neurological health (Agarwal et al., 2022; Qu et al., 2021), it is not currently recognized as a key component of the Mediterranean-DASH Intervention for Neurodegenerative Delay (MIND) dietary pattern (Marcason, 2015) associated with cognitive health (van Soest et al., 2024). The MIND diet screener, a 15-item tool used to quickly assess adherence to the MIND dietary pattern, lists broccoli, carrots, peas, onions, green/red peppers, celery, string beans, tomatoes, yams, squash, and eggplant as other types of vegetables but not sweet corn (Marcason et al., 2015). The present study provides evidence that most consumers eat sweet corn and have positive perceptions of its health benefits; thus, its inclusion into the MIND dietary pattern should be considered. Consuming sweet corn more often may increase carotenoid intakes and support brain health; however, confirmatory research is needed.

Of the representative sample of the U.S. population, most respondents noted sweet corn to be budget-friendly and confirmed that they buy and eat sweet corn, but perhaps not often enough. The results of this study identify key points for food and nutrition Extension programming. First, consumers have positive perceptions of the health benefits of sweet corn, and therefore, there is an opportunity for FCS educators to promote sweet corn consumption and thereby increase vegetable intake, supporting diet quality and wellness. Although research is needed to confirm sweet corn’s specific contributions to overall health, there is currently no known research showing that the consumption of sweet corn contributes to any cardiometabolic harm (Dahl &Gerstenfeld, 2024). Given its dietary fiber, nutrient, and carotenoid contents and less processed nature, consumption is expected to support health, particularly as a ‘whole grain’ substitute for refined grains. Second, survey responses suggested that many consumers perceive that frozen and canned corn do not provide the nutritional and health benefits of fresh sweet corn. It is possible that this misconception extends to other frozen and canned vegetables. Although many canned vegetables, including sweet corn, have added sodium – a nutrient of concern, low and no-added-sodium brands are readily available. Education is needed to inform consumers of the healthfulness of minimally processed sweet corn and other vegetables, especially budget-friendly, shelf-stable, convenient alternatives for when fresh options are limited.

In conclusion, unprocessed and minimally processed plant foods, such as sweet corn, are recommended to support chronic disease risk reduction (USDA & USHHS, 2020). This, in combination with its nutrient and bioactive contents, supports sweet corn as a healthful food compared to the many ultra-processed foods made from milled field corn. The present study provides evidence that the

average consumer has favorable perceptions of the health benefits of sweet corn, but many are not aware of the specific health benefits of the carotenoids and their unique connections with eye and brain degenerative diseases. Overall, the findings suggest that there may be an opportunity to educate on the health benefits of xanthophyll carotenoids and other bioactive components of sweet corn.

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Tables

Table 1.

Consumer perceptions of the health benefits of sweet corn.

Survey Item	Strongly Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Strongly Disagree
Consuming sweet corn as part of a balanced diet promotes overall health and well-being.	26%	38%	26%	8%	3%
Consuming sweet corn regularly contributes positively to overall health.	20%	40%	28%	10%	3%
Consuming sweet corn, with its lower glycemic index than many breads and cereals, may help manage blood glucose levels.	20%	41%	32%	5%	2%
Sweet corn provides essential vitamins and minerals.	29%	43%	20%	6%	2%
Sweet corn contains antioxidants, which may help reduce the risk of cardiovascular disease.	22%	35%	35%	6%	3%
Sweet corn contains phytonutrients with potential anti-inflammatory properties.	17%	34%	42%	5%	2%
Sweet corn contains lutein and zeaxanthin, which support eye health.	18%	29%	45%	6%	2%
Sweet corn is a good source of dietary fiber, which helps to promote digestive health and regularity.	33%	40%	20%	5%	2%
Sweet corn provides energy for physical activity and overall vitality.	25%	40%	27%	7%	2%
Consuming sweet corn may support healthy weight management.	20%	34%	35%	9%	2%
Consuming sweet corn may help reduce the risk of cognitive decline.	15%	24%	50%	9%	3%
Frozen sweet corn provides similar nutritional and health benefits as fresh corn on the cob.	21%	34%	26%	15%	4%
Canned sweet corn provides similar nutritional and health benefits as fresh corn on the cob.	14%	30%	29%	21%	6%

Total respondents n=1502

Tables

Table 2.

Demographic characteristics of survey respondents.

Characteristics	Respondents (n = 1502)
Gender, n (%)	
Male	751 (50%)
Female	750 (50%)
Other	1 (<1%)
Age, n (%)	
18–27	305 (20%)
28–43	301 (20%)
44–59	300 (20%)
60–69	339 (23%)
70 – 78	200 (13%)
79 – 96	57 (4%)
Race, n (%)	
American Indian or Alaska Native	35 (2%)
Asian	72 (5%)
Black or African American	231 (15%)
Native Hawaiian or Pacific Islander	7 (<1%)
White	1157 (77%)
Other	48 (3%)
None of the above	12 (<1%)

Characteristics	Respondents (n = 1502)
Ethnicity, n (%)	
Hispanic or Latino	164 (11%)
Not Hispanic or Latino	1338 (89%)
Region of United States	
Midwest	378 (25%)
Northeast	374 (25%)
South	375 (25%)
West	375 (25%)

Tables

Table 3.

Responses to the survey item "The following are some reasons people may choose not to eat sweet corn (fresh, frozen, or canned). Why don't you like or buy sweet corn?"

Reasons	Responses (n = 263)
Personal taste preferences	76 (29%)
Availability of fresh sweet corn	63 (24%)
Digestive issues	61 (23%)
Other	50 (19%)
High sugar content	45 (17%)
Dietary restrictions	42 (16%)
High carbohydrate content	42 (16%)
Cost	33 (13%)
Concerns about GMOs	21 (8%)
Low protein content	19 (7%)
Low nutrient density	15 (6%)
Allergies	15 (6%)
High glycemic index	14 (5%)
Environmental concerns	11 (4%)
Caloric density	10 (4%)

Tables

Table 4.

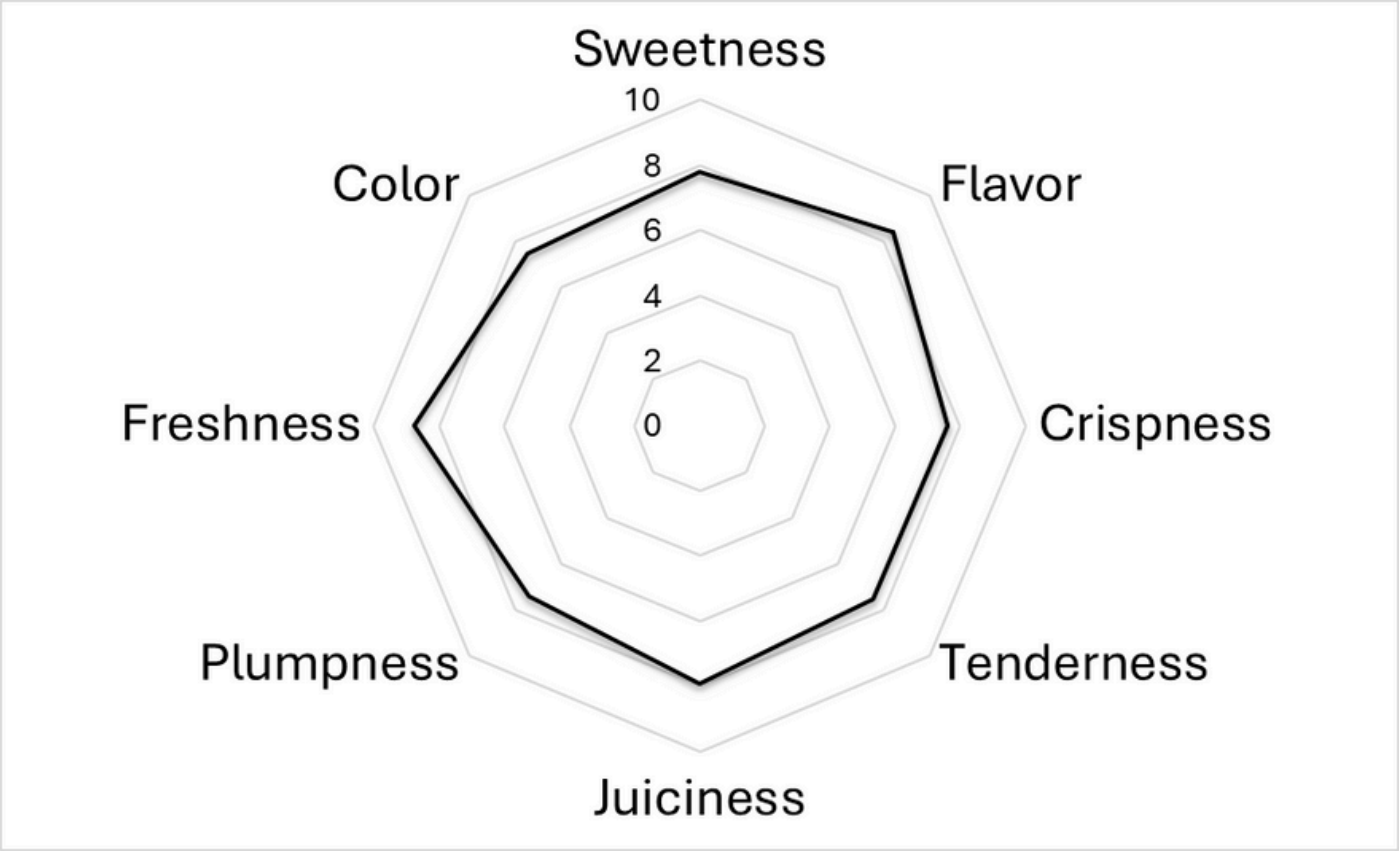
Responses to the survey item, "The quality of sweet corn on the cob can be affected by many factors, such as storage. Which, if any, quality concerns have you experienced?"

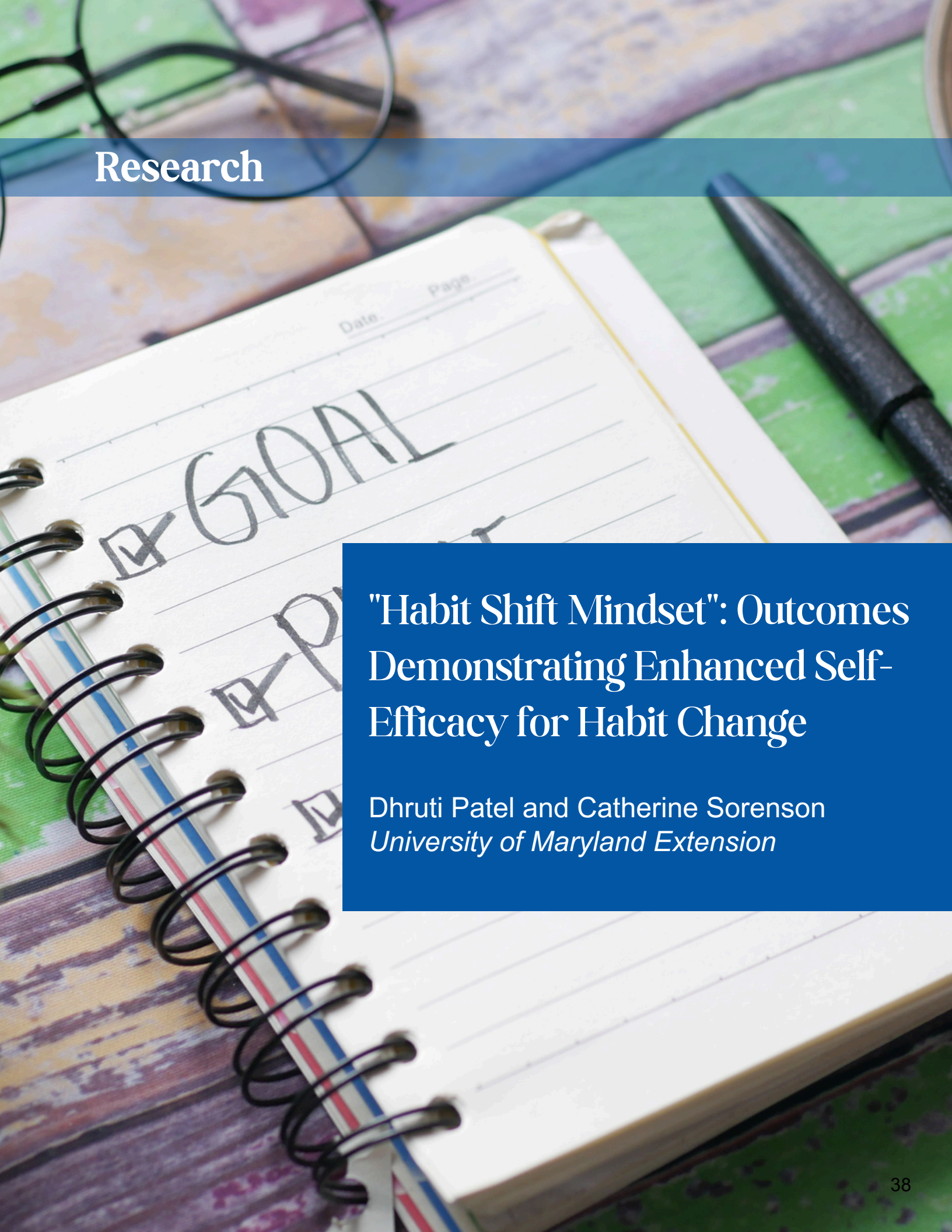
Quality concerns	Responses (n = 1498)
Lack of sweetness	642 (43%)
Dry or shriveled kernels	573 (38%)
Loss of flavor	572 (38%)
Tough or chewy kernels	562 (38%)
Loss of crispness	421 (28%)
Overly starchy or mealy texture	328 (22%)
Worm or insect damage	326 (22%)
Inconsistent kernel size	295 (20%)
Mold or rot	234 (16%)
Other	141 (9%)

Figures

Figure 1.

Sensory qualities of sweet corn on the cob that were important to consumers. The data point's distance from the center represents the value for each variable on a scale from 0 = not important, 10 = very important.





"Habit Shift Mindset": Outcomes Demonstrating Enhanced Self-Efficacy for Habit Change

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Abstract

The Habit Shift Mindset (HSM) program was developed in response to Extension programs' observed habit-based content deficit. The program uses a habit-based approach in modeling behavior change. This study demonstrates the efficacy of HSM's program framework, use of social cognitive theory, methodology, and outcomes. The program outcomes with paired Wilcoxon Signed Rank test showed statistical significance with a large effect size in habit self-efficacy (SE), habit management, goal adherence, resource allocation, implementation of learned strategies, barrier anticipation, and solution-seeking. The study also showed larger effect sizes in the pre- and post-intervention SE scores of r=0.59.

Introduction

Habits are ingrained human phenomena grounded in our neurobiology and psychology. Wood and colleagues (2002) quantified that about half of daily behaviors are automated and habitual. Since then, many habit researchers have found a clear sequential association between stimulus and response, even when unaware (Wood et al., 2002; Weiden et al., 2020; Wyatt, 2024). For example, people often struggle to implement New Year's resolutions, often reverting to ingrained habits like scrolling a mindless stream of social media content despite intending to exercise. Even with the best intentions, many people struggle to reach their identified goals. Almost all humans engage in habitual behaviors that are harder but not impossible to change. Studies in neuroscience, psychology, and behavioral sciences have shown that when a behavior is done consistently in the presence of the same context, it develops into a habit (Weiden et al., 2020).

In many instances, habits and behaviors are used interchangeably; however, both rely on neurologically distinct patterns. Habits are automated sequences of activities learned through repetition and context (Benjamin et al., 2020; Gardner et al., 2012; Gardner & Rebar, 2019). Habits follow three cyclical key steps: cue/stimulus, action/routine, and reward in the Habit Loop, a term coined by Charles Duhigg (2012). Behaviors are situation-dependent; they may or may not be unintentional (Gardner & Rebar, 2019). When performed repeatedly over long periods, behaviors transition into repetitive, habitual behaviors (Duhiggs, 2012; Gardner & Rebar, 2019). Given the automatic nature of habits, researchers discuss them as a key concept for behavioral maintenance (Rothman et al., 2009). Many health-related behavioral goals rely on long-term repetition and are conscious overrides of old, pre-established habits (Gardner et al., 2021). Almost all Cooperative Extension educational interventions aim to change behavior and can utilize habit-based scientific principles to help their community members cultivate new habits and relieve old ones.

Habit Shift Mindset Program

Due to the latest habit understanding in scientific frontiers, and the rarity of Extension educational program interventions on habit change, inspired the creation of the Habit Shift Mindset program. The program aims to 1) cultivate scientific literacy regarding habit formation and empirical research-grounded habit-change principles, 2) empower participants (Extension and non-Extension educators) to create their personalized habit plan of action, 3) encourage educators to develop program approaches that can help strengthen their current education programs towards lasting behavior change.

Habit Shift Mindset self-reflective workbook journaling

The program utilizes self-reflective journaling activities through a workbook component. This type of journaling activity is a well-utilized protocol in the behavioral science field. A literature study by Sudirman et al. (2021) discussed the transformative implications of journaling improving individuals' self-inquiry, self-discovery, critical ideation, cognition, and metacognitive capabilities. Throughout the program, participants engage in workbook journaling activities regarding their habit patterns, perceptions, influence of their

environments, impacts of their existing habits, and infusing scientific habit principles in changing their habits. This creates self-awareness (objective evaluation of current habit patterns) and self-efficacy (critical thinking in identifying ways to address identified habit patterns and improved self-confidence in their ability (fulfill their self-created habit plan) (Cook et al., 2018; Sudirman et al., 2021; Waddington, 2023).

Habit Shift Mindset self-reflective workbook journaling

The program included two central tenets: 1) the science of habit formation and 2) strategies for habit formation/change. A detailed overview of the program content and corresponding activities is provided in Table 1.

Theoretical Framework: Social Cognitive Theory (SCT)

Social Cognitive Theory, formerly known as Social Learning Theory, was developed by Albert Bandura (1977) (Islam et al., 2023; McAlister et al., 2008). Bandura (1977) presented many learning principles within the bounds of social contexts. They posited that humans engage in observational learning, cognitive processes (attention, retention, reproduction, and motivation), modeling, reciprocal determinism (individual behaviors reciprocal to their environment), self-efficacy (self-belief in one's ability to accomplish), and vicarious learning (learning from others' punishment/reward). In 1986, Bandura refined adaptation to the now-known SCT, where more integration of cognitive psychology, personal bias influencing learning from experience, and limitation of cognitive processing capabilities were articulated (Bandura, 1998; Islam et al., 2023; McAlister et al., 2008). Many social, economic, cultural, and internal factors contribute to the development of habitual behaviors (Islam et al., 2023). Therefore, this theory was chosen as a grounding theory to develop program content, learning activities, and program assessment.

1) SCT in developing program content and learning activities: The HSM program was developed to be introspective and reflection-focused, where participants were invited to develop self-awareness and external factors influencing their habit patterns. The program uses modeling and observational learning SCT principles by group participant scenarios and case studies. Self-efficacy is one of the key SCT principles. The HSM program allows participants to improve their self-efficacy by providing time to identify their habit patterns using Habit Loop and discover ways to break their loop by personalizing scientifically grounded habit theories.

2) SCT in developing the program workbook: The HSM program workbook was developed to ensure that program participants could engage in the program with a safe learning space (reciprocal determinism), learn from peers through their examples (vicarious factors), set goals (cognitive processing), visualize habit action plans (cognitive processing), anticipate glitches (self-efficacy), collect resources (self-efficacy, reciprocal determinism, and cognitive processing), and prepare for future barriers (vicarious factors and cognitive processing). The program evaluation was also grounded in SCT, which will be further discussed in the methodology section.

Objective

The study sought to assess changes in participant self-efficacy due to the HSM education program. It hoped to investigate specific measures of habit change self-efficacy, such as preparedness for habit-related challenges, overcoming barriers, resource access, emotion awareness, habit adherence, and implementing learned strategies.

Method

To improve program accessibility and flexibility, two program versions (an in-depth program for 120 minutes and an abbreviated program for approximately 75 minutes) were developed. The abbreviated program heavily emphasized scientific principles of habit formation/change as well as the use of case studies. The abbreviated program focused on SCT's reciprocal determinism and cognitive processing principles through case studies and group discussions. In comparison, the in-depth program provided

opportunities for reciprocal determinism, cognitive processing, self-reflection, self-efficacy, and vicarious factors (Bandura, 1998; McAlister et al., 2008). The program was implemented with general populations and educators (Extension) trained in the HSM program curriculum.

Program Participants

The HSM program participants were eighteen years older or older. This age criterion was identified due to the complexity of the educational content and the introspective learning activities, which are more appropriate for and relevant to adults. The participants were recruited through community partnerships, social media and email marketing for self-participant registration, and workforce development events.

Program Evaluation

The HSM program evaluation for the general population uses quantitative survey methodology implemented using retrospective pre and post surveys right after the program ends. The surveys were drafted using the Likert scale and gathered ordinal non-parametric data. In addition, the survey collected demographic data, which included race, ethnicity, sex, education level, income, county of residence, and state. The survey was formulated and adapted from the General Self-Efficacy Scale (GSES). This scale was developed by Schwarzer & Jerusalem, (1995) to assess a general sense of perceived self-efficacy to predict coping with daily hassles and stressful life events. The GSES is self-reported with a four-point Likert scale where 1 point is allotted for “note at all true”, 2 for “barely true”, 3 for “moderately true”, and 4 for “exactly true” (Schwarzer & Jerusalem,1995). The authors adapted this scale to develop habit self-efficacy measures (in before and after format) aligned with HSM program components, such as managing habit change, overcoming habit-related barriers, steadfastness in staying true to goals, navigating unexpected challenges, acquiring and using shared program resources, directing emotions in nurturing habit change process, habit change strategy adherence, habit sustenance (See Appendix A, adapted survey instrument). The retrospective pre and post survey format was determined due to the self-reported survey format and subjective experience measures (such as self-efficacy) (University of Wisconsin–Madison Extension, N.D.). Geldhof et al. (2018) described the consequences of using a retrospective survey to help mitigate response-shift bias in subjective experiences such as self-efficacy gained through program participation. There is an increased possibility that participants over or under exaggerating their experience, leading to response bias (Geldhof et al., 2018; University of Wisconsin–Madison Extension, N.D).

Data Collection and Analysis

The survey was anonymous and voluntary, and individuals could refrain from partaking in the survey, choose not to complete the survey after beginning, or skip questions. The survey was approved by the University of Maryland’s Internal Review Board (IRB NO. 2015977-1). They were disseminated in paper format or using a Qualtrics XM web survey link. Once physically collected, the paper surveys were entered into Qualtrics. The data analysis was conducted using SPSS 29 statistical software. The three data analysis components were tested: 1) descriptive statistics using frequencies, 2) the Wilcoxon Signed Rank Test for nonparametric (Likert scale) data comparing individual pre and post evaluation measures, 3) the Wilcoxon Rank Test for comparing sums of self-efficacy scores of two data points (pre and post), and 4) qualitative participant feedback on useful learned strategy taught in the program.

Results

The educators implemented the program with 329 participants throughout Maryland, reaching 21 out of 23 counties, including Baltimore City. Of the 329 total program participants, 233 completed participant surveys.

1) Descriptive Statistics of Participant Demographics

The voluntary demographic data (For detailed distribution (see Table 2) indicated that the majority of participants were white (52%) and non-Hispanic (79.3%), females (68.4%), with Bachelor’s degrees (43.9%), and income levels between $75,000 and above.

2) Wilcoxon Signed Rank Tests for Individual Evaluation Measures

The test revealed statistically significant improvements in self-efficacy across all measured themes related to habit change following the intervention ($p < 0.001$). Among all measures, participants reported the most significant changes in confidence in managing habit-related changes after the HSM program intervention (md/median= 4.00, n=233) from before intervention (md=2.00, n= 233), with a large effect size (r=0.59, p<0.001). Efficacy in adhering to habit changes also showed a larger effect size (r=0.58, p<0.001) from before intervention (md=2.00, n=233) to after intervention (md=4.00, n=233). Lastly, self-efficacy in overcoming barriers using HSM strategies also showed a larger effect size (r= 0.58, p<0.001) from pre-intervention (md=2.00, n=233) to post-intervention (md=3.00, n=233). For a more detailed statistical inference report, see Table 3.

Overarching improvements were reflected in increased mean scores from pre to post intervention, accompanied by a substantial effect size range (r = 0.55 to 0.59), indicating a practically significant enhancement in perceived self-efficacy among participants resulting from the HSM program. The individual measure scores demonstrated a significant increase in the effectiveness of the intervention in bolstering individuals' belief in their ability to enact and maintain habit changes.

3) Comparing Sums of Self-Efficacy Scores

The General Self-Efficacy Scale (GSES) relies on nonparametric scoring of the entire test to assess existing self-efficacy among adults (Schwarzer & Jerusalem, 1995). The score ranges from 10 to 40. A score closer to 10 is considered the lowest self-efficacy, where individuals have weaker beliefs in their ability to cope with various circumstances to achieve their specific goals (e.g., habit change). A score near 40 is the highest self-efficacy in one's ability to cope with various circumstances to achieve specific goals. The second Wilcoxon Signed Rank test compared the HSM program's effectiveness based on participants' overall SE scores in pre and post data points (See Table 4). The test showed significant improvements in self-efficacy scores post-intervention (Md=34, n=233) from pre-intervention (Md=20.00, n=233) with a larger effect size of (r=0.59 and p<0.001). In Figure 1, the sum of self-efficacy scores also shows a marked difference. The boxplot is also indicative of this change in self-efficacy scores, with the median score increasing from 20 in the pre-intervention to 34 in the post-intervention, despite the presence of outliers in both pre and post intervention data. In synthesis, both Wilcoxon Signed Rank Tests indicate a borderline and singular measure of positive impact of the HSM program on participants.

4) Qualitative participant feedback on relevant learned strategies

Qualitative participant feedback from 105 participants was collected, indicating the most relevant program strategies for their habit. The qualitative data were organized by frequencies, indicating that habit loop (28%), Friction/Dopamine cycle (23%), and barriers (13%) were the most discussed strategies of relevance among participants (see Figure 2).

Discussion

The study indicates the fulfillment of program goals in improving participants' self-efficacy to formulate and continue their habit formation/change journey. Social Cognitive Theory, General Self-Efficacy Scale, and Journaling workbook components provided participants with a safer and more introspective environment. This data supports the use of a habit-based approach in Extension programs, teaching wider communities to adopt and develop habits. In practicality this may mean, educators taking intentional steps in infusing concepts of teaching habit science, habit strategies (friction, barriers, habit loop), providing introspective space to develop a personalized plan of action, and engaging in tracking, smaller benchmarks, meaningful rewards, and developing ongoing support systems to foster those goals, such as community forums, Facebook groups, and support groups.

Future trends and limitations

The study data showed a limited reach among individuals with lower income

(<$75,000) and education levels (below Bachelor's degree), which has an impact on the representation of the larger population. Targeting underserved populations more effectively could lead to robust investigative outcomes and potentially reveal disparities within groups. For example, working with populations such as male participants, Hispanic individuals, non-English speakers, or low-income communities, or low literacy could strengthen the program's outreach efforts.

Future research and prolonged program interventions utilizing newer modalities, such as asynchronous courses, text interventions, along with other educational technology resources like artificial intelligence (AI), may provide even greater depth to this existing program model. In that effort, the authors are currently piloting a three-month text-based intervention to extend the HSM. Tailoring intervention and seeking more underrepresented groups would bring new insights and relevance to this program's outcomes.

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Appendix

Table 1

Program tenets Content	Activities
Science of habit formation Neuroplasticity and Habit Loop	● Identify a particular habit and observe influencing factors contributing to that habit. ● Develop a habit loop for the identified habit by organizing each micro-step of the habit loop. ● Explore various options for breaking the developed habit loop.
Strategies for habit Formation/change Finding "why"	● Identify motivations for the need to cultivate or change a habit. ● Explore where the sources of motivation (external or internal).
Identifying vision and goals	● Identify a clear vision and goal related to identified habits. ● Create small milestones and psychological distance
Emotions and habits	● Use of emotions as a barometer and support system to ground habits.
Role of friction in habit	● Apply optimal friction to engage in desired habits and refrain from undesirable ones. ● Use of reward circuitry by dopamine to reduce friction to change identified habits
Replacement theory	● Find high or equally valued replacement strategies for the identified habits.
Barriers to change	● Anticipate and prepare barriers that hinder habit change.
Narrative identification	● Introspect on internal dialogues that might inhibit change in habits or adherence to old habits.
Building support system	● Evaluate the current system of support and seek new venues of support that foster habit change.

Appendix

Table 2. Habit Shift Mindset participant demographics descriptive table

Categories	Sub-categories	N	%
Race	White	124	52.3%
	African American	45	19.0%
	Two or More Races	26	11.0%
	Asian	15	6.3%
	American Indian or Alaska Native	6	2.5%
	Native Hawaiian or other Pacific Islander	5	2.1%
	Prefer Not to Say	4	1.7%
	Race	1	0.4%
	Some other Race	1	0.4%
	No response	10	4.2%
Ethnicity	Non-Hispanic or Latino	188	79.3%
	Hispanic or Latino	27	11.4%
	Prefer Not to Say	5	2.1%
	No response	16	6.8%
Sex	Female	162	68.4%
	Male	49	20.7%
	Non-binary/Third Gender	10	4.2%
	Prefer not to say	6	2.5%
	No Response	9	3.8%
Education	Bachelor's degree	104	43.9%
	Graduate or Professional degree	70	29.5%
	Some college/Associate's degree	37	15.6%
	High school graduate/GED	2	0.8%
	Prefer not to say	11	4.6%
	No Response	12	5.1%
Income	$75,000 and above	112	47.3%
	$50,000- $74,000	66	27.8%
	Prefer not to say	36	15.2%
	$26,000- $49,000	5	2.1%
	No response	17	7.2%

Appendix

Table 3. Wilcoxon Signed Rank Test table for individual pre and post evaluation measures of self-efficacy

Self-Efficacy Question Theme	Pre			Post			Test		r
	m	md	SD	m	md	SD	Z	p	
Managing habit-related changes with efforts	1.98	2.00	0.73	3.18	3.00	0.68	12.02	***	0.55
Finding resources to overcome barriers associated with habit change	1.94	2.00	0.68	3.2	3.00	0.71	12.40	***	0.56
Sticking to habit goals	1.93	2.00	0.67	3.25	3.00	0.71	12.34	***	0.57
Navigating unexpected challenges related to habit changes	1.95	2.00	0.68	3.25	3.00	0.73	12.20	***	0.56
Resource availability to habit change strategies	2.02	2.00	0.71	3.37	4.00	0.72	12.05	***	0.56
Overcoming barriers through learned program strategies	1.94	2.00	0.61	3.30	3.00	0.72	12.55	***	0.58
Cultivating emotional awareness to guide a habit change process	1.85	2.00	0.64	3.04	3.00	0.84	12.08	***	0.56
Overall adherence to habit change	1.98	2.00	0.65	3.42	4.00	0.71	12.54	***	0.58
Overall self-confidence in applying learned strategies to any future habit	1.94	2.00	0.62	3.53	4.00	0.67	12.66	***	0.59

Note: The significance level of 5% was determined.

The symbols “m” for mean, “md” for median, “SD” for standard deviation, “Z” for test statistics, “p” for significance probability, and “r” for effect size. Significance level depictions are 0.1% as *, 0.01 as **, and 0.001 as ***.

Appendix

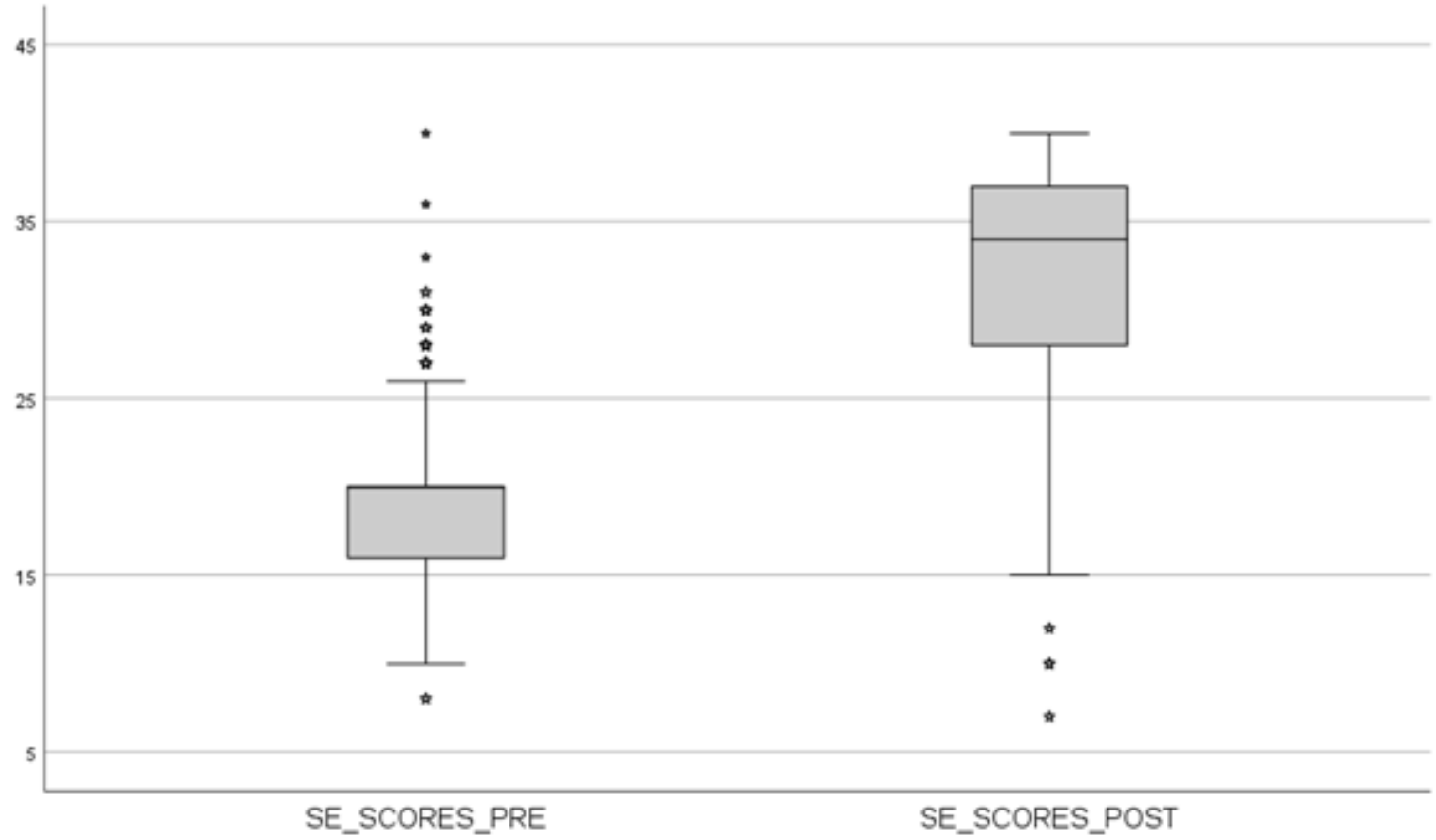
Table 4. Wilcoxon Signed Rank Test table for overall SE Scores

Overall Sample Self-Efficacy (SE) Scores	Pre			Post			Test		r
	M of SE scores	Md	SD	M of SE scores	Md	SD	Z	p	
Overall self-efficacy scores (n=233)	18.94	20.00	5.18	32.29	34.00	6.0	12.79	***	0.59

Note: The significance level of 5% was determined.

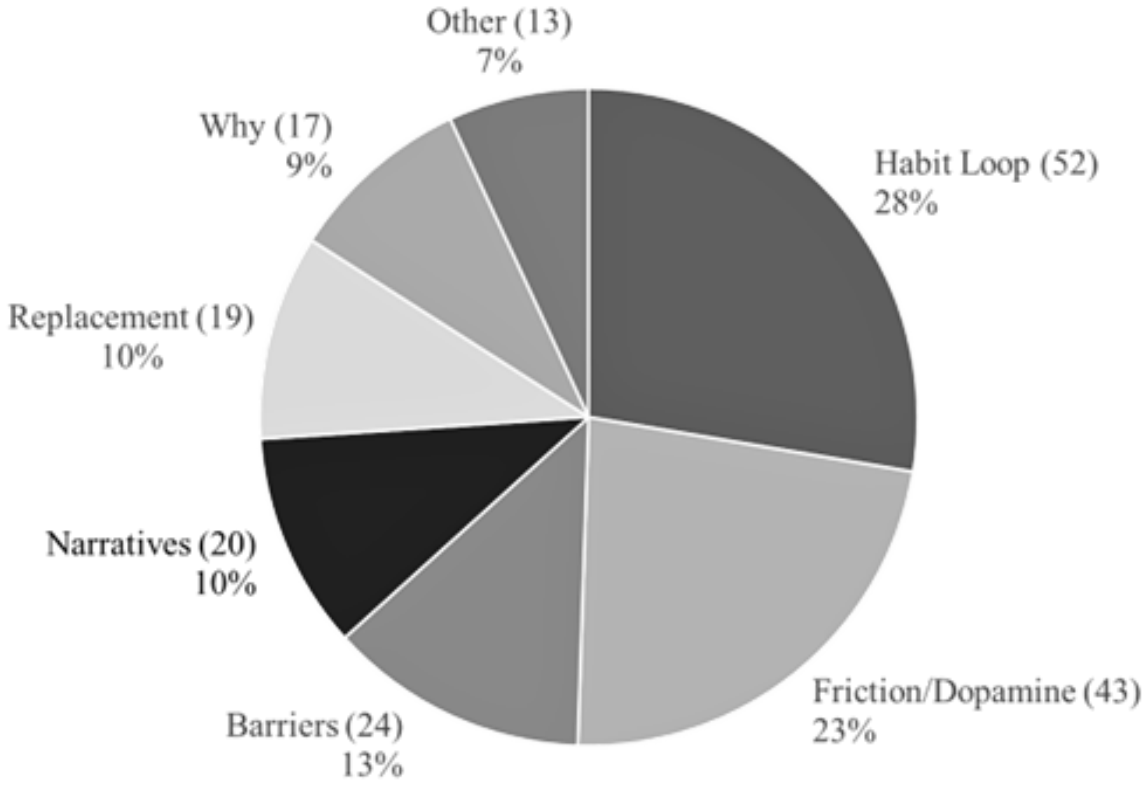
The symbols "M" for mean, "Md" for median, "SD" for standard deviation, "Z" for test statistics, "p" for significance probability, and "r" for effect size. Significance level depictions are 0.1% as *, 0.01 as **, and 0.001 as ***.

Figure 1. SE Scores for pre and post HSM participant intervention.



Appendix

Figure 2: Qualitative participant responses (n=105) on relevant program strategies



Note: The frequency of qualitative responses for strategies are indicated in the parentheses of each chart label.

Appendix A

Adapted Self-Efficacy Survey Instrument

Check on bubbles to indicate your survey question responses.	Not at all true	Hardly true	Moderately true	Exactly true
1. Before this program, I believed I could always manage to change habits if I tried hard enough.	○	○	○	○
1A. As a result of this program, I believe I can always manage to change habits if I try hard enough.	○	○	○	○
2. Before this program, if I experienced a barrier to changing my habits, I could find the means and ways to overcome it.	○	○	○	○
2A. As a result of this program, if I experience a barrier to changing my habits, I can find the means and ways to overcome it	○	○	○	○
3. Before this program, it was easy for me to stick to my aims and accomplish my goals	○	○	○	○
3A. As a result of this program, it is easy for me to stick to my aims and accomplish my goals.	○	○	○	○
4. Before this program, I was confident that I could navigate unexpected challenges and change my habits.	○	○	○	○
4A. As a result of this program, I am confident that I can navigate unexpected challenges when trying to change my habits.	○	○	○	○
5. Before this program, I had all the resources and skills I needed to apply the strategies I learned in this program.	○	○	○	○
5A. As a result of this program, I have all the resources and skills I need to apply the strategies I learned in this program.	○	○	○	○
6. Before this program, I could overcome most barriers if I invested the necessary effort.	○	○	○	○
6A. As a result of this program, I can overcome most barriers if I invest the necessary effort.	○	○	○	○
7. Before this program, I could identify and direct my emotions to drive my habit change process during difficult times.	○	○	○	○
7A. As a result of this program, I can identify and direct my emotions to drive my habit change process during difficult times.	○	○	○	○
8. Before this program, I was able to find creative ways to adhere to my habit change strategies.	○	○	○	○
8A. As a result of this program, I am able to find creative ways to adhere to my habit change strategies.	○	○	○	○
9. Before this program, I felt confident in my ability to apply various strategies for changing my habits.	○	○	○	○
9A. As a result of this program, I feel confident in my ability to apply the strategies I learned in this program.	○	○	○	○
10. Before the program, I felt confident in my ability to adapt and sustain my habit change process.	○	○	○	○
10A. As a result of this program, I feel confident in my ability to adapt and sustain my habit change process.	○	○	○	○

Promoting Physical Activity Through Extension Education and Survey-Based Insights

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Abstract

To determine the impact of walking trails in Cape May County and establish the built environment's ability to support improved frequency of physical activity, the Family and Community Health Science Agent designed and administered a survey study. This pilot project sought to determine how the built environment in Cape May County, New Jersey was perceived by residents and visitors and to collect data on trail usage, safety, and, demographics. Additionally, the study used Cooperative Extension's unique position as the community arm of the University to establish partnerships within the county to meet both University and County objectives.

Introduction

In the United States, only 28.3% of men and 20.4% of women meet the recommendations for weekly physical activity (Elgaddal, et al. 2022). Sedentary lifestyles cost 117 billion dollars annually in healthcare costs and are reported to be the cause of 1 in 10 premature deaths (CDC, 2023). Regular physical activity reduces the incidence of chronic disease, improves symptoms of depression and anxiety and, can improve sleep quality and quantity (United States Department of Health Human Services, 2018). The Physical Activity Guidelines for Americans (PAGA) recommends adults participate in 150 to 300 minutes of cardiovascular exercise each week with an additional two days that include muscle strengthening exercises (USDHHS, 2018). Cooperative Extension delivers research-based knowledge and education to communities nationwide, offering services that promote health and wellness. These efforts include encouraging physical activity as a valuable tool for enhancing overall quality of life.

Over the past two decades, built environments have gained prominence in community development initiatives by promoting increased physical activity through the creation of safe, planned spaces for living, working, and, playing. The United States Department of Transportation (USDOT) has focused on collaborations with state and local government to encourage healthier built environments by approaching broader public health concerns such as chronic disease prevention, improved equity, increased physical activity and, improved safety (U.S. Department of Transportation, 2015). Beginning in the 1990's policy makers in Cape May County, New Jersey planned and designated funds and maintenance resources to establish a county-built environment to promote safe and convenient exercise (New Jersey Bicycle and Pedestrian Resource Center, 2017). While built environments aim to create community enhanced physical activity opportunities, few studies have been done to determine the success of these changes (McCormick et al. 2022). There is also evidence that the built environment may need supplemental education to support increased movement (McCormick et al. 2022). Cooperative Extension programs are an excellent resource to assess community behaviors and to design effective educational programs to promote physical activity.

To encourage more physical activity and exercise amongst residents and visitors, the Cape May County Family and Community Health Sciences Agent created the Cape May County Walking Guide to promote the use of the built environment. The Cape May County Walking Guide is available online and in print at the county Cooperative Extension office and was designed as an educational tool to increase movement. It was theorized that the guidebook effectively provided education and awareness about the built environment as an exercise modality to increase physical activity in the community. However, the guidebook did not assess the need for additional education to promote increased physical activity or examine how the built environment was being used as a means of exercise.

Purpose

Cooperative Extension is well positioned in the local community to evaluate and deliver education for better community health outcomes. The County Agent designed, administered and assessed a survey study to evaluate how the built environment was being utilized. It was hypothesized that user feedback from this study could potentially inform trail expansion and guide the

development of physical activity education initiatives by Cooperative Extension. This research project gathered user input on safety, signage, demographics, and, exercise habits.

Methods

An Institutional Review Board (IRB) protocol (Pro 2023000920) was obtained from Rutgers University for a 20-question online survey using Qualtrics as the data collection tool (see Image 1). The survey reported a 99% response quality and allowed only one survey to be completed per person.

To effectively gather data, the Cape May County Walkability project posted signs at walking trails throughout the county with a Quick Response (QR) code. The QR code directed participants to the survey questions about safety, demographics, and, activity level. Anyone who saw the sign and chose to scan the QR code was eligible to participate. Fifty-nine signs were posted throughout Cape May County at trailheads and parking lots between June 1, 2023, and November 1st, 2023 (see Image 2). These dates were chosen to obtain an appropriate response from both residents and visitors because this is the height of tourism season in the county. No signs were placed in areas where data could be skewed by a high number of people using the trails for non-physical recreation, such as beaches and boardwalks. No signs were posted in the State Forest due to the substantial number of trails in that concentrated area. The first one hundred participants were offered an incentive to complete the survey.

The County Agent partnered with the County Planning Director to develop a twenty-question pilot survey designed to gather inferential data on how the built environment is used and its effectiveness in encouraging physical activity among residents. Questions about physical activity were designed based on the Physical Activity Guidelines for Americans and cardiovascular exercise questions were categorized into three key components – intensity, frequency, and, duration (USDHHS, 2018). The County Planning Executive contributed questions specifically about the built environment for use in the development and sustainability of trails and included questions about relevant signage, distance willing to travel and, points of interest. Questions were administered using Qualtrics and no data linking the respondent to the response was collected.

Results

Surveys were completed by both residents (54%) and visitors (46%) of Cape May County with 333 total responses recorded and 251 completed surveys (n=251). Participants who were visitors to the County came from fifteen different states (53%) outside of New Jersey, as well as from international locations (>1%), while 46% were visitors from other counties within New Jersey. Most respondents were female (58%), primarily between the ages of 55-65 (26%) and 46-55 (21%) additionally 2% identified as Hispanic. Thirty-six percent had an income of $125,000 or more and 44% held a college degree (see Figure 1). The demographic data in this study closely aligns with county statistics, including income ($80,800 annually), age (29.5% over 65 years old), and, ethnicity (8.6% Hispanic) (University of Wisconsin Population Health Institute, 2024).

Safety is a critical aspect of a well-designed built environment, and factors such as poor lighting, excessive trash, crime, and, challenging terrain can discourage use (Giles, et al. 2021). To assess trail safety, participants were asked to share their perceptions of both the trails where they completed the survey and those they used regularly. Trail safety was measured using response options of safe, unsafe, or neutral. Various conditions were evaluated including terrain, surroundings, lighting, trash in area, crime in area, and, signage for orientation/wayfinding. Overall, safety was not a reported concern at the survey location - lighting (70%), trash in area (81%) terrain (96%), surroundings (95%), crime (93%) and, signage for way finding (83%) were all favorably identified as safe. Comparable positive outcomes were observed on other trails (trails where the survey was not taken but used by participants), with favorable safety results including lighting (78%), trash in area (78%) terrain (92%), surroundings (93%), crime (89%) and, signage for way finding (84%) (see Figure 2). Findings from the safety portion of this study are not

surprising given Cape May County's low crime rates, flat terrain, safe surroundings and, well-planned built environment.

The Physical Activity Guidelines for Americans highlight the built environment's role in enhancing community well-being by improving access to diverse physical activity opportunities (USDHHS, 2018). To assess respondents' fitness levels and commitment to regular exercise, questions were asked about the frequency, intensity, and, duration of their workouts. The data collected showed that most users were regular moderate exercisers. Specifically, 17% reported engaging in over 300 minutes of moderate exercise per week, 15% exercised for 151-300 minutes, while 14% reported 60-100 minutes, and, another 14% exercised for 31-60 minutes weekly. Only a small percentage (3%) did not engage in any regular exercise, while vigorous exercisers (15% in total) participated in varying amounts, ranging from 31 to 300 minutes weekly. The County Health Rankings and Roadmaps reports Cape May County as average in physical inactivity days (22%) which aligns with state (23%) and United States (23%) amounts (University of Wisconsin Population Health Institute, 2024).

In addition to examining user habits, this study aimed to evaluate how trails fulfilled users' personal needs, ensuring the sustainability of the built environment while enabling Cooperative Extension to assess and enhance educational opportunities. Proximity to home and work (70%) met the needs of the majority, followed by surroundings (55%), and, safety (43%) were listed as most important for personal needs. Multiple use opportunities including play area, exercise equipment and, fields were important to 43% of participants while 3% felt wheelchair accessibility was prudent. Most participants indicated they had driven from within five miles (46%) to access the built environment trail system and 36% walked or biked from within 3 miles of the trail. Only 13% drove more than five miles and 4% walked or biked further than 3 miles. The county's-built environment is extensive; however, data indicates that 59% of respondents used motorized transportation to access it, suggesting it may not effectively support the goal of providing easy access to exercise opportunities.

The *Cape May County Walking Guide* provided research-based education on the benefits of physical activity, along with practical strategies for incorporating movement into daily life. Designed to be user-friendly, it served as an accessible and engaging educational resource. To determine if the guidebook was being utilized one question on the survey asked, "have you ever used the Cape May County Walking Guide", respondents overwhelmingly responded no (96%) they had not used the guidebook. Although distribution through the County Extension office, tourism centers, libraries, and county buildings remain steady, survey responses did not reflect significant usage. This highlighted the need for improved marketing efforts and alternative distribution methods to enhance the guidebook's reach.

Discussion

Well-designed built environments can improve community access to physical activity; however, availability alone does not ensure usage. To promote long-term sustainability, it is essential to understand user perceptions, evaluate how different modalities are utilized, and, identify educational strategies that could encourage greater physical activity. This study led to increased collaboration between Cooperative Extension and the County, provided insights into educational opportunities for utilizing the built environment, and, enhanced understanding of user perceptions for physical activity promotion. However, it presented both benefits and challenges, offering valuable lessons for enhancing data collection and, improving outcomes in future research.

The Cape May County Planning Department has been collaborating with the South Jersey Transportation Organization (SJPTO) to establish a cross-county bike trail system. Because the Cooperative Extension Agent developed a relationship with the Planning Department for the Walkability study the final data was shared with SJPTO for future trail planning. The ability to share data related to the built environment positioned Cooperative Extension and specifically the department of Family and Community Health Sciences as a worthy partner within the county for research and evaluation.

The *Cape May County Walking Guide* has been widely distributed and requested (average 3000 copies distributed per year since 2022). It is marketed on the FCHS Facebook page, given out at tabling events, distributed in county buildings, shared at educational events, and, requested by community members. However, the poor user rating (4%) received in the Walkability Study demonstrates that it did not reach a portion of county residents and visitors and, more specifically it did not reach those using the built environment. A valuable lesson learned was that the guidebook needed to be marketed in various ways to reach a wider audience. To enhance readership of the guidebook, FCHS created small signs featuring a QR code that directs users to the virtual guidebook (see Image 3). These signs were placed in additional public locations, including post offices, restaurants, and, stores. Additionally, the guidebook is emailed to participants of FCHS educational programs after each class. Recognition that the guidebook had the ability to reach a broader audience was a positive outcome of the study.

The Walkability Study evaluated a small section of the community and was not an exhaustive inclusion of the entire population as is often the case with survey studies. The survey did reach visitors and residents of Cape May County but only a small portion of the community was represented, the majority of which were regular exercisers. Participants who took part recognized the convenient location, surroundings, safety, and, availability of multiple-use spaces as positive factors for their personal needs. Extension professionals can leverage personal convenience data to tailor educational opportunities within workplace wellness programs. Given that proximity to work was identified as a key benefit, it is logical to promote both the built environment and Extension education to encourage physical activity in workplaces. Safety and multi-use options could be promoted to the public for more widespread community use of the built environment and Extension professionals are well situated to offer information in existing programming. The impact of Extension education on the built environment could be assessed after each program that incorporates it, allowing for a broader evaluation of community members' perceptions.

Unfortunately, the study unintentionally omitted the collection of racial demographic data, which could have provided valuable insight for inclusiveness and educational programs. Cape May County is not a diverse community, however ensuring that all residents and visitors are included in Extension education is critical. According to the 2023 US Census Cape May County residents are comprised of 91.6% White community members, 4.7% Black, 0.5% American Indian and Alaska Native, 1.0% Asian, 0.1% Native Hawaiian/other Pacific Islander, 2.1% Two or more Races (U.S. Census Bureau, 2020). Data collected on ethnicity in the Walkability Study showed that 2% of survey respondents identified as Hispanic or Latino, while Census data indicated that the Latinx population in the community is 8.6%. Given the underrepresentation in the survey, the guidebook is being reviewed for potential translation opportunities to help Extension Education better reach and engage a more diverse audience. Extension professionals should address how to reach a broader audience of sedentary residents to encourage use of the built environment as a form of exercise based on these findings.

Summary

Evaluating built environments is necessary to promote sustainability and determine best practices for Extension Education. Poor safety can be a deterrent to use, however Cape May County's built environment demonstrated favorable safety outcomes. The Cape May County Walkability Study is the result of Extension education and data collection that supported both University and county needs. It served as a good pilot study to reinforce the built environment in Cape May County while examining insight for future education, research, and potential partnerships. Data collection is closely aligned with county statistics and serves as a marker for evidence-based information to expand the built environment and guide development for future Extension education programs aimed at increasing physical activity levels.

Funding

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Acknowledgements

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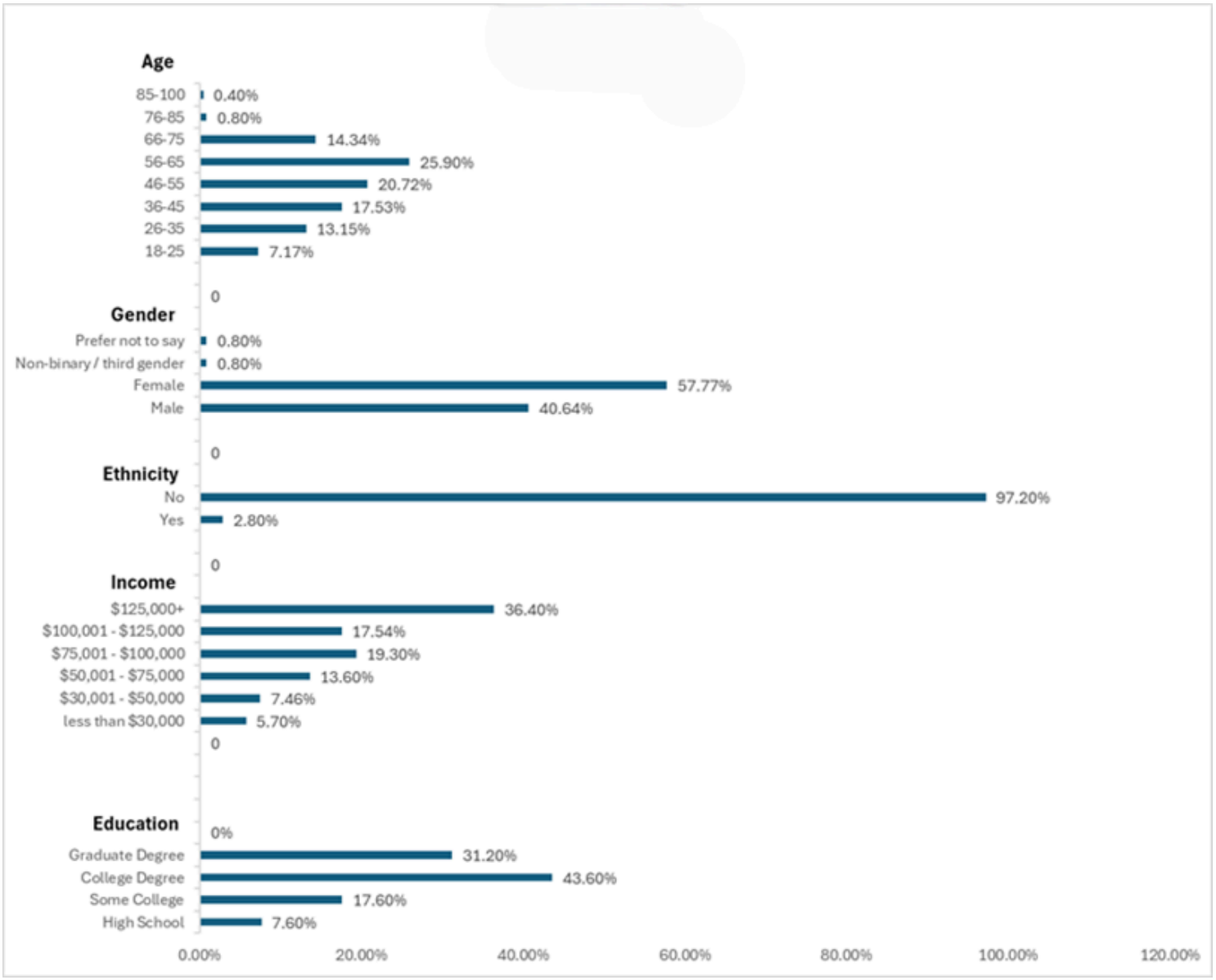
Figures

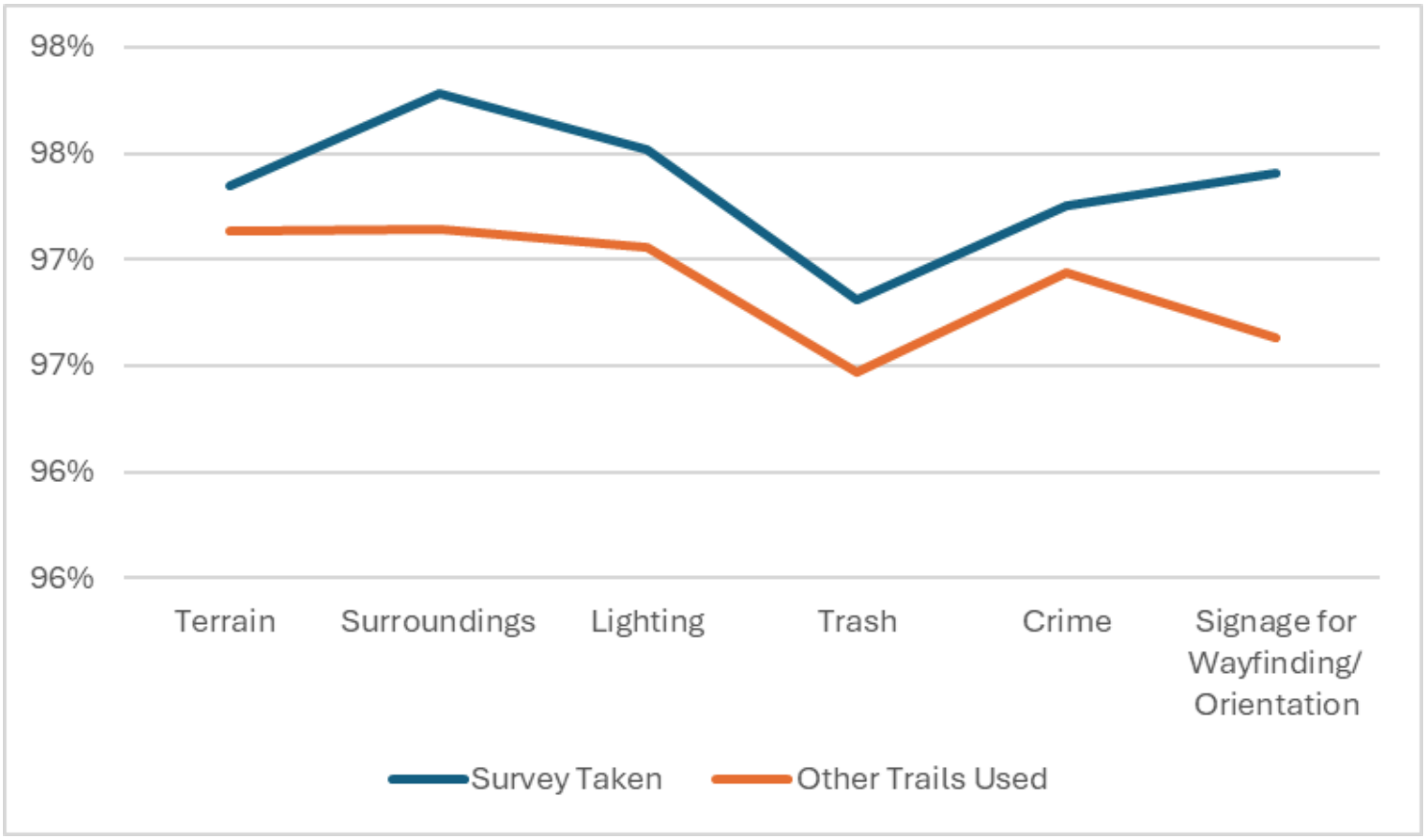
Figure 1



Demographics

Figures

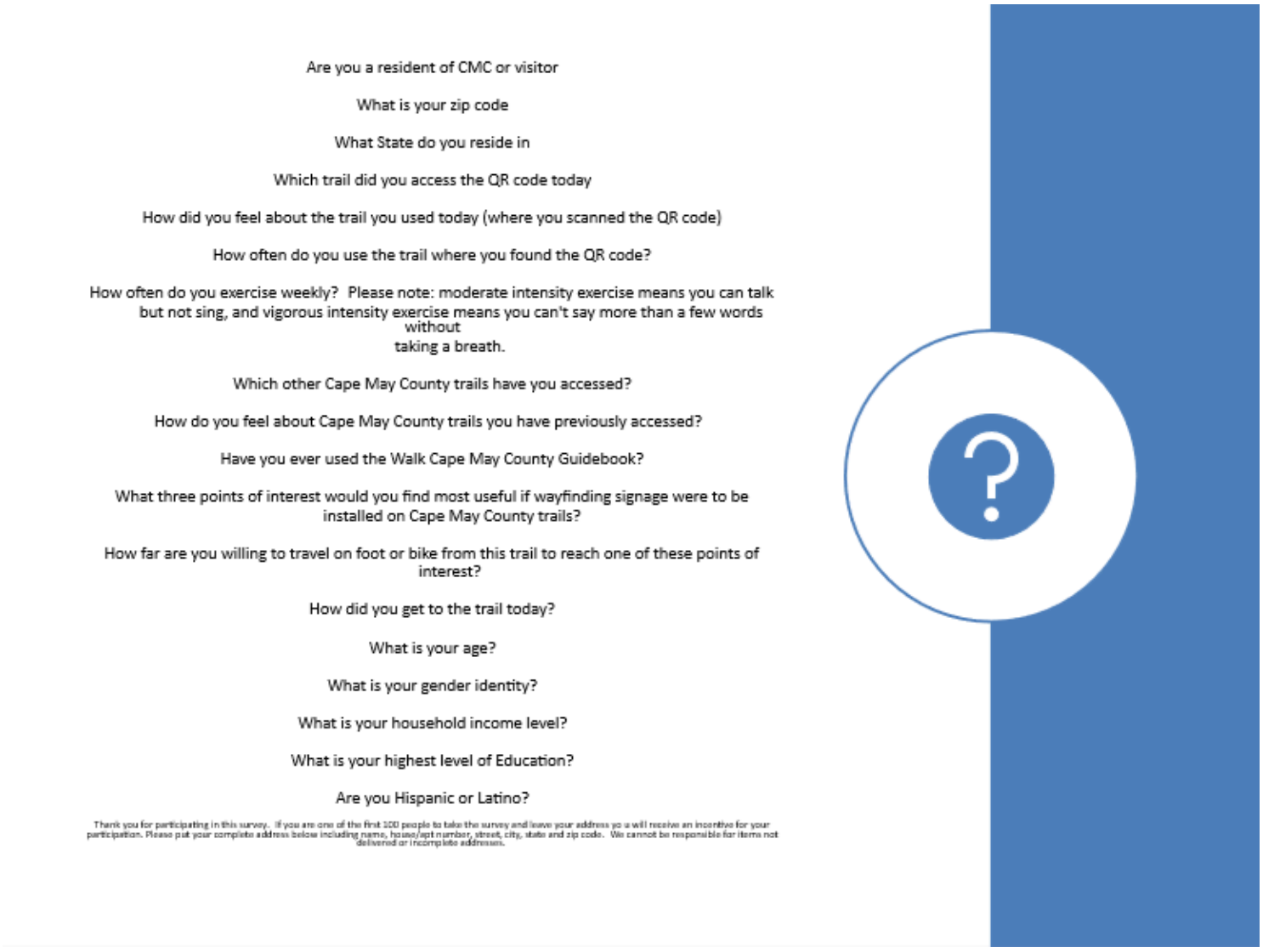
Figure 2



Trail Safety Comparison

Images

Image 1



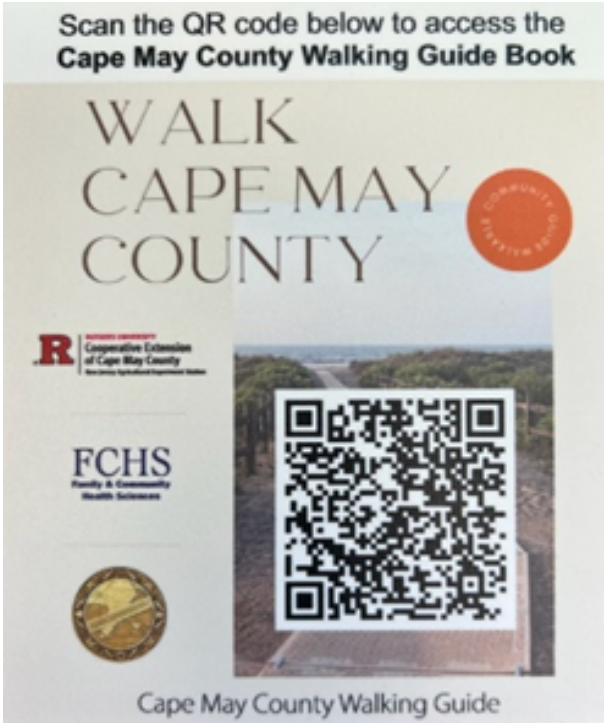
20 Questions Used for Survey

Images

Image 2

Sign to Access Survey for Study

Image 3



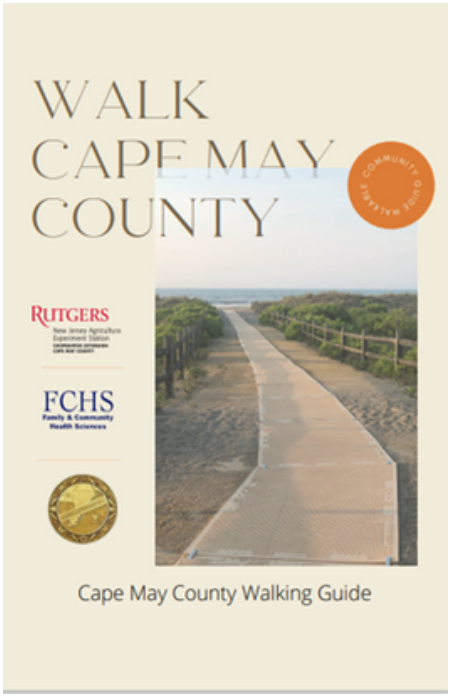
Sign Used for Additional Marketing with QR Code to Guidebook

Appendix 1

Photo 1

Trail Head Sign

Photo 2



Guidebook Print Copy

Reliability of the MIND Diet Screener in Older Adults: A Brief Tool to Assess Adherence to a Brain-Healthy Dietary Pattern

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Abstract

This study tested the reliability of telephone administration of the validated MIND (Mediterranean-DASH diet Intervention for Neurodegenerative Delay) Diet Screener in older adults, a demographic at risk of dementia and compromised recall. Adults aged 75–101 years completed the 15-item MIND Diet Screener by telephone interview at two timepoints. Participants (n=60; 86±6 years, 67% female) scored 9.4±1.8 and 9.2±1.8 out of 15 points, with an intra-class correlation coefficient of 0.71. Telephone administration of the MIND Diet Screener was feasible with good reliability, supporting its suitability for Extension program evaluation. Reliability testing of face-to-face and self-administration in older adults is needed.

Introduction

Adherence to a healthful dietary pattern versus a Western diet supports an overall reduced risk of chronic disease, including neurodegeneration (Arnoldy et al., 2023) and the risk of mild cognitive impairment and Alzheimer's disease (Fu et al., 2022). Specifically, diets comprised of vegetables, fruits, unsaturated vegetable oils, nuts, legumes, and fish during adulthood decrease the risk of cognitive impairment and dementia (Boushey et al., 2020) and continue to support cognitive health into older adulthood (Munoz-Garcia et al, 2020). Although the Mediterranean dietary pattern has long been associated with reduced risk of cognitive decline (Scarmeas et al., 2009) and dementia (Scarmeas et al., 2006), the MIND (Mediterranean-DASH diet Intervention for Neurodegenerative Delay) dietary pattern is specifically tailored for brain health. The MIND dietary pattern is strongly associated with better cognitive function in older adults and is superior to the Mediterranean dietary pattern (Kheirouri et al., 2022), particularly for North American populations (van Soest et al., 2024). The MIND dietary pattern, in accordance with the Mediterranean diet, emphasizes plant-based foods and olive oil with moderate-to-high consumption of fish and seafood, moderate-to-low intake of dairy products, low intake of meat, and with particular emphasis on green leafy vegetables and fruits high in antioxidants such as berries as well as limiting foods high in saturated fat (Marcason, 2015). Most recently, green leafy vegetable intake has been associated with less amyloid plaque, the hallmark of Alzheimer's disease pathology (Agarwal et al., 2023).

Dietary assessment methodologies for determining adherence to healthful dietary patterns are burdensome, particularly for older adults (Mueller, 2015), making them less feasible for routine use in Extension nutrition education evaluation or community-based research. In contrast, dietary screeners may offer quick yet valid and reliable indicators of adherence to healthful dietary patterns (Bailey, 2021). The MIND Diet Screener is a 15-item questionnaire that estimates adherence to the MIND dietary pattern associated with better cognitive function (Mueller et al., 2020). Although the MIND Diet Screener is validated in adults (57.7 ± 6.4 and 69.8 ± 4.3 years of age) (Mueller et al., 2020; Tangney et al., 2023), its reliability has not yet been established in older adults, a cohort at higher risk of dementia (CDC, 2019) and compromised recall (Handing et al., 2023). Additionally, as food insecurity, inadequate access to healthful foods due to social and economic circumstances, is inversely associated with cognitive function (Gao et al., 2009; Wong et al., 2016), it may contribute to poor recall and reliability of dietary screening and assessment.

Objective

Family and Consumer Sciences (FCS) Extension programming promoting healthful dietary patterns requires valid and reliable tools for pre- and post-evaluation. The primary aim of this study was to determine the test-retest reliability and internal consistency of the MIND Diet Screener in middle-old (75 to 84 years) and oldest-old (≥ 85 years) adults. An exploratory aim was to assess whether food security status affected the reliability of the screener.

Method

In this cross-sectional study, a convenience sample of community-dwelling older adults (75-105 years of age) was recruited in Florida, U.S., through word of mouth, flyers, and social media posts by collaborating Family and Consumer Sciences educators. Age and English-speaking ability were the only inclusion criteria. Participants were not assessed for cognitive function. Following written informed consent, participants completed the 15-item MIND Diet Screener (Mueller et al., 2020) and the U.S. Adult Food Security Survey Module (Blumberg et al., 1999) by telephone interview at two timepoints, at least 1 week apart. All interviews were conducted by a dietetic student research assistant trained by a faculty researcher and registered dietitian/nutritionist. Data were collected between December 2022 and May 2024.

The 15-item MIND Diet Screener assessed the frequency of intake of a given amount of olive oil, leafy greens, other vegetables, berries, red meat, fish (not fried), chicken (not fried), whole-fat cheese, butter and cream, beans, whole grains, sweets, nuts, fast food, and alcohol (Mueller et al., 2020). The Morris et al. (2015) coding scheme was used with the revised interpretation of the coding scheme used for the Wisconsin Registry for Alzheimer's Prevention (WRAP) study (Mueller et al., 2020). Point values assigned to each of the 15 screener items were 0, 0.5, or 1, for a possible range from 0 to 15 points. The 10-item short form of the original U.S. Household Food Security Survey Module reliably assesses food security status of older adults (mean age 74.6 ± 9.5) (Lee et al., 2011). Food security status is categorized as “highly food secure” (no food access problems), “marginally food secure” (anxiety over food access), “low food security” (reduced diet quality and variety), and “very low food security” (multiple indications of disrupted eating patterns and reduced food intake) and scored as per U.S. Department of Agriculture guideline (0, high; 1-2, marginal; 3-5, low; 6-10, very low). Ethics approval was granted by the University of Florida Institutional Review Board 2 (#IRB202202266).

Sample size was estimated based on a systematic review of test-retest reliability of patient-reported outcomes in older adults (Park et al., 2018). A sub-sample of 16 per age group (75-84 and 85-105 years) was needed to demonstrate test-retest reliability using an estimated correlation coefficient of 0.75, type I error = 0.05, type II = 0.10, and 25% attrition. Test-retest reliability was assessed by intra-class correlation coefficient (ρ) – the consistency or agreement of repeated measurements using the R-4.4.2 statistical software. Internal consistency reliability – how closely related screener items are as a group was assessed by Cronbach’s alpha (a), and item correlations by Spearman's correlation (ρ) using JMP v17.

Results

Of the 76 older adults who consented to participate in the study, 60 completed both telephone-administered surveys. The repeated values for the MIND Diet Screener indicated good reliability when compared to common thresholds of 0.75–1.00, considered excellent; 0.60–0.74, good; 0.40–0.59, moderate; and < 0.40, considered poor (Cicchetti, 1994), with no apparent decrease with age. Participants (n = 60; 86 ± 6 years, 67% female, 93% White) scored 9.4 ± 1.8 (mean ± standard deviation) and 9.2 ± 1.8 at the first and second administration of the MIND Diet Screener, respectively, giving an intra-class coefficient of ρ = 0.71 (confidence intervals (CI): 0.56, 0.81) overall. In a subgroup analysis of the oldest-old (n = 39), test-retest reliability by intra-class coefficient was estimated to be ρ = 0.73. (CI: 0.54, 0.85) compared to those younger (ρ = 0.69; CI: 0.39, 0.86). Intra-class coefficient values range from 0 to 1, where higher values indicate better reliability.

Most study participants were food secure, with three indicating marginal food security, and thus, analysis of the impact of food insecurity on test-rest reliability was precluded. Internal consistency reliability for the MIND Diet Screener was a = 0.44; items ranged from a = 0.35 (olive oil) to a = 0.51 (cheese). There were significant correlations between individual MIND Diet Screener items; generally, animal-sourced food items clustered, as did plant-sourced food items

(Table 1). The strongest correlation was between nuts and berries. Cheese intake was negatively correlated with olive oil, leafy greens, berries, chicken, and nuts. Additionally, whole grains were negatively correlated with red meat, as was alcohol, whereas fast food was positively correlated with red meat and sweets.

Discussion

Reliable dietary screeners are needed to assess the effectiveness of food and nutrition Extension education and community-based trials, such as Food as Medicine interventions promoting dietary patterns for brain and cardiometabolic health. The findings support the test-retest reliability of the MIND Diet Screener for use in assessing the brain-health dietary patterns of community-dwelling older adults, suggesting that diet recall may not be compromised in this aged cohort, i.e., the older adults who participated in this study reliably responded to the MIND Diet Screener. All survey items contributed to the general MIND diet construct, including the alcohol item. Additionally, telephone administration typically required 8-10 minutes per participant to complete, supporting its feasibility. However, due to the impaired hearing of some participants, a family member or friend proxy was required.

A secondary outcome assessed was the effect, if any, of food insecurity on the reliability of the MIND Diet Screener, as food insecurity is inversely associated with cognitive function (Gao et al., 2009; Wong et al., 2016). In middle-aged and older adults, food insecurity is associated with lower global cognitive function, executive function, and memory (Na et al., 2020). In adults aged 40-75 years, those experiencing food insecurity had a greater decline in cognitive function than their food-secure peers, and those with very low food security exhibited the steepest decline in cognitive function (Wong et al., 2016). In the present study, most study participants reported being White and food secure, which may have supported the good reliability of the MIND tool. Lacking a racially and ethnically representative sample was a major limitation of the study. Future research is needed to test the reliability of the MIND Diet Screener in food-insecure cohorts and in a more racially and ethnically representative sample, specifically seeking out the inclusion of Hispanic and Black/African American individuals. Furthermore, future studies that include an assessment of cognitive function, such as the Montreal Cognitive Assessment, would inform the relationships between the reliability of dietary recall, food insecurity, and cognitive status in older adults.

Telephone administration of the MIND Diet Screener exhibited good test-retest reliability in older adults for assessing adherence to a brain-health dietary pattern. Thus, the tool may be appropriate for evaluating adherence to the MIND dietary pattern and the effectiveness of Food as Medicine interventions and educational programs promoting the adoption of brain-health dietary patterns. A strength of the study was that the MIND Diet Screener was administered to all participants by the same trained individual. However, this strength may also affect the generalizability of the findings, as it is possible that the reliability of the screener may be lower if multiple or less trained individuals administer the tool. As Extension programming and evaluation often take place in person or virtually, future research to determine the reliability of face-to-face interviews and self-administration (paper and online applications) of the MIND Diet Screener in older adult populations is needed.

The MIND dietary pattern, developed purposely to optimize brain health, is differentiated from the Mediterranean dietary pattern by emphasizing leafy greens and berries (Marcason, 2015). Adherence to the MIND dietary pattern is associated with better cognitive performance (Huang et al., 2023; Kheirouri & Alizadeh, 2022), slower cognitive decline (Cherian et al., 2019; Huang et al., 2023), and a lower risk of dementia (Chen et al., 2023). Extension programming promoting such a brain-health dietary pattern is needed to reduce the disease and economic burdens of cognitive decline and neurodegenerative disease in our aging population. The results of this study suggest that the MIND Diet Screener may be a reliable and, thus, very useful tool to assess Extension programming promoting a brain-health dietary pattern. Participants can be reliably assessed with the MIND Diet Screener at baseline, i.e., prior to brain-health dietary education or Food as Medicine intervention, and at short- and long-term follow-up to determine if participants

have improved their adherence to the MIND dietary pattern. Such Extension programming should focus on the cornerstones of the MIND dietary pattern, promoting the consumption of olive oil, leafy greens and other vegetables, whole grains, beans, chicken and fish, nuts, and berries of all sorts, while reducing intakes of red meat, fried foods, whole-fat cheese, butter and cream, commercial sweets, and fast food.

Adopting a brain-health dietary pattern, such as the evidence-based MIND diet, is an important Extension program outcome to evaluate. However, there is increasing emphasis on the delivery of evidence-based food and nutrition programs, specifically, those that result in improvement in objective clinical outcome markers such as blood pressure and blood cholesterol. Thus, in addition to collecting data on improvements in adherence to the MIND dietary pattern, program evaluation of brain-health diet education or Food as Medicine interventions for older adults should also include a long-term assessment of cognitive function with the goal of improvement. If this can be achieved, quality of life and significant economic outcomes will follow.

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Tables

Table 1.

Spearman's correlations of statistically significant ($p > 0.05$) scores of the 15 items of the MIND Diet Screener among older adults 70 years of age and older.

MIND Screener Item	MIND Screener Item	Spearman ρ
Leafy greens	Olive oil	0.1917
Other vegetables	Leafy greens	0.3074
Cheese	Olive oil	-0.212
Cheese	Leafy greens	-0.1872
Cheese	Berries	-0.3746
Cheese	Chicken	-0.1893
Butter and cream	Olive oil	0.354
Beans	Olive oil	0.1913
Beans	Other vegetables	0.2058
Whole grains	Leafy greens	0.2174
Whole grains	Other vegetables	0.21
Whole grains	Red Meat	-0.3039
Nuts	Berries	0.4253
Nuts	Cheese	-0.3099
Nuts	Butter and cream	0.1904
Fast food	Red meat	0.2315
Fast food	Sweets	0.2157
Alcohol	Red meat	-0.1977

School Administrators' Efforts to Maintain and Improve School Wellness Environments: A School-University Partnership Monitoring Factors Affecting School Wellness

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Abstract

This project involved a university-community partnership to support wellness efforts in a Midwestern school district. Researchers and Extension FCS professionals collaborated with district leadership to conduct triennial assessments of the school wellness policy and develop targeted programming. The study explored principals' views on wellness-related needs, resources, and pandemic-related changes in school environments. Findings highlighted persistent challenges in student emotional and behavioral health and the value of community-linked partnerships in supporting wellness policy compliance and advancing student and family health. Potential roles of Extension FCS professionals include providing educational programs, facilitating policy implementation, and fostering community partnerships to enhance wellness outcomes.

Introduction

School and their environments impact students' nutrition, physical activity, health, and academic achievement (Harvey et al., 2018). Federal policies and legislation, including the 2010 Healthy, Hungry-Free Kids Act, mandate that schools participating in the National School Lunch and/or Breakfast Program develop and monitor the implementation of school wellness policies (Belansky et al., 2010). Local wellness policies are designed to promote health, well-being, and learning by increasing opportunities for healthy eating and physical activity throughout the school day. Policy adherence is monitored at least triennially and is designed to document compliance, evaluate policy quality, and measure progress towards stated goals.

In response to federal policies promoting children's health, many schools are expanding services for students and their families. These efforts follow holistic frameworks that recognize the interconnected nature of wellness within schools and communities (Jones et al., 2020). Sustainable, strategic models can benefit children and adults alike but require collaboration among diverse stakeholders to redesign policies and practices (Jones & Eberline, 2021). Extension Family and Consumer Science (FCS) professionals are well-positioned to partner with school systems in these initiatives. The required triennial assessments of local school wellness policies offer a key opportunity to evaluate and improve current structures that advance health equity and reduce barriers to affordable services.

This study grew from a university-community partnership aimed at monitoring, supporting, and strengthening student and family well-being within a Midwestern school district. University researchers and Extension personnel collaborated with district leadership to conduct required triennial assessments of the wellness policy and design targeted initiatives to enhance physical activity and nutrition programs. While the assessments target district-level compliance, efforts were made to capture specific characteristics of individual schools to identify challenges and successes of policy implementation, highlighting the need for building-level perspectives. Recognizing the critical role principals play in shaping and sustaining school wellness environments (Weemer et al., 2023), the assessment team interviewed principals to gain insights into the contextual factors affecting student experiences and needs. The timing of the assessment in spring 2022 provided an opportunity to address questions about changes in children's health concerns before, during, and after the COVID-19 pandemic (see Hamilton & Gross, 2021, for a summary of child behavioral health challenges revealed and exacerbated during the pandemic). The purpose of this study, therefore, was to explore principals' views about wellness-related needs and resources within their schools, as well as their observations of pandemic-related changes that impacted wellness programming and policies.

Methods

Setting and Context

The study was conducted in a Midwestern school district with nine schools: one early childhood school, six K–5 elementary

schools, one middle school, and one high school. The district serves 5,423 students, with a race/ethnicity makeup of 47.2% White, 23.9% Black or African American, 14.3% Hispanic or Latino, 10.5% Two or More Races, 3.7% Asian, 0.4% American Indian, and 0.1% Pacific Islander. The district has 58.2% of its students from low-income households, and 7% are English language learners.

Participants

Building-level administrators from each school were invited to participate in the study through email invitations from the research team members. Before participant recruitment or data collection occurred, approval was obtained from the institutional and school review boards.

Data Collection Procedures

Semi-structured interviews occurred with building-level administrators (n=9). Each interview lasted approximately 60 minutes and was conducted on-site at the respective school building. Two research team members were present to conduct the interviews. The semi-structured interview guide included questions such as 1) reflections on school wellness changes since 2019, 2) inventory of current wellness-related efforts, and 3) future opportunities for growth to improve the wellness climate. Data were captured using extensive hand-written field notes by both researchers to reflect participant responses to interview questions. The field notes provided rich, contextual details, and qualitative insights. Researchers noted nonverbal behaviors, captured contextual details of responses, and background or historical information provided by the participants (Phillippi & Lauderdale, 2017).

Data Analysis

Data were analyzed using inductive qualitative methods (Elo & Kyngas, 2008) and a within- and cross-case analysis approach. Field notes were transposed into a digital transcription of the interviews and read thoroughly by the research team members to be understood holistically, within each school setting, and concerning the research questions. Constant comparative analysis techniques were employed throughout the data analysis (Lincoln & Guba, 1985). Open-axial coding occurred to reveal initial patterns, codes, and categories (Nowell et al., 2017). Peer debriefing sessions and research triangulation occurred until theme refinement and operational definitions were finalized. A final step included an examination of the themes across schools (cases) to determine the extent to which each theme persisted across cases. The research team members examined field notes and codes, and any discrepancies were discussed until agreement was reached.

Results

Qualitative findings reveal two overarching themes related to perceived changes in the School Wellness Context. Specifically, administrators described 1) *Exacerbated Mental, Emotional, and Behavioral Health Concerns and 2) Establishing Community-Linked Partnerships and Services.*

Mental, Emotional, and Behavioral Health Concerns

The mental, emotional, and behavioral health concerns identified during the principal interviews were categorized into three areas: (a) decreased ability of students and parents to self-regulate, (b) reduced school readiness, and (c) emergent student and family needs exacerbated by the COVID-19 pandemic.

Self-Regulation Challenges Among Students and Parents

Principals reported widespread challenges in self-regulation among both students and parents, though the nature of these challenges varied by age group. At the elementary level, there was a notable increase in the levels of dysregulation, with students struggling to manage emotions and behaviors. Students were arriving at school tired from a lack of sleep and what appeared to be an increase in screen time and video games. Educators observed heightened anxiety among students, including an increase in panic attacks among children. In response, one school implemented a check-in/check-out mentoring system (see Wolfe et al., 2015) to provide students with additional emotional support.

At the high school level, school counselors reported an increase in student referrals, with more students seeking support than in previous years. Staff also observed a rise in physical altercations between students and destructive behaviors, in part due to social media challenges to destroy and vandalize school property. These behaviors necessitated a shift in focus, diverting time away from academic instruction to prioritize mental health support and relationship building among students. At the district level, there was an increased commitment to Social-Emotional Learning (SEL) and expanded resources to support students' mental and emotional well-being. One principal reported that they had grossly underestimated the impact the pandemic would have on SEL and student behaviors.

Decline in School Readiness

Decreased school readiness was particularly evident among early learners and elementary students. Principals reported that COVID-19 disrupted crucial opportunities for socialization, particularly in structured learning environments. As a result, many children were not able to regulate themselves in classroom settings. Additionally, some children entered school without having achieved key developmental milestones, such as toilet training. Truancy was also identified as a factor contributing to lower school readiness, further complicating students' ability to transition successfully into school.

Emerging Student and Family Needs

The pandemic amplified existing student and family needs while introducing new challenges. Several elementary and junior high schools cited this as a major area of concern. At one elementary school, the principal personally visited the homes of students in need, ensuring they had access to Wi-Fi hotspots and meals to support their learning. Through these efforts, the school's food distribution program expanded, increasing the number of meals provided from 40 to 180.

Housing instability also became more pronounced. One elementary school, which already had served students facing placement-related challenges, reported an increase in children living in homeless shelters during the pandemic. The principal noted that, despite the hardship, shelter living provided some students with greater structure and stability, including regular mealtimes.

Employment challenges were another significant factor affecting families. While job opportunities existed, many families remained unemployed, exacerbating financial instability. Principals reported an increase in family structure changes, with more children being raised by single fathers or in father-led households. Separately, there was a reported rise in domestic violence, substance use, and investigations by the Department of Children and Family Services, underscoring the complex challenges schools faced in supporting students and their families.

Establishing Community-Linked Partnerships

Administrators highlighted the crucial role of strategic partnerships during and after the COVID-19 pandemic, particularly in strengthening connections with families and community agencies. They emphasized that these partnerships were instrumental in expanding student services and resources.

Faith-based and non-profit organizations played a pivotal role in promoting physical activity by offering after-school and weekend programs. Additionally, the local Extension Agency supported nutrition education by providing food tasting and instructional programming for teachers. Community businesses also contributed by donating specialized equipment, such as running shoes and sports uniforms, at no or low cost, facilitating student participation in these programs.

Healthcare-related partnerships were also strengthened, enhancing access to services such as vision screenings, vaccination/immunization clinics, child welfare, and counseling support. A key development was the hiring of a full-time Family Facilitator, a district employee dedicated to building or sustaining community partnerships that would benefit students and families. Through this role, the district established a collaboration with a non-profit organization specializing in housing assistance, homelessness resources, youth

empowerment, restorative justice, crisis intervention, and substance use and suicide prevention. Additionally, a revitalized partnership was formed with a health service provider to offer primary care, mental health treatment, substance use services, dental care, and housing support based on a referral system from school counselors and social workers.

Community contributions extended beyond healthcare. A local business donated $5,700 to fund the development of a school greenhouse and eight hydroponic gardens within classrooms. The funding also integrated agricultural lessons into the 5th-grade curriculum, teaching students gardening and harvesting skills while providing fresh produce for families. The initiative was further supported by a partnership with the area career center and a high school industrial technology instructor, allowing students to construct a garden shed for gardening supplies storage.

Faith-based organizations also played a role by donating active playground equipment and volunteering their time to revitalize outdoor play areas. Additionally, all elementary schools partnered with Peaceful Playgrounds, a non-profit organization, to receive playground equipment, painted activity markings, and professional development for recess supervisors on conflict resolution strategies.

These strategic partnerships reportedly expanded schools' capacity to meet student and family needs through ongoing outreach initiatives while also increasing access to health services through new on-site primary care options and referral systems connecting families to community agencies and organizations.

Discussion

The results indicate that while community-based partnerships and services contributed to perceived improvements in school wellness, mental, emotional, and behavioral health concerns increased. The value of key community partners mobilizing in support of school wellness-focused efforts emerged as an essential finding. Extension FCS professionals are an example of existing community agencies located within many U.S.-based cities and towns, well-equipped to support schools in addressing noted contemporary challenges through social-emotional learning (SEL), family development, and mental health initiatives. Examples of this work include SEL education (Cromwell, Ure, Everitt, & Everitt, 2022), food insecurity assistance (Cromwell, Nelson, & Prevedel, 2017), community-based service-learning projects (Cromwell & Palmer, 2016), and nutrition education—which align with and are adjacent to the needs identified by school administrators in this study. These findings emphasize the potential that Extension FCS professionals possess to support schools, specifically regarding compliance with the Healthy, Hunger-Free Kids Act of 2010 (Hughes, 2015).

Extension FCS professionals offer regional and disciplinary expertise that can support local schools in achieving wellness goals and complying with federal regulations. With existing resources and educational programs focused on wellness and well-being such as SEL skills development, financial management skills for students and adults, nutrition education, meal planning strategies for families, and staff training on classroom management and stress reduction techniques, FCS professionals are well-positioned to assist those responsible for wellness policy oversight, such as Food Service Directors or dedicated wellness coordinators in larger districts. Raising awareness of the high-quality, evidence-based, comprehensive programs offered through Extension can help ensure school personnel utilize and capitalize on these available resources.

Adhering to wellness policy requires close monitoring of implementation and outcomes. Extension FCS professionals, especially SNAP-Ed educators, are well-equipped to support local schools with data interpretation, goal setting, and action planning. In the partnership described above, the SNAP-Ed educator helped to align the data collected from the administrators with the wellness policy and made recommendations on changes that would strengthen the policy. After the policy was reintroduced to school staff, the educator provided technical assistance to help school staff align their goals with the district policy. Change takes time, but the 2024-2025 school year showed great progress with each school building

having a representative on the wellness committee and each representative setting two goals for wellness at their schools for the school year. In previous years, the Food Service Director had a hard time getting a representative from each school to be on the wellness committee, and they had not been asked to set specific goals for their school.

As connectors, Extension FCS professionals can play a key role in fostering and strengthening community partnerships with local and regional schools. By leveraging their expertise and aligning with post-COVID priorities, they can help address identified needs in collaboration with school administrators who understand their school's specific context (Weemer et al., 2023). Based on the data presented above, it was determined that an asset map should be developed so school social workers, nurses, and other staff could share with families where they could access physical activity opportunities, and other health-promoting services and resources. Through a collaboration with Extension staff, additional community assets, such as food pantries and the county health department, were identified and added to the map, which resulted in the map becoming more holistic. These partnerships are crucial as schools continue to navigate the ongoing impacts of the pandemic.

The current study was limited due to single interviews with each building-level administrator and none with the district superintendent. Additionally, there was a challenge of navigating themes across the district at large compared to individual schools.

Conclusion

These findings highlight the importance of promoting children's and families' physical and emotional well-being as part of a holistic approach to education. FCS Extension professionals can contribute to schools' educational mission by addressing systems-level factors associated with school climate, learner readiness, workforce preparedness, and school-linked programming and services (Jones et al., 2022; Jones & Eberline, 2021; Lawson et al., 2022). In this project, FCS Extension personnel significantly contributed to the target district by providing essential nutrition and food security education programs for students, adults, and families, thereby addressing critical gaps in community education. Additionally, through continuous involvement in the partnership they offered expertise in policy, environmental assessment, and process evaluation, including goal setting, resource identification, and outcome assessment. The vision and goals for school wellness reported by administrators have import for developing capacity and competencies in those committed to providing new (necessary and re-designed) interdisciplinary systems of support for the well-being of students, staff, and families (MacPhail & Lawson, 2020). Through involvement in district-level strengths and needs assessments, FCS professionals helped to identify priority areas where existing federally funded educational programs—focused on health, nutrition, and financial literacy—could be strategically offered to students and families to reduce equity gaps and expand access to essential knowledge, skills, and services. By aligning federal priorities with locally identified needs, FCS personnel in this project have been instrumental in ensuring these investments result in meaningful, place-based impact.

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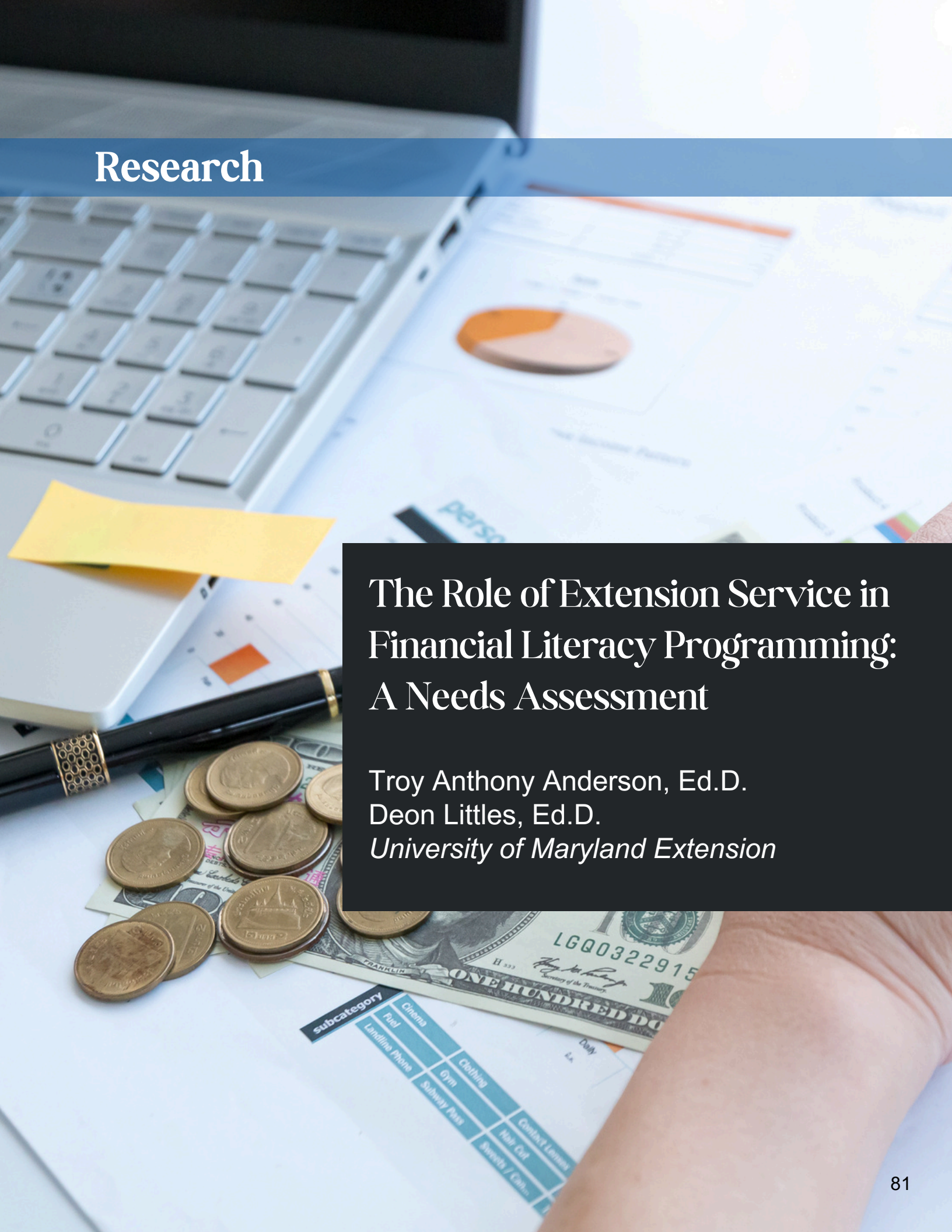

The Role of Extension Service in Financial Literacy Programming: A Needs Assessment

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Abstract

This study examines the role of extension service in enhancing financial literacy programming within rural Calvert County, Maryland. By employing a mixed methods approach, the study assesses financial literacy needs among community stakeholders (n=160). The findings highlight significant gaps in basic financial knowledge, particularly budgeting and credit management. By integrating qualitative insights with quantitative data, the study underscores the potential for tailored financial programming, such as a "financial wellness series." It further advocates for leveraging technology and interactivity among stakeholders to improve programs. Emphasizing the importance of ongoing evaluation, the study provides actionable recommendations for policymakers and practitioners to foster financial independence and resilience in rural communities.

Introduction

Financial literacy is increasingly recognized as a vital component of economic stability and personal well-being, particularly in rural communities like Calvert County, Maryland. As the financial economy evolves, individuals face complex decisions, involving budgeting and credit management (Nguyen, 2024). Therefore, comprehensive financial literacy programs are essential for equipping people with the knowledge and skills needed to navigate these challenges effectively (Lusardi et al., 2025). This is especially true for rural populations, where access to financial resources and educational opportunities may be limited. Addressing these challenges requires innovative solutions, such as offering a Cooperative Extension financial program.

According to Mull (2023), the Smith-Lever Act significantly broadened USDA's partnerships, establishing the Cooperative Extension Service in 4-H, Agriculture, and Home Economics (now Family & Consumer Sciences), fostering collaboration and growth in these fields. The University of Maryland Extension services deliver financial literacy programs in underserved communities comprising, single-parent families, minority groups, first-generation college youth, and the elderly that have a pressing need for increased financial education due to a lack of resources, opportunities, and services. These programs can effectively reach community members by providing tailored content on budgeting, saving, and managing debt, which are critical skills for fostering economic resilience. The content addresses local needs, such as access to workshops on budgeting, savings, and resources for understanding credit and debt management, and personalized guidance on navigating financial systems for improved economic stability. Considering Maryland's demographic composition and unequal distribution of wealth, income, and services due to socioeconomic factors affecting low-income residents, extension services offer a potential solution to bridge the gap by fostering community resilience and economic self-sufficiency through financial education.

Rural communities like Calvert County face distinct challenges that impact financial literacy levels. These include geographic isolation, limited access to financial institutions, and fewer educational resources compared to urban areas (Lusardi et al., 2025). Additionally, demographic factors, such as lower educational attainment and income disparities, are prevalent. Research conducted by Gunarathna and Dias (2023) highlights significant financial literacy gaps among women, minorities, and individuals with lower education, emphasizing the need for targeted interventions. Despite these challenges, technological advancements present new opportunities for financial literacy. Digital platforms and mobile applications can deliver interactive learning experiences to broader audiences, making financial literacy more accessible (Ansar et al., 2023). For Calvert County residents, the use of basic technology for example access to internet, digital literacy and training, computers and tablets could enhance the reach and effectiveness of financial programming, ensuring that even the most remote residents gain access to vital financial skills.

The literature underscores the crucial role of financial literacy in empowering individuals to

make smart financial choices and highlights the possibility of behavior change through targeted educational interventions. However, there are challenges to ensuring the effectiveness and reach of these programs, particularly in rural settings (Willis, 2021). As a result, it is imperative to understand the specific context and challenges faced by rural communities like Calvert County in developing effective financial literacy programs. Additionally, by placing this study within a broader framework, we can better appreciate the role of extension services in promoting financial independence and resilience, ultimately contributing to a more financially literate society capable of navigating future economic challenges.

Purpose

The purpose of this study is to assess and enhance financial literacy in Calvert County, Maryland by leveraging the resources and outreach of Cooperative Extension Services. By conducting a needs assessment, the study sought to identify the financial knowledge gaps and strengths among residents and organizations, with the aim of fostering a financially resilient rural community. This initiative supports the land-grant university mission by tailoring extension programming to meet the specific financial education needs of underserved populations in rural areas via the field of Family and Consumer Sciences.

Goal and Objectives

The overarching goal of this study is to develop and expand innovative financial literacy programs that address the unique challenges and opportunities faced by rural residents in Calvert County, ultimately strengthening their financial well-being and resilience. The objectives for the study include:

1. Conduct a financial needs assessment among residents, local agencies, and community organizations to identify gaps in financial knowledge, behaviors, and available resources.
2. Evaluate existing extension programming in financial literacy within the county to determine effectiveness, accessibility, and areas for enhancement.
3. Engage community stakeholders - including residents, educators, nonprofit leaders, and local government in structured discussions to understand their financial education priorities and challenges.
4. Develop data-driven, culturally relevant financial literacy programs that respond to the specific needs of rural populations.
5. Establish partnerships with local institutions (i.e., schools, libraries, health facilities) to broaden the reach of extension services.
6. Measure program outcomes related to knowledge gain, behavior change, and self-reported improvements in financial confidence and decision-making.
7. Create a scalable model that can be used to replicate successful programming in other rural communities across the state.

Method

This study employed a mixed-methods approach, combining both qualitative and quantitative methods to comprehensively assess the financial needs of families in Calvert County, Maryland. This dual approach allowed for a nuanced understanding of complex issues related to financial literacy among community members. The qualitative component focused on understanding participants' perceptions, attitudes, and experiences with extension services. The qualitative analysis was grounded in two theoretical frameworks: Blumer's Symbolic Interactionism and Marx's Conflict Theory. These frameworks were chosen for their complementary ability to explore individual and systemic influences on financial literacy.

Based on the relationships among individuals within society, symbolic interactionism provided a lens for how participants interact and experiences extension programs that shapes their understanding of financial concepts. For example, during in-depth interviews, participants often described learning about budgeting through role-playing exercises and group discussions. These activities allowed participants to engage actively with financial scenarios such as case studies on financial pitfalls, debt management, handling finances in family, saving and spending habits, thereby constructing meaning and internalizing

financial concepts through social interaction. This approach highlighted how participants used symbols (i.e., money, budgets) to negotiate and understand their financial reality, underscoring the importance of interactive and experiential learning strategies to enhance programming (See Appendices: Figure 1).

Conflict theory was utilized to explore the socio-economic factors that influenced learning readiness and access to financial literacy. By examining the power dynamics and resource distribution within Calvert County, Maryland, this framework provided insights into the barriers faced by underserved groups. For instance, the study found that participants from lower socio-economic backgrounds expressed concerns about limited access to financial resources such as government benefits and assistance, community development, financial institutions and non-profit educational assistance. These findings were interpreted through the lens of conflict theory, which posits that economic disparities can hinder access to knowledge and perpetuate financial insecurity. The need for extension intervention to close the financial literacy gap among marginalized populations facing systemic disadvantages and inequitable treatment limiting access to opportunities, resources, and societal benefits is supported by conflict theory.

The study was reviewed and approved by the University of Maryland, Institutional Review Board (IRB) to ensure that it adheres to ethical standards and protects the rights and welfare of participants. The IRB approval number is [IRB NetID 2048655-1], and the study complied with all applicable federal and institutional regulations regarding human subject research. Participants were informed of the study's purpose, procedures, risks, and benefits, and their consent was obtained prior to participation. Participants were free to withdraw from the study at any time without penalty.

Participants. The study employed purposive sampling to ensure a diverse representation of stakeholders by deliberately selecting individuals or groups that embody a wide range of perspectives and experiences relevant to the study's objectives. This process aided in capturing a more comprehensive understanding of the community's needs, leading to more effective and inclusive outcomes related to financial literacy and extension services. The participant group consisted of 160 stakeholders from extension services, county agencies, university students, teachers and government offices (n=160). This diverse pool of participants enabled the study to explore the multifaceted roles of extension services in financial programming within the community (See Appendices: Table 1).

Qualitative and Quantitative Approaches. For this study, both qualitative and quantitative approaches were used. In-depth interviews were conducted with selected stakeholders to gain insights into their experiences and perceptions of financial services (See Appendices: Table 2). The interviews highlighted varying community needs, challenges, and program impact. Conversely, the quantitative aspect of the study utilized structured surveys to collect data on participants' pre and post financial literacy levels, engagement with existing programs, and perceived barriers to financial wellness such as budgeting, managing expenses, saving, and managing debt. This quantitative data allowed for a comprehensive analysis of trends and patterns, which complemented the qualitative findings. Together, these methodological approaches facilitated a detailed understanding of the community's financial literacy needs, highlighting both strengths and areas for development within extension services. The results underscored the potential for tailored financial programming that addresses the diverse needs of Calvert County's population, ultimately contributing to enhanced financial independence and resilience.

Data Collection. A survey was conducted to inform the literature review and previous research findings. To ensure the survey's validity and reliability, it was peer-reviewed by other Extension Agents, enhancing its credibility and applicability. Recognizing the diverse linguistic needs of the community, the survey was made available in both English and Spanish, ensuring accessibility for a broader audience. The survey comprised 15 carefully structured questions, categorized into demographic inquiries and scaled items. These sections were crafted to capture a detailed understanding of participants' financial literacy levels, demographic characteristics, and overall experiences within extension services. The scaling items allowed respondents to express the degree of their agreement or experience, while the

demographic section gathered essential background information.

To select participants for the four (4) focus groups consisting of five (5) persons (n=40), a purposive sampling method was employed, which allowed for the inclusion of diverse voices in the data collection. The analysis for the completed questionnaires provided a full picture of the levels and interest of participants financial literacy. Data analysis collected from participants prioritized content using descriptive statistics and mean scores (See Appendices: Figure 2). Additionally, the interview results were used to identify preferred delivery methods by ranking them according to the percentage of participant preference (See Appendices: Figure 3).

Results

The study highlights a pressing demand for financial education among Calvert County residents, underscoring the critical role extension services can play in fostering financial literacy and encouraging behavioral change. Using both quantitative and qualitative methods, the study gathered data to inform the development of responsive programming. The survey included Likert scale responses that were statistically analyzed to assess financial knowledge and preferences (see Appendices: Table 4). A notable eighty-one percent of participants expressed a clear need for basic financial literacy, indicating a substantial knowledge gap in key areas such as budgeting, saving, and understanding credit. Although most participants reported incomes above the federal poverty level, which in 2025 is approximately $15,650 for an individual and $31,150 for a family of four. Many still lacked fundamental budgeting skills. This disparity highlights that financial vulnerability can exist even in households not classified as impoverished by age, race, education, employment, and or income alone. These findings suggest a strong need for extension programs offering hands-on workshops in practical financial skills such as budgeting, expense tracking, and financial planning. Case studies and simulations can be gradually introduced to ease experiential learning in an effort to merge program delivery.

Findings

In-depth interviews and focus groups provided deeper, contextual insights into community perceptions and lived financial experiences. Several recurring themes emerged: (1) A need for monthly budgeting assistance and basic savings strategies, (2) Interest in youth financial literacy programs, (3) Requests for one-on-one, in-office consultations to better understand and improve credit scores, and (4) A desire for guidance in credit management, home ownership preparation, and debt reduction.

These findings underscore the community's desire for practical, accessible, and supportive financial education that aligns with real-life challenges for a variety of family structure and household sizes. The integration of quantitative data and qualitative insights supports the development of a comprehensive, community-informed curriculum. This curriculum will be tailored to the specific financial literacy needs of Calvert County residents and delivered through experiential and interactive methods via in-person, online, and hybrid formats. Potential initiatives include: (1) Youth financial literacy programs in partnership with schools and community centers, (2) Budgeting and credit management workshops for adults and families, and (3) Financial coaching and consultation sessions with local Extension Agents.

Connecting extension programs to community needs, dramatically improve economic stability that provides basic needs access and financial strength for future planning. On a broader scale, the study offers actionable insights for policymakers, stakeholders, and Extension leaders. As emphasized by Ansar, Klapper, and Singer (2023), community financial literacy is fundamental to economic security. Policymakers can use this data to advocate for increased funding and policy support for local extension financial education initiatives. Partnerships with local businesses, banks, credit unions, and nonprofit organizations can enhance programming by incorporating real-world financial tools and case studies. These collaborative efforts would not only broaden the scope of services but also ensure the sustainability and relevance of extension

programming. The results and findings from this study validate the high demand for financial literacy education in Calvert County, Maryland.

Summary & Discussion

The study examined the role of extension services in enhancing financial literacy programming within rural Calvert County emphasizing the benefits of educational programs offered by extension services. Lusardi et al. (2025) posits that engaging families in workshops and educational settings significantly helps them develop a financial mindset, crucial for their financial well-being. As a result, the findings from this study aligns with the existing literature highlighting the importance of financial literacy. While the study had many strengths, it also had a few limitations. The cross-sectional study showed a correlation between financial literacy and program success, it lacked the longitudinal data to establish causality, meaning further research is required to verify long-term effects. The diversity of perspectives in the community made quantifying individual needs challenging, suggesting that the study's snapshot may not fully capture evolving needs. And lastly, the rural geographic focus limits generalizability to urban or suburban areas where financial literacy needs differ.

To enhance impact, several recommendations are proposed. Policymakers can seek to advocate for integrating financial literacy competencies into core curricula for all school districts. Practitioners like Extension Agents should incorporate interactive content and digital advancements, such as mobile apps, to broaden program reach and effectiveness (Ansar, Klapper, & Singer, 2023). Additionally, conducting a needs assessment or utilizing a program evaluation design in rural settings can potentially offer insights into extension services' roles in program development. While rural contexts provide specific insights, urban research could reveal different outcomes if the study is replicated in a larger city driven by advanced technology.

Future research should explore the scalability of financial literacy programs across regions and demographic groups. Longitudinal studies could offer deeper insights into sustained impacts on financial behaviors and decision-making between participants living beneath or above one's means. Examining the interplay between technology and traditional methods could further optimize program delivery with the advent of artificial intelligence (AI). Ultimately, ongoing evaluation and adaptation of extension services are imperative to maintain relevance and effectiveness. While this study focused on Family and Consumer Sciences Extension Agents delivering financial education, 4-H, Agriculture, and other extension services could also serve as a vehicle to provide financial literacy programs. Additionally, incorporating technology, and tailoring interventions to community needs, financial literacy can be fostered across communities, promoting wellness and stability amidst economic challenges. Through these efforts, extension services can play a pivotal role in promoting financial literacy and wellness.

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Appendices

Figure 1: Participants' most effective learning strategies during programming.

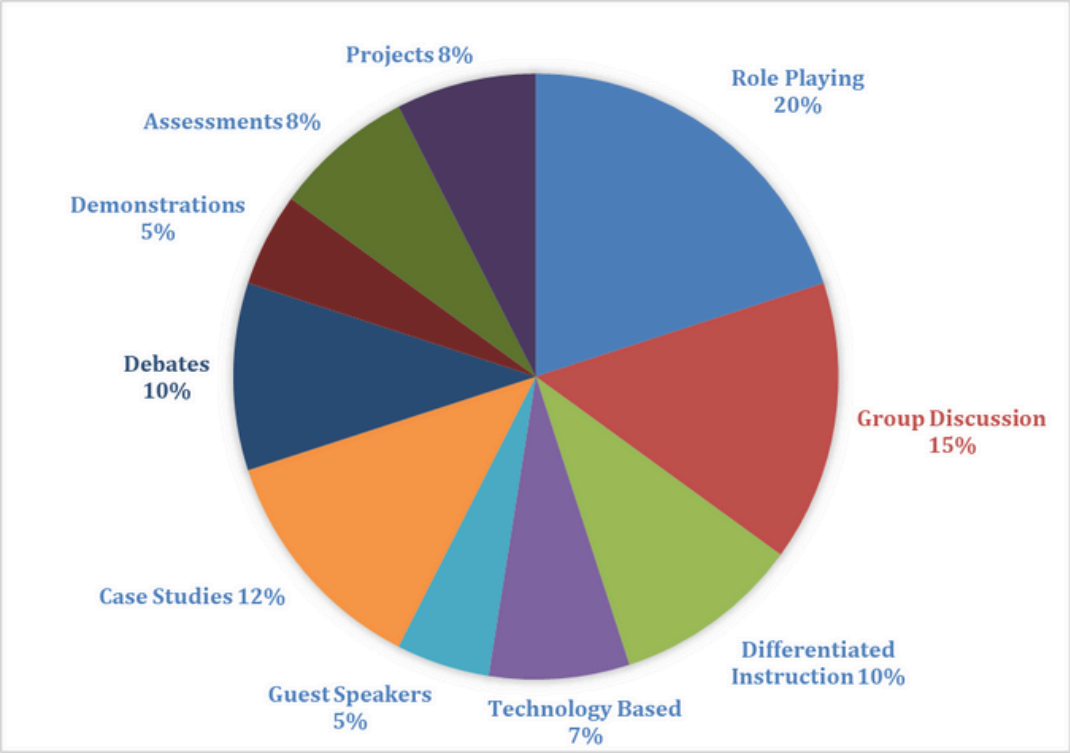

Figure 2: Fundamental financial topics of focus for participants.

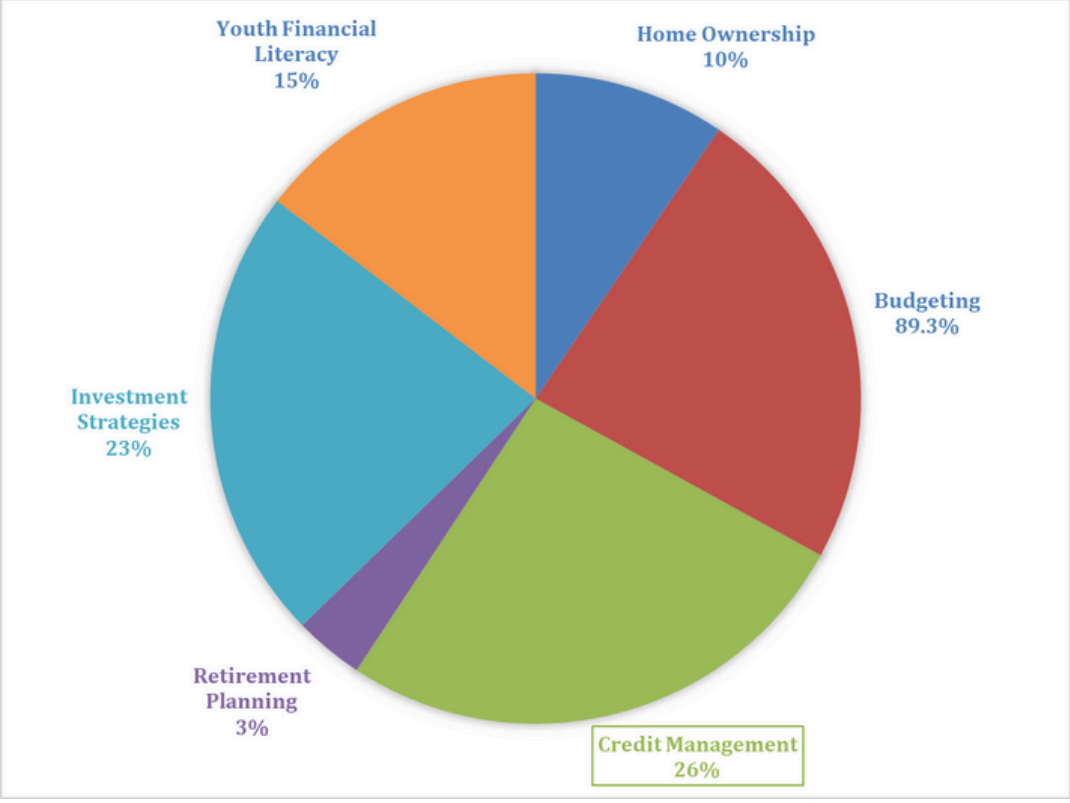

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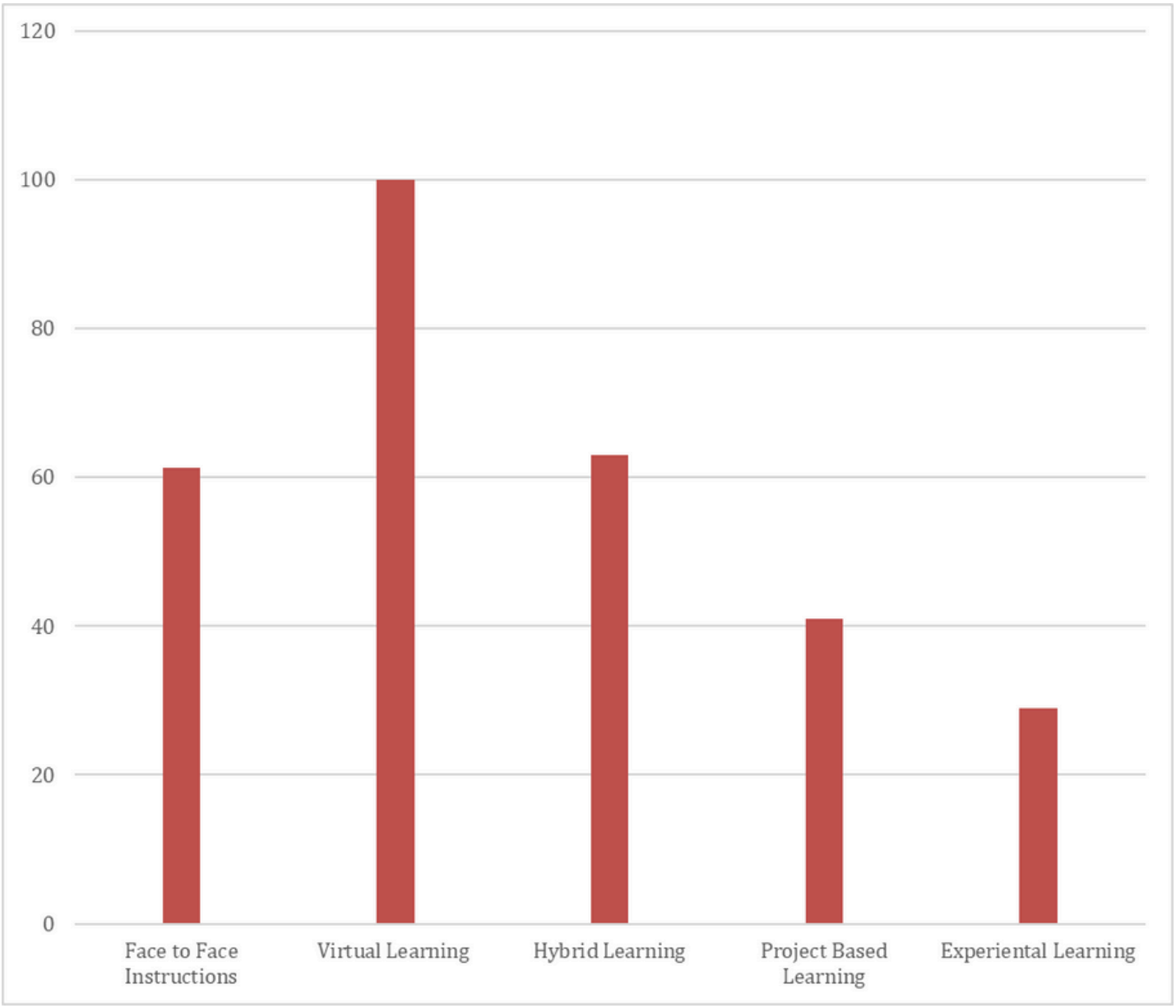
Figure 3: Preferred program delivery methods ranked by participants.



Appendices

Table 1: Survey Instrument *(Modified English version)*

Section 1: Characteristics		n=160	%
1	Gender: • Male • Female • Choose not to identify	 58 102 -	 36.3 63.7 -
2	Ethnicity: • Hispanic/ Latino • Non-Hispanic • Choose not to identify	 43 117 -	 26.8 73.2 -
3	Race: • White/ Caucasian • Black/ African Americans • American Indian or Alaska Native • Asian • Native Hawaiian or Other Pacific Islander • Some Other Race • Two or More Races • Choose not to identify	 81 47 1 10 1 15 5 -	 50.6 29.4 0.6 6.2 0.6 9.4 3.2 -
4	Age Range: • 18-24 • 25-34 • 35-44 • 45-54 • 55-64 • 65 or greater • Choose not to identify	 12 42 64 21 18 3 -	 9.2 26.2 40.2 13.1 9.5 1.8 -
5	Education: • Some High School • High School Diploma/GED • Some College • Community College/ AA • Four Year degree • Some post Graduate • MA/MS • Doctorate • Choose not to identify	 4 9 14 33 79 12 8 1 -	 2.5 5.7 9 20.7 49 7.5 5 0.6 -

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6	Geographical Location: · Southern Calvert County · Northern Calvert County	 77 83	 48.2 51.8
7	Length of Employment: • 0-5 years • 6-10 years • 11-15 years • 16-20 years • 21+ years	 69 47 32 8 4	 43.2 29.3 20 5 2.5
8	Household Income Before Taxes: • Less than $25,000 • $25,000 to $34,999 • $35,000 to $49,999 • $50,000 to $74,999 • $75,000 to $99,999 • $100,000 to $149,999 • $150,000 to $199,999 • $200,000 or more	 6 17 42 39 54 2 - -	 3.7 10.7 26.3 24.3 33.7 1.3 - -
9	Total Household Members: • One • Two • Three • Four or more	 33 23 26 78	 20.6 14.3 16.4 48.7
10	Total Children Attending/Attended College: • None • One • Two • Three • Four or more	 16 21 16 71 36	 10 13.2 10 44.3 22.5

Appendices

Section 2: Financial Literacy		
6. **How would you rate your level of financial literacy?**		
o Very low	21	13.2
o Low	48	30
o Moderate	74	46.2
o High	17	10.6
o Very high	-	-
7. **Do you have a personal or household budget?**		
o Yes	43	26.8
o No	117	73.2
8. **How often do you review your financial statements (bank statements, credit card bills, etc.)?**		
o Never	9	5.6
o Rarely	41	25.6
o Sometimes	87	54.3
o Often	23	14.3
o Always	-	-
9. **Do you have a savings plan for emergencies?**		
o Yes	83	51.8
o No	77	48.2
Section 3: Program Engagement		
10. **Have you participated in any financial education programs offered by Extension services?**		
o Yes	86	53.7
o No	74	46.3
11. **If yes, how would you rate the effectiveness of these programs in improving your financial literacy?**		
o Not effective	-	-
o Slightly effective	-	-
o Moderately effective	3	1.8
o Very effective	34	21.2
o Extremely effective	49	30.6

Appendices

12. **What types of financial education programs are you most interested in? (Select all that apply)**		
o Budgeting	143	89.3
o Credit management	160	100
o Home ownership	58	36.2
o Retirement planning	21	13.1
o Investment strategies	138	86.2
Youth financial literacy	89	55.6
Section 4: Barriers to Financial Wellness		
13. **What are the primary barriers you face in achieving financial wellness? (Select all that apply)**		
o Lack of financial knowledge	97	60.6
o Insufficient income	142	88.7
o High cost of living	126	78.7
o Debt obligations	87	54.3
o Access to financial services	99	61.8
o Other (please specify)	23	14.3
14. **How confident are you in your ability to make informed financial decisions?**		
o Not confident at all	39	24.5
o Slightly confident	62	38.7
o Moderately confident	44	27.5
o Very confident	15	9.3
o Extremely confident	-	-
15. **What resources would help you improve your financial wellness? (Select all that apply)**		
o Online financial tools and calculators	129	80.6
o Financial workshops or seminars	95	59.3
o One-on-one financial counseling	64	40
o Access to financial literacy materials	97	60.6
o Community support groups	53	33.5

Thank you for completing this survey. Your feedback is invaluable in enhancing financial literacy services in our community.

Appendices

Table 2: Interview Instrument for Focus Groups

Interview Procedures

- **Interviewer Introduction:** Briefly introduce yourself and explain the purpose of the interview.
- **Confidentiality Assurance:** Assure the participant that their responses will be kept confidential and used only for research purposes.
- **Consent:** Obtain verbal consent to proceed with the interview and to record the session, if applicable.

I am grateful for your time as you participate in this interview process. Today I want to discuss the needs, challenges, and opportunities for financial wellness across Calvert County. Any information shared today will assist me in developing specific financial programs within our community to address financial health and wealth concerns for residents. The interview is an opportunity for me to gather rich information and draw more detailed conclusions than other research methods, taking into consideration nonverbal cues, off-the-cuff reactions, and emotional responses. I will simultaneously be leading the interview and taking notes.

By the end of the interview, I hope to gain a better understanding of how you feel about the services offered here to teach people about finances. Some of the topics that we will discuss surround the organization, community program offerings, Extension services, and a rating scale about specific topics in financial wellness. The interview should take about 15-30 minutes of your time.

The information you share with me today will be used to improve current or develop new financial programs for members of our community. The information you provide may be shared with other people from our University, however your name will not be linked to your individual stories. All information will be kept confidential. Your participation is voluntary and you may choose to stop at any time. If you have any questions or do not understand what I am asking, please let me know.

As I mentioned earlier, the goal of this interview is to understand what you think about financial programming. There are no right or wrong answers so please answer the questions as honestly as possible as I am interested in your individual experiences. According to University policies, I must disclose and provide you with a copy of our informed consent statement. You can have a few minutes to peruse the document, and then we will review it together. Also, with your verbal consent, I would like to record this session to help me take notes of our conversation. Upon the transcription of our conversation, this recording will be deleted. Please let me know if you are not comfortable with being recorded.

--pause for questions—

Appendices

Demographic Information 1. What is your role in the community? 2. How long have you been involved with the community or Extension services? 3. Experience with Financial Programming 4. Can you describe your experience with financial programming offered by Extension services? a. Follow-up: What specific programs have you participated in or are aware of? 5. How did you first learn about these financial programs?	
Perceptions and Expectations 6. What are your overall perceptions of the financial programming provided by the Extension services? 7. What expectations did you have before participating in these programs, and were they met? 8. What is the most effective way for you to learn and retain information?	
Needs and Challenges 9. What specific financial education needs do you believe are most pressing for your community? 10. What type of class delivery methods would encourage you to attend Extension programming? 11. What challenges have you or your community members faced in accessing or benefiting from financial programming?	
Program Impact 12. How have the financial programs impacted your financial literacy or behavior? a. Follow-up: Can you provide examples of any positive changes or improvements? 13. Have you noticed any broader community changes as a result of these programs?	

Appendices

Suggestions for Improvement 14. What improvements or changes would you suggest for the financial programming offered by Extension services? 15. How could technology be better utilized in delivering financial education?	
Additional Insights 16. Is there anything else you would like to share about your experiences or suggestions for the future of financial programming in your community?	
Conclusion • Thank the Participant: Express gratitude for their time and valuable insights. • Next Steps: Briefly inform them about the next steps in the research process and how their input will contribute to the study.	

This interview instrument is designed to gather comprehensive and nuanced data from stakeholders, providing insights into their experiences, perceptions, and suggestions regarding Extension services in Calvert County.

Appendices

Table 3: Shows a breakdown of results obtained from the participants' focus group for 4 groups of 5 participants.

Survey	Frequency					Mean
n=40	5	4	3	2	1	
1. Families are welcomed and valued when accessing Extension programs and services.	38	2	-	-	-	4.95
2. Each individual's beliefs and values are respected by the Extension Educator.	40	-	-	-	-	5
3. Extension activities are planned at various times of the day to involve a wide variety of participants.	4	5	-	11	20	2.05
4. Communication with families in the community is consistent.	8	7	1	9	15	2.6
5. Communication with families is in a language they can comprehend and/or translations are made available.	40	-	-	-	-	5
6. Families are involved in the decision-making process of the Extension education.	13	18	-	6	3	3.8
7. Families are encouraged to help with Extension outreach.	29	2	1	5	3	4.22
8. Families are encouraged to volunteer in Extension program delivery.	12	19	-	7	2	3.8
9. Families who volunteer in Extension programs and services are given training and recognition.	20	15	5	-	-	4.37
10. The Extension Educator recognizes barriers (social stratification, geographical location, communication and language) to participation and work to bridge these barriers.	32	7	1	-	-	4.77

Appendices

11. The Extension Educator provides information to families about services that can help with family needs (rental assistance, budgeting, goal setting, improving credit score, and estate planning).	29	6	5	-	-	4.6
12. Extension Educator and families work together on Extension initiatives.	10	2	-	10	18	2.4
13. Extension Educator and families are actively involved in program planning.	4	10	-	9	17	2.37

Appendices

Table 4: Likert Scale Summary of Results

The following table presents the results of a Likert scale survey conducted with 160 participants in Calvert County, Maryland. The survey was designed to assess various aspects of financial literacy and the effectiveness of Extension services in enhancing financial education. Participants responded to statements about their financial knowledge and behaviors on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

Statement	1 (SD)	2 (D)	3 (N)	4 (A)	5 (SA)	Mean Score
I feel confident in my ability to create and manage a budget.	24	32	40	44	20	3.02
I understand how to read and interpret credit scores.	28	40	50	30	12	2.76
I am knowledgeable about different investment options.	36	42	48	26	8	2.54
I regularly save a portion of my income for future needs.	20	28	42	50	20	3.16
I am aware of the financial resources available in my community.	22	30	38	50	20	3.14
I believe financial education should be a part of school curricula.	8	12	20	60	60	3.98

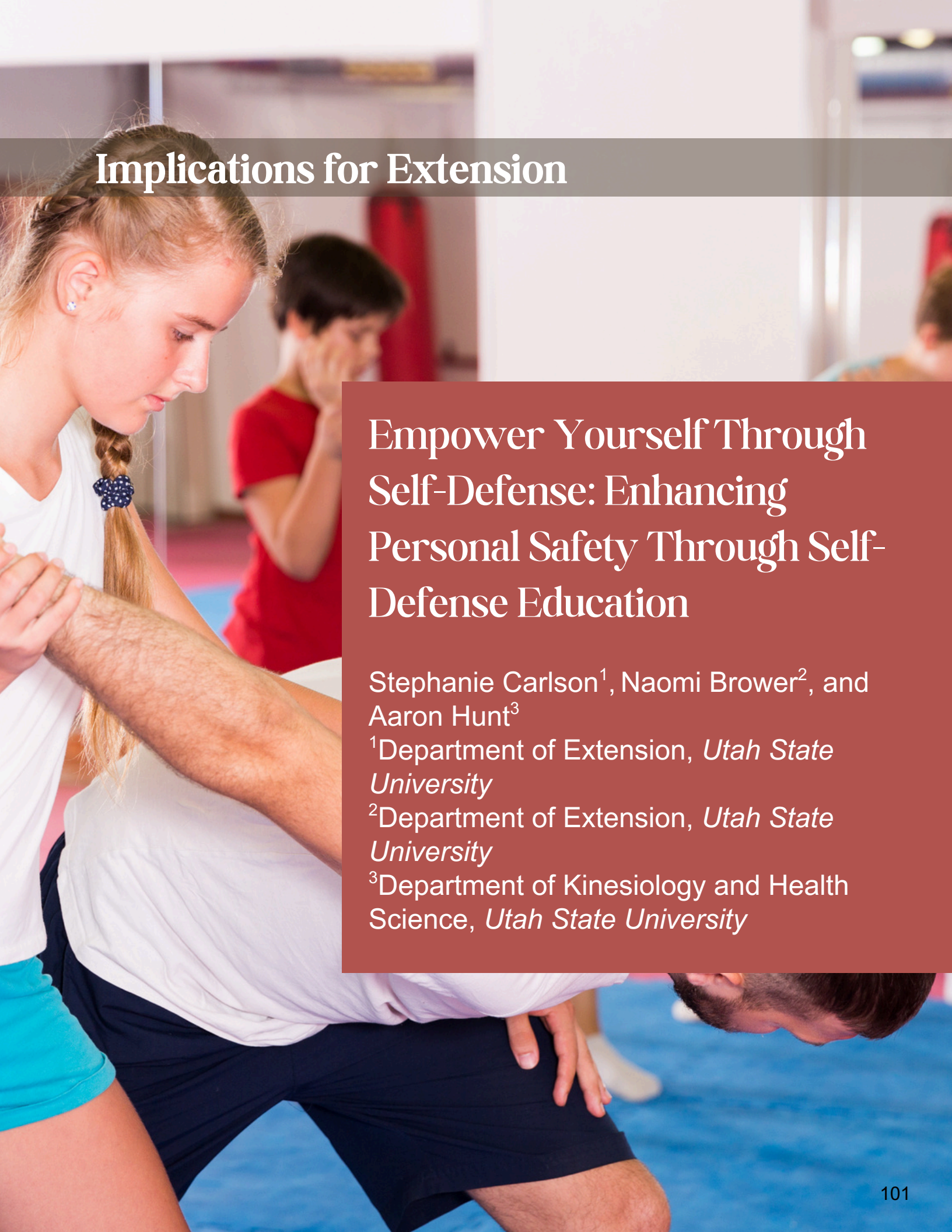
Discussion of Findings

The survey results provide valuable insights into the financial literacy outlook of Calvert County residents. Notably, the mean scores indicate several key areas where financial education could be enhanced:

1. Budgeting Confidence (Mean Score: 3.02): While there is a moderate level of confidence in budgeting, nearly half the participants either disagreed or were neutral about their budgeting skills. This suggests a need for more focused workshops on budgeting to build financial confidence.
2. Understanding Credit Scores (Mean Score: 2.76): A significant portion of participants expressed a lack of understanding regarding credit scores, highlighting a critical area for improvement. Extension services could offer targeted sessions on credit management, helping individuals to better navigate credit-related decisions.
3. Investment Knowledge (Mean Score: 2.54): The lowest mean score was found in the area of investment knowledge, indicating that many participants feel unprepared to make informed investment decisions. This highlights an opportunity for Extension services to introduce educational programs focused on investment literacy.
4. Savings Behavior (Mean Score: 3.16): While the mean score for regular saving is slightly higher, there remains room for improvement. Encouraging a savings culture through workshops on financial planning and goal setting could enhance this aspect.
5. Awareness of Community Resources (Mean Score: 3.14): Participants showed a moderate awareness of available financial resources. Increasing outreach and communication efforts could help ensure all residents are informed about support services and opportunities.
6. Support for Financial Education in Schools (Mean Score: 3.98): There is strong support for integrating financial education into school curricula, reflecting a community-wide recognition of its importance. This could drive collaborative efforts between schools and Extension services to develop comprehensive programs for youth.

Overall, these findings emphasize the need for targeted financial literacy interventions in Calvert County, Maryland. Some of the needs identified include improving understanding of credit scores and investment knowledge, as well as enhancing budgeting and savings skills. By focusing on these areas, Cooperative Extension Services can develop tailored programs that directly respond to the community's financial literacy gaps. Such programs could include workshops and seminars designed to demystify credit management, offering clear guidance on how to improve credit scores and make informed financial decisions. Additionally, initiatives aimed at boosting budgeting confidence and cultivating a savings culture could empower residents to achieve greater financial independence.

To optimize participation in financial literacy programs through extension services, it is essential to consider the preferred delivery methods that would encourage community engagement. Moreover, understanding the barriers faced by residents, such as limited access to reliable transportation or digital resources, can inform the design of inclusive and accessible programming. By addressing gaps in credit management and enhancing budgeting and saving skills, extension services can foster greater financial independence and resilience among community residents. Furthermore, the strong endorsement for school-based financial education suggests potential for long-term positive impacts on future generations.



Empower Yourself Through Self-Defense: Enhancing Personal Safety Through Self-Defense Education

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Abstract

The *Empower Yourself Through Self-Defense* program addresses rising violent crime by equipping participants with essential self-defense knowledge and skills. Through interactive training, over 737 individuals learned to recognize threats, de-escalate conflicts, and respond effectively. Evaluation results indicate significant improvements ($p < 0.001$) in confidence, awareness, and self-defense abilities. Participants reported reduced fear, increased preparedness, and strong interest in continued training. Given its success, future efforts will focus on expanding accessibility, incorporating non-physical defense strategies, and offering specialized courses. The program continues to enhance public safety by empowering individuals with practical skills for self-protection.

Introduction

Violent crime, including aggravated assault, rape, robbery, and homicide, remains a pressing public health and safety concern. In 2023, the national violent crime rate in the United States declined to approximately 364 offenses per 100,000 people, marking a 3.0% decrease from the previous year, but still impacting over 1.2 million people (Federal Bureau of Investigation, n.d.). In 2023, Utah's violent crime rate was 232 per 100,000 people, approximately one-third lower than national averages (Utah Commission on Criminal and Juvenile Justice, 2024). Utah's reported rape rate was 55.5 per 100,000 people, significantly exceeding the national average of 42.6 per 100,000 (Federal Bureau of Investigation, n.d.). While sexual violence can impact individuals of any gender, women and girls face the highest risk accounting for approximately 90% of rape victims in the United States between 2019 and 2023 (Federal Bureau of Investigation, n.d.). Youth are particularly vulnerable, with individuals aged 10–19 comprising 42% of reported cases and those aged 20–29 comprising 21% during the same period (Federal Bureau of Investigation, n.d.).

The impact of violent crime extends far beyond the act itself for victims, often resulting in chronic psychological, emotional, and financial hardship. Victims may experience stress, anxiety, post-traumatic stress disorder (PTSD), depression, substance use, and long-term health complications (Bureau of Justice Statistics, 2022; Alliance for Safety and Justice, 2022). Families of victims often face emotional distress, financial strain, and disrupted family dynamics (Alliance for Safety and Justice, 2023). The broader economic burden of violent crime is enormous as it accounts for 85% of all costs, with an estimated annual cost of $2.6 trillion (McCollister et al., 2022).

Given these challenges, preventive strategies are crucial for individual and community well-being. One promising approach is self-defense training, which not only provides individuals with physical protection skills, but also enhances psychological resilience and awareness. A recent integrative review found strong evidence that self-defense training is associated with reduced risk of attempted and completed rape, lower rates of nonconsensual sexual contact, and significantly fewer PTSD symptoms among participants (Johnson & Cole, 2024). Self-defense courses have also been shown to improve risk recognition, boundary-setting, and self-efficacy, which are critical components of violence prevention (Katz, Fortune, & Naclerio, 2023; Sabri, Pitter, & Campbell, 2024).

In response to the lack of accessible research-based resources to address crime prevention and provide self-defense training, the Empower Yourself Through Self-Defense program was developed by Utah State University faculty. This program, developed in collaboration with martial arts professionals, provides participants with the essential knowledge and skills to better protect themselves and others against violent crime.

Purpose

The Empower Yourself Through Self-Defense is a comprehensive program designed to educate individuals of all genders and abilities about violent crime while teaching effective strategies for prevention, avoidance, and conflict resolution. Its primary goal is to equip participants with the knowledge to recognize potential threats,

de-escalate conflicts, and respond effectively. The program also emphasizes the development of practical self-defense skills to enhance participants' ability to protect themselves and others in the event of a physical attack.

Method

The Empower Yourself Through Self-Defense program was delivered as a 90-minute workshop that integrated an educational presentation with a hands-on training component to equip participants with fundamental self-defense skills. The program is based on a structured curriculum which includes a 49-slide PowerPoint presentation, a 39-page corresponding instructor guide with corresponding notes, and various handouts summarizing key content and additional resources, such as information on bullying prevention and domestic violence support services.

The curriculum serves as an introductory self-defense course for individuals aged 18 and older who are in generally healthy relationships. It does not address in-depth responses to domestic violence, as such situations are best handled by trained professionals. To ensure both safety and relevance, a domestic violence support professional reviewed the curriculum, while martial arts experts assessed the hands-on training component for effectiveness and safety.

Participants

Since its inception, the Empower Yourself Through Self-Defense program has provided in-person training to over 737 individuals through 90-minute sessions conducted at 26 locations across Utah. The sessions were taught by Extension professionals, who attended a comprehensive training held by the authors of the curriculum, one of whom has an extensive background in martial arts.

Participants self-selected to attend, and were recruited through collaborations with local organizations, as well as social media outreach, flyers, and county Extension newsletters. The majority of participants were female (84.98%), with 35.32% between the ages of 12 and 17. While the program was originally designed for individuals 18 and older, the inclusion of participants aged 12 to 17 was part of a pilot initiative to assess its effectiveness for younger individuals. Most participants identified as Caucasian/White (92.64%), with smaller representations from other racial and ethnic groups. The demographic distribution of participants closely reflected the census data for the areas served.

Procedures

At the beginning of the workshop, Extension professionals delivered a 30-minute PowerPoint presentation covering key topics related to violent crime and personal safety. Topics included risk avoidance strategies, enhancing situational awareness, trusting one's instincts, and understanding the fight-flight-freeze response. Participants were also introduced to self-defense laws, including rights and legal limitations when defending themselves and others.

Following the educational presentation, participants engaged in a hands-on training session designed to prepare them for responding to physical confrontations, where participants had a chance to both observe and practice techniques. This session included instruction on utilizing sound and distance strategically, forming a proper fist to prevent self-injury, blocking punches, executing effective strikes and kicks, and escaping from an assailant's grasp.

Findings

The program was evaluated using a retrospective pre-post survey administered on paper at the conclusion of the workshop. Participants rated pre-workshop and post-workshop levels of self-defense knowledge, confidence, and perceived ability to protect themselves on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

A total of 242 individuals completed the evaluation across 26 workshops statewide. Participation was voluntary, and all surveys were completed anonymously.

The IRB approved evaluation consisted of two primary components, a quantitative assessment and a qualitative assessment

(see Table 1). The quantitative assessment (Q1-Q10) measured changes in self-defense confidence and knowledge, and a post-only question (Q11) that assessed intent to apply the knowledge ("I will use this information to protect myself and others"). Demographic data were also collected. The qualitative questions (Q12-15) captured key learnings, planned behavior changes, interest in additional training, and overall workshop feedback.

Quantitative Findings

Paired t-tests revealed statically significant improvements ($p < 0.001$) across all measured self-defense competencies (see Table 2). The largest gains were observed in participants' confidence and knowledge, particularly in knowing what actions to take during a confrontation (Mean change = 1.37, $t = -21.70$, $p < 0.001$), ways to avoid becoming a victim (Mean change = 1.25, $t = -18.14$, $p < 0.001$, and identifying targets on the body to hurt or disable an attacker (Mean change = 1.23, $t = -17.34$, $p < 0.001$). These findings indicate that participants left the workshop better prepared to recognize threats and apply effective self-defense techniques. Additionally, participants strongly agreed that they would apply what they learned (Q11) ($M = 4.66$, $SD = 0.74$).

Age Group Differences

While the target audience of the curriculum is 18 and older, 35% of those who completed an evaluation were age 12-17. The largest gains in evaluation were observed in this group, likely due to lower baseline knowledge. Adults (18–54) exhibited consistent improvements, though less dramatic than younger participants. Older adults (65+) showed the smallest gains, particularly in physically demanding techniques, suggesting a need for modified training approaches.

Qualitative Findings

Qualitative responses indicated moderate interest in additional self-defense training, particularly in defense against weapons and advanced escape techniques. Participants also reported plans to adopt proactive safety behaviors and practice techniques regularly. Overall, feedback on the workshops was positive, with requests for longer or more frequent training sessions.

Open-ended responses underscored the program's personal value, with participants especially appreciating the practical self-defense techniques including escape strategies and situational awareness. One elderly woman shared, "I learned that even though I am older and not physically able, I can defend myself." Another participant stated, "The information and practice are empowering." These responses highlight the program's effectiveness in building confidence and equipping individuals with essential self-defense skills regardless of age or physical ability.

Discussion and Summary

Statistically significant improvements across all self-defense evaluation measures support the effectiveness of the Empower Yourself Through Self-Defense program. Similar to other research findings, (Brekin, 2008; Katz, et al., 2023; Sabri, et al, 2024, Thompson, 2023), the results of this study indicate that the Empower Yourself Through Self-Defense program may be an effective way to address concerns about personal safety and community wellbeing. Participants demonstrated increased knowledge, improved reflexes, better coordination, increased confidence, and a heightened ability to make decisions under pressure leading to reduced anxiety, helplessness, and fear.

The substantial gains in recognizing threats and applying self-defense techniques highlight the program's success in teaching both prevention and response strategies, empowering individuals to protect themselves more effectively. Many expressed intentions to incorporate proactive safety behaviors into their daily routines and consistently practice the techniques learned. Feedback was overwhelmingly positive, with numerous participants advocating for extended or more frequent training sessions, underscoring the program's impact and the demand for continued self-defense education.

By equipping individuals with practical self-defense skills, the program directly addresses concerns about personal safety and community well-being. Expanding this

program has the potential to contribute to a safer society by fostering awareness, prevention strategies, and proactive safety behaviors, which may reduce violent crime especially rape and sexual assault.

Future Directions

The program's success underscores its public value, as participants leave with a heightened sense of security and the ability to take control of their personal safety. Given the strong demand from individuals of a wide range of age and abilities, modifying and expanding the program could enhance its accessibility and impact. Future efforts could incorporate additional training on situational awareness, de-escalation tactics, and non-physical self-defense strategies to provide more comprehensive prevention tools. Incorporating alternative self-defense techniques that do not rely on physical strength would further ensure accessibility for individuals with physical limitations.

While most participants expressed confidence in applying the skills learned, many expressed a desire for additional skill development. Expanding training opportunities, such as multi-session workshops and specialized courses on weapon defense, ground defense, or workplace safety, could meet diverse learning needs. Additionally, long-term impact assessments would help evaluate skill retention and real-world application, ensuring that self-defense techniques remain effective over time. By continuously evolving and adapting, the program can further strengthen its role in promoting safety and empowerment within communities.

Implications for Extension

University Extension programs provide research-based education to the public, serving individuals of all ages, races, and genders. Committed to accessibility and inclusivity, these programs offer an excellent environment for learning basic self-defense skills. With a broad reach across both rural and urban areas, they ensure a structured, credible, and accessible setting where self-defense training can be taught effectively and safely.

In conclusion, the findings suggest that the Empower Yourself Through Self-Defense program is an effective tool for enhancing individuals' knowledge and skills to protect themselves, address personal safety concerns, and build confidence. For more information about how to access the free Empower Yourself Through Self-Defense curriculum or how to become a trained instructor please contact Stephanie Carlson at stephanie.carlson@usu.edu.

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Tables

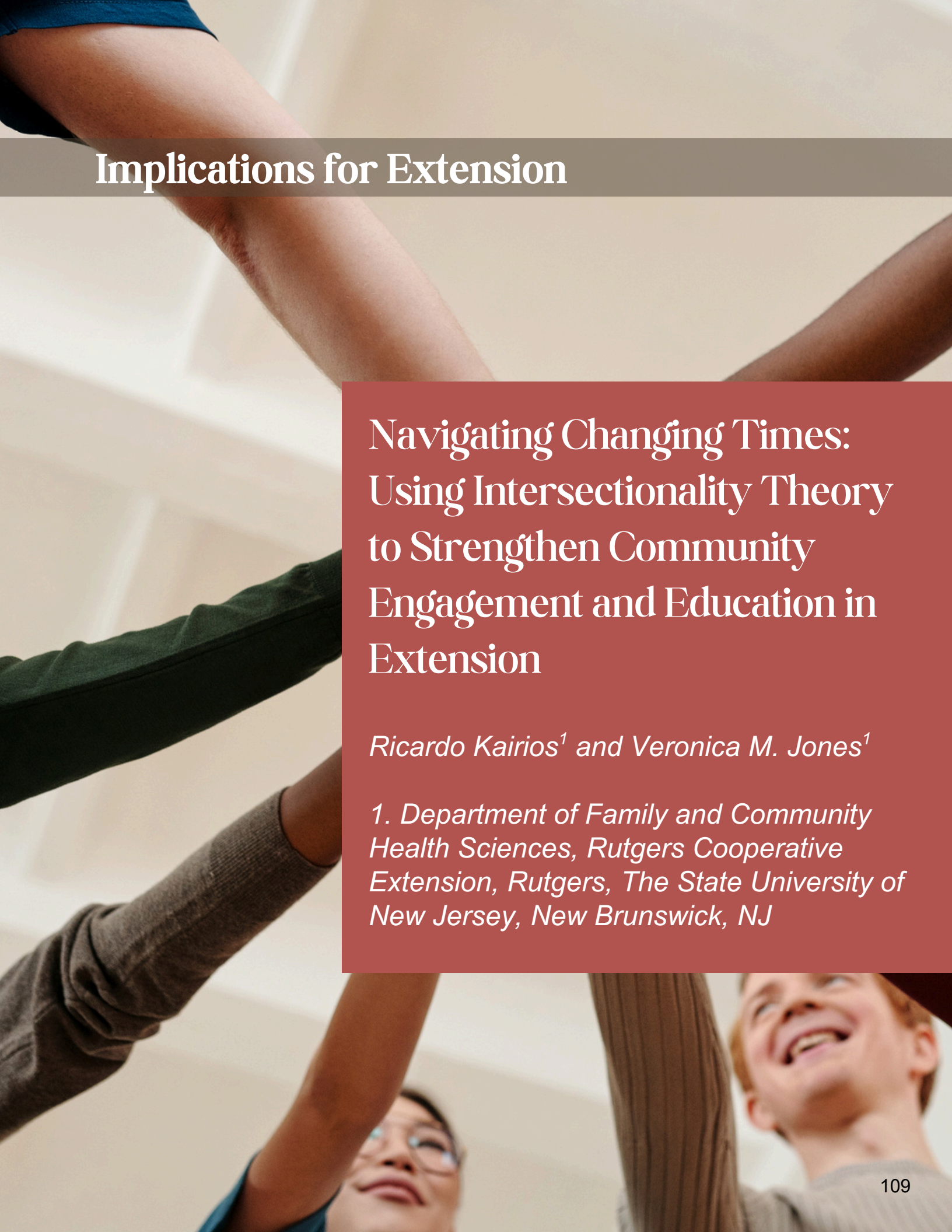
Table 1.
Evaluation Questions Pre-Post Survey Results

Survey Question	
Q1	I know how to recognize dangerous situations
Q2	I know actions I can take in the event of a confrontation
Q3	I know ways to avoid becoming a victim
Q4	I know targets on the body to hurt or disable an attacker
Q5	I know parts of my body I can use as a weapon to defend myself
Q6	I know how to prevent injury by blocks or avoiding blows
Q7	I know how to use punches and kicks to hurt/disable an attacker
Q8	I know ways to free myself from a hold
Q9	I know how to protect myself if attacked
Q10	I feel confident I can protect myself
Q11	I will use this information to protect myself and others
Q12	What motivated you to attend class
Q13	List one or two things that you learned or found interesting from this activity
Q14	What changes do you plan to make as a result of the information you have learned
Q15	What other self-defense topics/skills would you like to learn
Q16	Comments

Tables

Table 2.
Pre- and Post-Workshop Self-Defense Knowledge and Confidence Scores with Paired t-Test Results.

Question	Pre-Event Mean	Post-Event Mean	Change	p-value	n	t-statistic
Q1	3.71	4.56	0.84	p < 0.001	233	-13.63
Q2	3.09	4.46	1.37	p < 0.001	228	-21.7
Q3	3.46	4.55	1.09	p < 0.001	227	-15.69
Q4	3.41	4.66	1.25	p < 0.001	226	-18.13
Q5	3.43	4.66	1.23	p < 0.001	228	-17.34
Q6	2.88	4.46	1.58	p < 0.001	226	-21.25
Q7	3.07	4.5	1.43	p < 0.001	224	-19.05
Q8	2.87	4.44	1.57	p < 0.001	224	-20.06
Q9	3.07	4.42	1.36	p < 0.001	224	-19.59
Q10	3.03	4.28	1.25	p < 0.001	210	-16.85



Navigating Changing Times: Using Intersectionality Theory to Strengthen Community Engagement and Education in Extension

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Abstract

Community engagement and education within Cooperative Extension programs must address the diverse and intersecting identities of individuals and communities to ensure equitable access and meaningful impact. Intersectionality theory provides a framework for understanding how overlapping social identities – such as race, gender, socioeconomic status, and sexual orientation – shape experiences and access to resources. This article discusses the implications of intersectionality for Family and Consumer Sciences professionals and highlights strategies to design culturally responsive programming that meets the needs of diverse communities. Integrating intersectionality into outreach and education efforts can help Extension professionals foster more inclusive programs that support individuals and communities.

Introduction

Part of the National Extension Association of Family and Consumer Sciences creed states, “willingness to accept the challenges of the changing times.” As times change and challenge our work, the need for Cooperative Extension programs to serve diverse populations remains essential. Traditional outreach models, which often adopt a one-size-fits-all approach, frequently overlook the complex ways in which individual experiences impact community engagement. Intersectionality theory, first introduced by Kimberlé Crenshaw (1989), provides a lens to examine how overlapping systems of oppression – such as racism, sexism, and economic inequality – affect individuals’ access to education, resources, and equitable programs and services (Crenshaw, 1989).

In the context of Extension work, applying an intersectional approach allows professionals to tailor their programs to better address the unique needs of historically marginalized communities. This article explores how intersectionality theory can enhance Cooperative Extension’s Family and Consumer Sciences (FCS) initiatives. By integrating this framework, Extension professionals can design programs that more effectively engage underrepresented populations, particularly in areas such as food security, financial literacy, health education, and community leadership.

Objective

This article aims to examine the relevance of intersectionality theory in Extension education and community engagement, highlight strategies for incorporating intersectional perspectives into Extension programming, and discuss the benefits and challenges of applying this framework to FCS initiatives.

Background

Health Equity in Cooperative Extension

In 2021, the Extension Committee on Organization and Policy Health Innovation Task Force published the *Cooperative Extension's National Framework for Health Equity and Well-Being* (Burton et al., 2021). The framework uses a social-ecological model to show how norms, policies, practices, and structural inequities influence health outcomes. It emphasizes the importance of considering diverse influences on health, including social identity factors such as race and gender identity, which are often shaped in society by systemic racism and cisphobia.

Focusing on health equity, social determinants of health, and coalitions as a community asset, the framework guides Extension professionals and the communities they serve. Full integration presents challenges, as Extension systems are complex and require tailored approaches to meet both community needs and job requirements (Charbonneau et al., 2025). Therefore, it is essential for Extension professionals to understand how social identities develop, how power differences create inequities, and how multiple forms of oppression compound challenges for marginalized groups.

Social Identity Development and Marginalization

Social identity development is the process by which individuals identify with specific social groups (Orenstein & Lewis, 2022). This typically begins in adolescence and can have lasting effects. Identities encompass a range of categories, including race, ethnicity, gender identity, sexual orientation, immigration status, and age, as well as lifestyle roles like being an exerciser, smoker, drinker, reader, or hiker. The process is dynamic, shaped by both individual and societal factors, and includes two phases: identity confusion and identity synthesis. Identity confusion represents a period of uncertainty regarding identity with a specific social group, while identity synthesis reflects confidence in one's identity (Orenstein & Lewis, 2022). A meta-analysis by Potterton et al. (2022) found that adolescents experiencing identity confusion are more at risk for social-emotional disorders in adulthood. When identities are not affirmed or are stigmatized, negative psychological and health outcomes can result, especially during adolescence and emerging adulthood (Potterton et al., 2022).

Social identity development is not only shaped by individual values but is also continuously influenced by the broader societal context, including societal and institutional norms. This process can create inequities through the societal valuation of certain identities over others, affecting how individuals experience discrimination, marginalization, and support within their communities (Shen & Dumani, 2013). As FCS educators work to support health equity, understanding the intersections between different social identities (e.g., race, gender, sexual orientation) and how these intersecting identities affect an individual's experience in society is critical. Marginalized groups often face multiple layers of oppression that compound their challenges, creating unique barriers to health access, education, and participation (Shen & Dumani, 2013). By integrating an understanding of these social dynamics into their work, Extension professionals can better address the needs of diverse communities through tailored interventions that account for the complex, intersectional nature of identity and oppression.

Intersectionality Theory and Its Relevance to Extension

Intersectionality recognizes that individuals navigate life through overlapping identities, which can expose them to both discrimination and privilege. This process creates a hierarchy that values some identities more favorably than others, what can be characterized as bias. Kimberlé Crenshaw coined the term intersectionality in 1989 to describe how Black women experience both racial and gender bias (Crenshaw, 1989). In the 1976 *DeGraffenreid vs. General Motors* case, Black women sued for discrimination, but the court dismissed the case because it failed to recognize the intersection of race and gender (Crenshaw, 1989). Although the company hired white women and black men, the unique experiences of Black women were overlooked. Today, intersectionality includes a broader range of identities, such as mental health, ability, nationality, religion, and gender identity, among many additional facets of identity.

Reaching diverse audiences is not new to Extension. Since the early 1900s, Extension has adapted to changing population shifts and needs. However, challenges persist, including limited staff diversity, underrepresentation of target populations, and insufficient funding for culturally tailored programs (Diaz et al., 2024). Community engagement is essential to assess program impact (Franz, 2014). Traditional models often rely on one-size-fits-all approaches that may not meet the needs of diverse communities. These challenges include limited representation in program development; outreach strategies that miss underserved populations, and educational materials that do not reflect cultural realities or identities.

Findings

When designing and delivering programs, Cooperative Extension follows a program planning model (Franz et al., 2015). This model includes phases such as identifying need-based issues, designing program plans based on those needs, delivering science-based education, and evaluating the program's impact. For example, Palmer and

Cromwell's (2019) Six Essential Elements Model provides an adaptable framework for educational programs (Palmer & Cromwell, 2019). The core elements of this model can be enhanced by applying an intersectionality lens, in alignment with the health equity and well-being framework.

Key Takeaways for Extension Professionals

1. Comprehensive Needs Assessment and Culturally Responsive Program Development

FCS educators should integrate intersectionality into program design by understanding the unique demographics and needs of the community. This involves using needs assessment data that reflects intersectional identities – disaggregated race, gender, sexual orientation, disability status, age, income level, and additional relevant factors – to inform program development. Data can be gathered through surveys, focus groups, and key informant interviews.

To put these ideas into practice, educators can engage in professional development opportunities focused on equity and inclusion, review existing curricula for cultural responsiveness, and co-create programs with underserved communities to ensure relevance. For example, Hughes et al. (2022) provides guidance on updating demographic questions in surveys to ensure they are inclusive and reflective of diverse, intersectional identities, thereby helping researchers gather more accurate data on participants' experiences and identities (Hughes et al., 2022). Involving community stakeholders throughout the process ensures their lived experiences are represented (Burton et al., 2021), and partnering with local organizations serving historically marginalized populations can support culturally tailored outreach strategies. To evaluate the effectiveness of inclusive needs assessments, educators can track metrics such as the diversity of survey respondents, the representation of intersectional identities in data, and the extent to which community-identified needs are reflected in program design.

2.Inclusive Outreach and Engagement Strategies

Extension professionals should form alliances with trusted community leaders to bridge connections with underserved groups. This not only enhances engagement but builds trust. These relationships can support the development and use of multilingual and culturally appropriate communication tools.

To put these strategies into practice, educators can co-host events with community partners, conduct outreach in familiar and accessible community spaces, and offer materials in multiple languages. Inclusive engagement also means offering flexible participation options – such as virtual learning, evening sessions, or childcare support – to reduce barriers. Research by Vines (2018) suggests that an engaged model for program delivery may be best suited for Extension programs, as it incorporates community input throughout the process. This model improves learning outcomes, fosters stronger partnerships, builds social networks, and supports sustainable solutions. Impact can be measured through participation rates across demographic groups, feedback from community partners, and pre/post assessments of trust and satisfaction with Extension services.

3.Addressing Structural Barriers

Many underserved communities face structural barriers to education and resources. Extension can help address these by advocating for policy changes that improve access to healthy food, financial services, and educational resources. As outlined in the *Cooperative Extension's National Framework for Health Equity and Well-Being,* leveraging community coalitions is an asset to Extension professionals (Burton et al., 2021). To implement these ideas, Extension educators can participate in local advocacy efforts, collaborate with coalitions to identify policy priorities, and develop programs that directly respond to community-identified needs. For example, offering workforce development programs tailored to populations facing multiple disadvantages or creating leadership initiatives that empower underrepresented individuals to take on decision-making roles.

To evaluate the impact of these interventions, educators can track indicators such as the number of community members accessing new or improved services, policy changes influenced by Extension efforts, increases in leadership roles held by program participants from marginalized backgrounds,

and pre- and post-program assessments measuring changes in knowledge, confidence, or access to resources. Tools such as logic models, community-based participatory evaluation frameworks, and equity dashboards can support this process by helping educators monitor progress, ensure accountability, and improve program effectiveness.

Effectively supporting intersectionality-focused initiatives also requires intentional resource allocation. This includes budgeting for translation services, compensating community partners for their time and expertise, and investing in staff training on equity and inclusion. Grant-writing support and internal funding mechanisms can be leveraged to prioritize programs that address systemic inequities. Transparent resource tracking and community input on funding priorities can further ensure equitable distribution and alignment with community needs. As Extension educators navigate changing times, community partnerships are essential for maximizing resources and addressing inequities. Strengthening Extension's role in this space requires both strategic collaboration and intentional resource development.

4.Personal Reflection

It is important to take time to self-reflect on your individual knowledge and awareness around intersectionality. Questions such as "What are the historical and cultural characteristics of the populations I serve?", "Who is included or left out of programming?" or "How might my own biases reflect in the work I do?" can guide this process (Sabik, 2021). To further support this practice, educators can engage in ongoing professional learning, participate in peer reflection groups, or use tools like the Implicit Association Test (Greenwald et al., 2025), the Intersectionality Toolbox (Sabik, 2021), or learn from previously available trainings like *Coming Together* (Walcott et al., 2020). The Extension network also offers opportunities to learn from colleagues, share insights, and adapt inclusive resources. Personal reflection is not a one-time activity – it is a continuous process that deepens understanding and strengthens the ability to serve diverse communities effectively.

Summary

Integrating intersectionality theory into Extension education and community engagement enhances the ability to effectively serve diverse populations. By recognizing the interconnected challenges individuals face, Extension professionals can design more inclusive, equitable, and impactful programs. This article outlines key strategies for applying intersectionality into practice, including inclusive needs assessments, culturally responsive outreach, and addressing structural barriers through advocacy and intentional resource development. It emphasizes the importance of professional development, curriculum review, and co-creation with historically marginalized communities to ensure programming is relevant, sustainable, and community-driven. These approaches strengthen Extension's commitment to equity and inclusion, ensuring that all communities benefit from educational and outreach efforts.

While this article offers actionable strategies for integrating intersectionality into Extension programming, future research is needed to deepen understanding and expand on the evidence-base literature. Studies could explore the long-term impacts of intersectionality-informed approaches on community outcomes, examine how co-creation models influence program sustainability, trust-building, participant empowerment, and identify adaptable best practices across diverse geographic and cultural contexts. These areas of inquiry would not only strengthen the theoretical foundation but also guide more effective, equity-driven Extension practices. As programming continues to evolve, embracing intersectionality offers a pathway toward more responsive, inclusive, and impactful community engagement.

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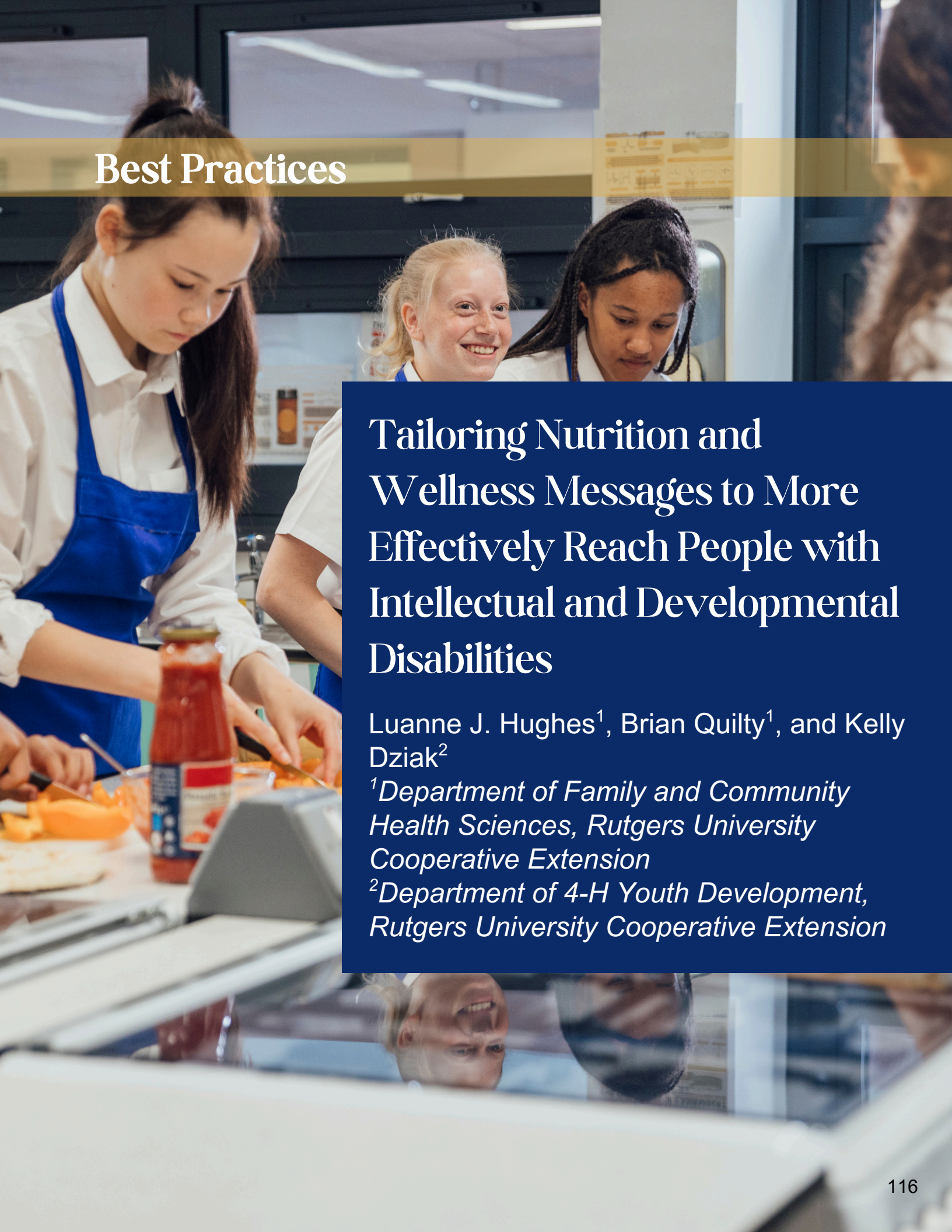

Tailoring Nutrition and Wellness Messages to More Effectively Reach People with Intellectual and Developmental Disabilities

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Abstract

Programs that teach strategies for long-term support and assistance help people with intellectual and developmental disabilities (IDD) reach new heights, so they may thrive in our communities. To ensure programming is accessible and appropriate for all, Cooperative Extension professionals must understand how to effectively adapt programs to meet the learning needs of people with IDD. SNAP-Ed educators participated in Skillfully Working with People with Disabilities, a five-session virtual training, to learn how to adapt methods to better support adults with IDD. The project intended to teach how to make informed choices about healthy lifestyles; it's proven to go beyond, impacting life and social skills.

Introduction

An estimated seven to eight million Americans of all ages, 3% of the general population, experience intellectual or developmental disabilities (IDD); many live in family homes and group settings. Intellectual and Developmental Disabilities are differences that are usually present at birth and uniquely affect the trajectory of the individual's physical, intellectual, and/or emotional development (Zablotsky et al., 2023). Intellectual disability starts any time before a child turns 18 and is characterized by differences in intellectual functioning or intelligence, including the ability to learn, reason, problem solve, and other skills; and adaptive behavior, including everyday social and life skills.

The term "developmental disabilities" is a broader category of often lifelong challenges that can be intellectual, physical, or both. "IDD" is the term used to describe situations in which intellectual disability and other disabilities are present (Eunice Kennedy Shriver National Institute of Child Health and Human Development, 2024). Nearly one in ten families in the U.S. is directly affected by a person with IDD at some point in their lifetime (Tanis, 2024).

Despite the number of people with IDDs, this audience is underserved in many realms due to a lack of specialized training among community educators and service providers who support them. Programs that offer support and assistance help people with IDD reach new heights and thrive in our communities. To ensure inclusive and accessible programming, Cooperative Extension professionals need a foundation of knowledge about intellectual and developmental disabilities and how to effectively adapt and create programs to meet learning needs. Training can establish Extension professionals as leaders who forge valuable partnerships with organizations that help people with IDD achieve productive, meaningful lives and reach their full potential.

Background

Individuals with IDD often experience poorer health outcomes compared to their "typical" peers. Historically, people with IDD have faced significant health disparities, driven by factors such as limited access to high-quality medical care, insufficient training of healthcare providers to address their specific needs, the influence of social determinants of health, and exclusion from public health initiatives and preventive services. Research indicates that health inequities observed in this population are primarily a result of social and economic determinants, rather than the intellectual disability itself (Anderson et al, 2013; Hatton & Emerson, 2015). Recently, there has been increased attention to identifying and addressing these disparities through initiatives focused on promoting healthy lifestyles and improving healthcare provider training (Liao et al., Anderson et al., Murthy et al., 2021).

Although research has identified a need to improve healthcare education for individuals with IDD, insufficient training is a common barrier identified for professionals who work with this population. Education on IDD for medical professionals often reflects an ableist perspective and is presented minimally, if at all, throughout all years of medical school (Siegel et al., 2023). Likewise, a lack of professional development about disabilities is also reported by Extension educators as a barrier to effective inclusive programs (Brill, 2011). It is important that Extension

educators, including those in the SNAP-Ed program, receive additional training specific to teaching individuals with IDD to best meet the needs and learning styles of this population.

There is limited research on the benefits of conducting nutrition education with individuals with IDD. However, there are some studies that show a positive impact. SNAP-Ed has been utilized to increase nutritional knowledge in adults with IDD living in group homes and the site managers (Piccolo & Christofferson, 2013). Another study piloted a 6-week Cooking Matters for Adults series of classes, adapted for people with IDD and their direct support professionals. Results showed improvement in healthy food preparation, eating a balanced diet, and improved kitchen skills as a result of the intervention (Barnhart et al., 2019). Including cooking as a component in nutrition education interventions is one example of healthy lifestyle programming that supports people with IDD. While there are nutrition interventions for this population that include a focus on MyPlate, fruits and vegetables, and grocery shopping, there are currently no nutrition interventions with a focus on cooking skills for individuals with IDD specifically (Goldschmidt & Song, 2017). Rather, educators adapt curricula (like Cooking Matters for Adults, mentioned above) to fit this need.

Rutgers Cooperative Extension's (RCE) Department of Family and Community Health Sciences (FCHS) offers limited-resource audiences, including those with IDD, nutrition education through Supplemental Nutrition Assistance Program Education (SNAP-Ed). Recognizing the need for training to more effectively reach the IDD population, SNAP-Ed nutrition educators participate in a virtual online training, Skillfully Working with People with Developmental Disabilities (Rutgers Cooperative Extension, n.d.). Skillfully Working with People with Developmental Disabilities is an online training series developed by RCE in collaboration with Colorado State University Adult Continuing Education to address the need for more trainings for professionals and educators to better serve people with IDD (Keywood & Brill, 2020). The specialized training provides foundational knowledge for teaching, assisting, and working with people with IDD. Educators learn to recognize various behavioral patterns and apply effective strategies to create a safe and inclusive learning environment. Since 2019, the five-course virtual program received over 1,500 enrollments representing a variety of formal and informal educational settings including school districts, long-term care facilities, day programs, residential housing programs, youth development organizations, and Extension educators.

The five courses within Skillfully Working with People with Developmental Disabilities include an overview of disabilities, learning styles and techniques, understanding and managing behaviors, use of visual supports, and disability laws and program adaptations. Participants learn how to identify behavioral and environmental triggers and techniques to modify learning materials, increase visual supports, and create positive learning environments. The courses are self-led, allowing participants to complete the training at their own pace. Those who successfully complete all five courses receive a digital "Mastery Badge" as evidence of their continued education and eight hours of professional development.

How Extension Educators Put Learned Skills into Practice

Extension educators use skills acquired through Skillfully Working with People with Developmental Disabilities to adapt and pilot SNAP-Ed interventions to teach individuals with IDD how to eat healthy, make informed decisions about what they eat, and how to prepare simple recipes. From Fall 2020 to Fall 2022, two SNAP-Ed educators collaborated with The ARC Gloucester County to pilot a modified nutrition education initiative. The mission statement of The ARC Gloucester is "To empower individuals with intellectual and developmental disabilities and their families to achieve their highest potential through advocacy, education and quality services," making them an ideal partner (The Arc Gloucester, 2025). The first curriculum adapted and taught was Just Say Yes to Fruits and Vegetables, which consists of 13 lessons including MyPlate, fruits and vegetables, whole grains, and healthy

beverages. Working with The ARC Gloucester County, 13 classes were taught at a variety of sites, including group homes, supervised apartments, and special needs centers. Utilizing skills learned from the Skillfully Working with People with Developmental Disabilities training, SNAP-Ed nutrition educators adapted the curriculum to better suit the audience. Educators used a variety of strategies to engage adults with IDD in the curriculum (Table 1).

Classes were adapted to be highly interactive and supported with help from site leaders (Table 1). Physical activity was included with each class to get participants moving during a time when they were mostly sedentary. The most innovative component of the program was conducting hands-on cooking during class. Recipes were chosen with assistance from the site, and SNAP-Ed nutrition educators worked with site leaders to help participants cook and taste a healthy recipe.

Pleased with the program, The ARC requested additional lessons, so the Food Smarts for Adults curriculum was adapted and taught next (Table 1). Food Smarts is a flexible, learner-centered cooking and nutrition curriculum that aligns with trauma-informed principles. This allowed for continued work with these groups and reinforcement of topics over a longer period of time. The program continued to grow, expanding to an additional 22 sites, 10 more educators, and 3 other New Jersey counties. Currently, twelve educators in our four SNAP-Ed counties work with individuals with IDD using strategies acquired through the online webinars and through peer-to-peer sharing and modeling. SNAP-Ed educators reported to supervisors that training to develop skills that support outreach to adults with IDD improved their ability to deliver lessons that were meaningful and on-point with clientele needs.

Outcomes

Program success was evaluated through structured debriefs and anecdotal feedback from staff at The ARC, providing meaningful insight into the program's relevance, delivery, and observed benefits among participants. The majority (88%) of program participants individuality. ARC staff reported that SNAP-Ed lessons helped them achieve this goal in an interactive, hands-on format. Likewise, ARC clients shared their enthusiasm for the lessons with feedback such as, *"I like learning how to eat healthy and lose weight with the SNAP-Ed class so I can get down to my goal weight of 159 pounds!"* Another shared that he, *"was surprised that the SNAP-ED Cowboy Caviar recipe ended up tasting good, but I did like it!"*

Although SNAP-Ed sessions were not traditionally part of The ARC's programming, they emerged as a popular and effective tool for teaching new skills and promoting healthy behaviors. Adaptations made to increase accessibility for individuals with IDD fostered strong engagement from both participants and staff. Also, participants at each site returned weekly to each class, which helped to reinforce the topics they were learning.

To evaluate the impact of the Skillfully Working with People with Developmental Disabilities training series on students' professional practices, a post-course survey was distributed to 185 course participants(including the SNAP-Educators) who completed the course between 2019-2025. Forty-six responses were collected (response rate of 25%). Table 2 presents the employment industries represented by survey respondents. Survey participants indicated the degree to which they agreed with statements related to their knowledge gained from the courses (Table 3), their implementation of information gained from the courses (Table 4), and their perceived level of skill improvement (Table 5).Results show that participants improved their knowledge and skills (98%), reported professional and personal growth (95%), and improved outcomes for their clientele (92%) because of participation in the course. Respondents also reported a better understanding and use of procedures when working with people with IDD (90%), a better understanding of IDD (85%), and having applied the course information into their professional work (80%).

The survey is ongoing and made available to course participants after a minimum of six months post-course completion. Since 2022, limited grant funding has enabled 12 New Jersey SNAP-Ed educators to access the Skillfully Working with People with Disabilities

online training series. During routine team check-ins, nutrition educators consistently reported that the training improved their ability to adapt and deliver lessons more effectively and boosted their confidence in working with individuals with IDD. Similarly, staff from The ARC noted that the lesson modifications implemented by educators enhanced lesson effectiveness and were well-aligned with the needs and abilities of their clients with IDD.

While internal feedback on the training has been overwhelmingly positive, a key limitation of this study is the lack of a specific identifier for SNAP-Ed on the course survey. Fifteen respondents identified as Extension professionals, five of whom were from New Jersey. From these five responses, three individuals listed their job title as “Nutrition Educator.” However, we are unable to determine their alignment with SNAP-Ed. We suspect that high staff turnover within SNAP-Ed could potentially contribute to a lower response rate, as some educators likely exited their roles before receiving the survey. Additionally, the demanding outreach schedules of SNAP-Ed educators—who dedicate approximately 75% of their time to community engagement—could have limited their availability and willingness to complete optional post-training surveys.

Conclusion

Extension professionals can learn simple strategies to reach individuals with IDD, welcoming them into our programming and offering them much-needed opportunities for education and enrichment. Trainings such as Skillfully Working with People with Developmental Disabilities offer convenient opportunities to make training accessible and possible for all Extension professionals. Likewise, applying skills and techniques can support Extension educators in adapting existing curricula and developing innovative new curricula that target people with IDD specifically. Although further evaluation of the Skillfully Working with People with Disabilities training is ongoing, current data, along with staff and site feedback, suggest that it is a valuable resource for enhancing Extension educators’ capacity to effectively support individuals with IDD.

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Tables

Table 1. Strategies to Engage Adults with IDD in the Curriculum

Engagement Strategy	Examples of Implementation in Instruction
Use multiple methods to deliver information.	• Show visuals of MyPlate & speak about each food group. • Bring whole foods for participants to touch and interact with. • Have participants draw pictures of fruits and vegetables they like.
Be very clear and specific in your language.	• Instead of saying, “Limit sugary drinks,” say instead, “Drink water. Try not to drink soda or fruit punch; those have a lot of sugar.”
Present oral information at a measured pace, using pauses to encourage understanding.	• After explaining a new topic, use thumbs up/thumbs down for knowledge check.
Offer cues to help with transitions.	• “We have 5 minutes left until our taste-testing activity is over.” • “We have 10 minutes to peel potatoes for the soup.”
Employ modeling to help participants learn appropriate interactions.	• Model how to politely decline a food they dislike. Say, “No thank you, I don’t want any more,” with a smile and polite tone. Participants observe facial expressions, tone, and body language.
Employ rehearsing to help participants learn appropriate interactions.	• Show different steps of a recipe and have participants act out. • Demonstrate specific exercises for participants to rehearse; break into smaller steps if needed.
Employ role-playing to help participants learn appropriate interactions.	• Simulate shopping at the grocery store, identifying foods, and choosing healthy options. • Simulate preparing a meal together as a family.
Embrace consistency and simplify	• Have the same structure each week: ice breaker, lesson activity, movement break, recipe demonstration.
Be positive and patient. Remember that an unconventional response may be influenced by cognitive difficulty that affects interaction.	• Allow all participants the opportunity to respond to questions and participate, without rushing them.
Minimize environnemental distractions.	• Turn off screen savers. • Silence cell phones. • Eliminate background noises.
Skillfully Working with People with Disabilities https://online.colostate.edu/badges/developmental-disabilities/	

Tables

Table 2. Employment Industries of Survey Respondents

Employment industries (select all that apply)	*n=37*
	# of respondents
Cooperative Extension	15
Education	13
Community Outreach	10
Social Services	8
Healthcare	3
Rehabilitation	2
Other	2
Long-term care	1

Note. n=number of responses. The survey employed a multiple-choice prompt allowing respondents to submit multiple answers.

Tables

Table 3. Skillfully Working with People with Developmental Disabilities Post-Course Impact Survey - Knowledge Gained

Statement: As a result of this course...	*n=40*		
	% of respondents		
	"Agree" or "Strongly Agree"	"Neither Agree nor Disagree"	"Disagree" or "Strongly Disagree"
I have a better understanding of procedures to follow when working with clientele with developmental disabilities.	90%	3%	8%
I learned instructional techniques to enhance learning in an inclusive environment.	90%	3%	8%
I have a better understanding of how to use visual supports.	90%	3%	8%
I have a better understanding of how to make accommodations and modifications for youth and adult audiences.	88%	0%	12%
I have a better understanding of developmental disabilities.	85%	0%	15%
I have applied the information received from the course in my professional work.	80%	10%	10%

Note. n=number of responses. The survey employed a 5-point Likert scale, with response options ranging from "strongly agree" to "strongly disagree," including "agree," "neither agree nor disagree," and "disagree."

Tables

Table 4. Skillfully Working with People with Developmental Disabilities Post-Course Impact Survey - Implementation

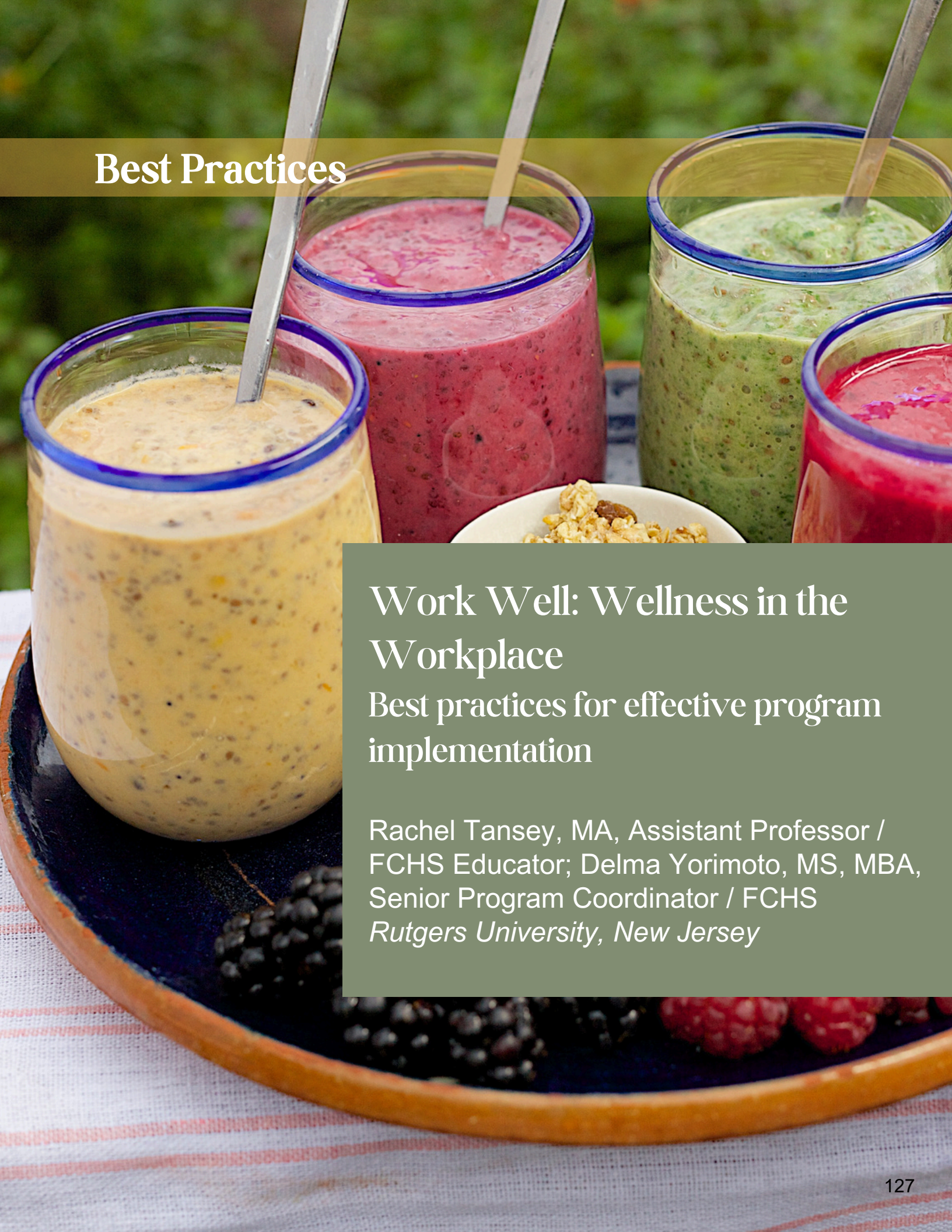
Statement: As a result of this course...	*n=40*			
	% of respondents			
	"Yes, I do."	**"I plan to."**	"I already did this before the course"	"I do not."
I use more visual aids.	66%	17%	15%	2%
I use instructional techniques to enhance learning in an inclusive environment.	60%	18%	20%	2%

Note. n=number of responses. The survey employed a 4-point Likert scale, with response options including "Yes I do", "I plan to", "I already did this before the course", and "I do not".

Table 5. Skillfully Working with People with Developmental Disabilities Post-Course Impact Survey - Skill Improvement

Rate your level of improvement as a result of this course in the following categories:	*n=39*			
	% of respondents			
	"Significant Improvement"	**"Some Improvement"**	**"Little Improvement"**	**"No Improvement"**
Improved knowledge and skills	44%	54%	2%	0%
Professional growth	51%	44%	3%	2%
Personal growth	49%	46%	3%	2%
Critical thinking and decision-making	38%	54%	5%	3%
Improved outcomes for clientele	56%	36%	5%	3%

Note. n=number of responses. The survey employed a 4-point Likert scale, with response options including "significant improvement", "some improvement", "little improvement", and "no improvement".



Work Well: Wellness in the Workplace

Best practices for effective program implementation

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Abstract

The Work Well, Wellness in the Workplace (Work Well) program is an online health promotion initiative aimed at enhancing participants' knowledge and intentions to improve healthy habits, increasing physical activity, and self-reported wellness as well as quality of life. Utilizing a pre- and post-survey design, the program assessed changes in those areas. Results indicated positive improvements in participants' understanding and intentions regarding health behaviors, aligning with existing research on the effectiveness of evidence-based interventions. This paper discusses best practices for implementing virtual health promotion initiatives in the workplace, informed by the Work Well study.

Introduction

Over a decade ago, a partnership was formed through cross-county collaboration to develop a plan addressing the needs of employee wellness. Family & Community Health Sciences (FCHS) educators assessed the needs of business staff and found it imperative to create educational programs focused on the health and well-being of employees. Fouad et al. (2017) found that workplace interventions increased productivity. In a systematic review, Javanmardi et al. (2025) found that health promotion in the workplace is effective for industrial workers. The virtual Work Well, Wellness in the Workplace (Work Well) program aims to reach employees of both traditional and non-traditional work settings.

This program has grown over the years with partial funding and support from both the Department of FCHS, part of Rutgers University Cooperative Extension, as well as support from a New Jersey Department of Health grant. Under the guidance of Rutgers University faculty and wellness coordinators, a variety of educational interventions have been developed, such as informative videos, electronic newsletters, and healthy recipe suggestions. These resources were utilized to build the Work Well intervention.

The Work Well program addresses a variety of topics (see Appendix 1) based on the interests of employees and the criteria of the researchers. Blake and Gartshore (2016) found in a systematic review that participants of an online intervention significantly improved their knowledge around nutrition and physical activity. Employee engagement for the Work Well initiative has some of the most engaged participants offered by the FCHS Department, reaching thousands monthly statewide. In the meta-analysis from Carolan et al. (2017), it was confirmed that digital psychological interventions showed effectiveness for employee engagement and rates of adherence. The Work Well initiative prioritizes making health and wellness accessible in the workplace, enabling employees to adopt healthier lifestyles and reduce the risk of chronic diseases.

Purpose

The FCHS Department, Work Well team is dedicated to enhancing overall well-being by emphasizing the importance of healthy living and promoting more active lifestyles. Goetzel et al. (2014) found that employers who implemented health promotion programs maximized the likelihood of positive health and financial results for both employee and employer. Research underscores the preventability of heart disease and obesity through early intervention. By addressing prevalent health issues such as obesity, heart disease, diabetes, and cancer, the study underscores the significance of prevention through education on proper nutrition and healthy practices.

Research shows that preventative lifestyles and interventions are essential for reducing risk factors contributing to chronic disease. The Work Well objectives are to promote health and wellness in the workplace through an engaging online platform designed to help participants:

- Enhance knowledge and intention to create/maintain overall healthy habits around nutrition and stress management.

- Increase intention to incorporate healthier levels of physical activity.
- Improve self-reported wellness and quality of life.

Background

This Work Well initiative addresses the "Healthy People 2030" campaign, a national United States Department of Health and Human Services initiative to increase the proportion of worksites that offer an employee health promotion program (Office of Disease Prevention and Health Promotion, n.d.). The program received Institutional Review Board approval (FWA00003913) to deliver weekly sessions (see Appendix 1) featuring evidence-based education on wellness topics, along with pre- and post-surveys administered over a 12-week period. Some of the topics address eating nutritious foods, reducing stress using mindfulness techniques, promoting positive self-image and self-care, enhancing exercise habits, along with practical advice on managing personal finances and balancing work/family responsibilities.

To address the challenge of educating busy adults, the Work Well team offers online sessions accessible at participants' convenience, integrating wellness education into the workplace to reach a diverse audience. Wojcik et al. (2024) note that employers are shifting towards programs focusing on overall well-being, including work-life balance, stress management, mental health, and flexible physical activity options for various work settings.

The Work Well web-based program was marketed through email and promotional flyers to all employees through the FCHS Department. Those who completed the pre-survey were then invited to participate in the study to explore diverse learning opportunities for healthier living.

Findings

In 2023, a pilot study was implemented at two sites, at both the Hudson County Department of Health and with the employees of Monmouth County, serving a total of 67 adult participants/employees. The initiative at both sites was very successful and has shown to be effective for those participating. One individual, who identified as a diabetic female, shared, *"The videos were great for me. The tips are easy to follow, they helped me to return to healthy habits like exercising more."* The post survey data showed that 47 out of 62 of the enrolled participants said that this program helped them to increase their physical activity. Participants shared some of the strategies that contributed to this success, such as partnering with a family member to go for walks, finding time during work breaks to stretch, and taking the stairs instead of the elevator, among others.

In addition, 47 out of 49 post-survey respondents shared that because of the intervention, they made positive changes to adopt a healthier lifestyle. Twenty-five out of 49 post survey respondents reported increased knowledge about healthier foods and skills to prepare recipes, while 23 out of 49 participants reported increased consumption of healthier foods, including fruits and vegetables. One participant said: *"Since the wellness program I have learned to consume more fruits and vegetables… I am exercising more and taking longer walks. It just helps me to de-stress and take in the beautiful scenery."*

Site managers expressed a desire to continue with more programmatic efforts, and in 2024, Work Well was implemented for workers employed by Hudson and Monmouth Counties, with 281 employees engaging on their wellness journey. The initiative achieved significant outcomes: 67% of participants completed the post-survey. Of the 188 respondents, 97% reported making positive lifestyle changes, including: 79% increased physical activity by using work breaks, walking more, and taking stairs, 57% adopted healthier diets, 56% experienced overall health improvements, 55% increased their

vegetable intake, and 54% prepared healthier meals.

Both implementation years, participants (86% female and 14% male) reported meaningful changes, such as switching from sugary drinks to water, meal prepping, and adding exercise to their routines. One participant noted, *"The program reminds us to put ourselves first, eat healthier, and destress."* The Work Well initiative continues to empower participants with sustainable health practices, demonstrating the impact of accessible wellness education. Plans are underway to expand efforts and reach new communities, including Spanish-speaking audiences. The lessons learned from the research and implementation of the 2023 and 2024 interventions yielded the following best practices.

Best Practices

The Work Well curriculum was collaboratively developed by extension professionals and registered dietitians to deliver comprehensive, evidence-based health and wellness content. Drawing on the Dietary Guidelines for Americans (U.S. Department of Agriculture & U.S. Department of Health and Human Services, 2020) and integrating established best practices in physical activity and stress management, the program was intentionally designed to promote sustainable behavior change. The curriculum development was guided by the Health Belief Model (HBM), which posits that individuals are more likely to engage in health-promoting behaviors when they recognize personal health risks, perceive benefits from behavior change, and feel empowered to act. Janz and Becker (1984).

To enhance participant engagement and knowledge retention, the program incorporated multiple interactive learning modalities, including surveys, videos, wellness challenges, recipes, webinars, and curated resource links, facilitating both applicability and enjoyment. Personalization was emphasized by encouraging participants to adapt the content to their individual health goals, preferences, and constraints, using tools such as MyPlate Plan and Shop Simple with MyPlate for customized meal planning and activity tracking. Practical implementation was further supported through actionable resources, including grocery lists, meal preparation guides, efficient cooking strategies, and accessible physical activity routines.

Cultural and linguistic inclusivity was prioritized through the provision of Spanish-language materials and the integration of culturally relevant recipes and practices to enhance accessibility. Ongoing program evaluation, informed by participant feedback, utilization data, and outcome metrics, allowed for continuous refinement of content, delivery methods, and engagement strategies. These ongoing adaptations included the expansion of Spanish-language offerings, simplification of recipes, and optimization of webinar lengths to meet evolving participant needs.

In addition, digital delivery was informed by general best practices for online wellness programs. The platform was designed to be user-friendly, with an intuitive interface, clear navigation, and minimal technical barriers to accommodate varying levels of digital literacy. Device accessibility was prioritized by utilizing virtual platforms such as Zoom, text messaging, email, and web-based links, all accessible via computers or mobile devices. Privacy and security protocols adhered to applicable data protection regulations, as per the Institutional Review Board confidentiality regulations, to ensure the safeguarding of personal health information and to maintain participant trust.

Discussions and Limitations

The Work Well program has demonstrated positive outcomes and significant potential for continued growth; however, several limitations should be addressed to support its long-term sustainability. Usability is inherently subjective, as features intuitive to some participants may pose challenges to others, particularly across varying age groups, technological proficiencies, and accessibility needs. Limited engagement in feedback mechanisms further constrains opportunities

for continuous improvement, especially when participation incentives are lacking. Additionally, while the program offers extensive resources, the volume of information may contribute to cognitive overload, potentially diminishing engagement and limiting overall effectiveness.

Despite these challenges, the Work Well program exemplifies how Extension professionals can address the evolving needs of a diverse workforce through innovative, inclusive, and evidence-based strategies. By embedding wellness into daily routines, the program promotes healthier, more productive work environments. Its core objective—to foster a culture of health through accessible virtual initiatives—empowers employees to adopt sustainable behaviors, enhance physical and mental well-being, and strengthen long-term health literacy. This approach supports improvements in knowledge, intentions, and self-reported wellness through digital health promotion interventions.

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Appendix 1

The Work Well intervention provides 12 weekly sessions with educational materials delivered via Microsoft Outlook / email including a confidential pre and post survey. Each email contained links to three educational components, designed to promote engagement and encourage sustainable behavior change. The online feature allowed for self-paced learning while maintaining a cohesive flow across the program.

1. 5-minute Video lessons providing accessible, concise education.
2. Webinars – recorded sessions featuring expert speakers in nutrition, fitness, and stress management to build on the 5-minute videos.
3. Factsheets, Recipes, and/or Newsletters – Practical resources reinforcing video and webinar content, covering nutrition facts, easy meal prep ideas, and wellness tips tailored to workers with time and resource constraints.

Topics explored were the following:

1. Health Benefits of Yoga
2. Breathe your Stress Away
3. Laughter is the Best Medicine
4. Cultivate Calm in Your Life
5. Physical Activity While on the Job
6. Sustaining a Healthy Lifestyle
7. Boosting Your Immune System
8. Brain Food
9. Super Snacks
10. Food and Mood
11. Hydration Happiness
12. Power of Prevention
13. Beating the Blues
14. Infusing Ecotherapy into Your Day
15. Create a Colorful Plate
16. Gluten Free
17. MIND Diet
18. Longevity and Health
19. Have a Healthy Heart
20. Pass (Up) the Salt
21. DASH Diet
22. Healthful Harvest
23. Healthy Meetings
24. Stress Less on the Job

The table below shows an example of weekly lessons:

Appendix 1

Curriculum			
Topics	**Lesson Links**	**Selected Objectives**	**Health Believe Model Components**
Stress Management	5-min video: Stress Less on the Job. Wellness Wednesdays with FCHS Webinar: Slowing Down: Rethinking Your Relationship with Time Recipe: Quinoa, Roasted Veggies and Fresh Herb Salad Resource: Workplace Wellness: Stress Less on the Job	Identify 3 practical stress management techniques or mindfulness exercises to enhance mental well-being.	• Perceived Severity: Educating participants on the health risks of chronic stress, including its impact on cardiovascular and cognitive health. • Perceived Benefits: Highlighting the physical and mental health improvements associated with stress reduction. • Self-Efficacy: Providing practical workplace stress management strategies, such as mindfulness and time management techniques. • Cues to Action: Reinforcing stress resilience through brain-supportive nutrition with a healthy recipe.
Nutrition	5-min video: Pass (up) the Salt Wellness Wednesdays with FCHS Webinar: Lose the Salt, not the Flavor: Reducing Sodium in your Everyday Cooking Recipe: NJ Broiled Scallops & Farro Salad Resource: Lose Salt not the Flavor	Name 3 way to reduce excess sodium in meals Name 3 spices that can boost flavors and reduce the need to add salt to homemade meals	• Perceived Severity: Educating participants on the health risks of excessive sodium intake, including hypertension and cardiovascular disease. • Self-Efficacy: Providing a resource on flavorful spice alternatives to reduce sodium in meals. • Perceived Benefits: Emphasizing the advantages of homemade meals, including better sodium control and overall health benefits. • Cues to Action: Offering low-sodium recipes to support practical implementation of dietary changes.

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