Intergenerational Creative Movement Program: A Social Connection Intervention to Foster Health and Well-Being

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[pre-print]

ABSTRACT

A sense of connection and belonging is widely recognized to be essential for mental health. Yet, since the COVID-19 pandemic, loneliness, social isolation, and mental health problems remain elevated across America. Transitions into young adulthood and older age, while distinct, similarly challenge social connectedness, especially among women. Our multi-lesson education program connected first-generation female college students with college-educated older women to foster belonging and improve mental health. The program integrated dance as a creative physical activity, promoted intergenerational engagement through a humanistic focus on generativity, and used a social network approach to gauge the development of connections among participants across the multi-lesson period. Social Network Analyses (SNA) revealed the program's success in building close intergenerational connections, reinforced by qualitative insights from in-depth interviews that highlighted an emergent sense of belonging. Pre- and post-intervention surveys showed these connections significantly improved participants' mental health. These findings were further supported by a comparison of mental health assessments between the participant (n=20) and control group (n=20). Our findings demonstrate the potential for creative movement and SNA techniques to be scaled up in other community settings, highlighting their applicability in fostering social connectedness and enhancing mental health, particularly relevant to aging populations.

INTRODUCTION

The United States (U.S.) is experiencing a mental health crisis rooted in an epidemic of loneliness and social isolation (U.S. Surgeon General, 2023), which was exacerbated by the COVID-19 pandemic (Adams-Prassl, 2022; Amo, Nabil, & Patterson, 2024). Although this crisis is widespread, the lives of women have been disproportionately affected. Older women and first-generation female undergraduate students are especially vulnerable because of being in a critical life stage that often separates them from their social connections (e.g., empty nester, or going off to college) (Moen, 2022; Usick, 2020). Although the underlying problem is widely recognized (i.e., loneliness and social isolation), solutions aimed at fostering social connections to enhance mental health remain underdeveloped. In response to these unique challenges, we designed, implemented, and evaluated an Intergenerational Creative Movement Program (ICMP) that is highly innovative in three key ways:

First, guided by a humanistic person-centered orientation (Rojas, 2019), we transposed traditional civic-centered approaches that confine participants within age-graded roles such as "volunteer" or "service learning" (Knight et al., 2014; Park, 2014) toward intergenerational programming that increases interaction and exchange between generations. ICMP was an eight-lesson program based on cultivating an environment advantageous for building close and meaningful relationships among a non-familial group of women through organic interactions (Campbell et al., 2023). Programmatic design was informed by evidence-based practices surrounding the role of arts/creativity (Fancourt & Finn, 2019). Specifically, we drew on the power of creative movement, or what some may call interpretive dance, to help facilitate social connections and improve mental health (Yan et al., 2024). Each of the eight one-hour creative movement lessons took place at the [LOCAL] Extension office and included discussion and movement related to the topic of home.

Second, mental health outcomes were assessed by a battery of well-established measures via pre- and post-program surveys that were administered to both a control and intervention group. Informed by a positive psychological orientation (Seligman, 2010), mental health and the concept of flourishing was measured by self-evaluations of quality-of-life as well as psychological and social well-being (Keyes, 2002). We specifically focused on flourishing because of its strong relationship with enhanced social connectedness, school/work performance, and physical health (Dahl, Wilson-Mendenhall, & Davidson, 2020).

Third, we extended a social network analysis (SNA) intervention assessment battery (Gesell, Barkin, & Valente, 2013; Valente, 2012; Valente et al., 2015) to gauge the development of social connections over the eight-week lesson period. These SNA assessments were used throughout the study to inform the design of each subsequent intervention group and lesson. Although there is a rich history of SNA use within intervention practice and research, few if any intervention studies have used longitudinal SNA methods involving sociocentric (i.e., whole network) techniques applied at multiple (i.e., more than two) points in time across the study period.

BACKGROUND

A large body of research has examined intergenerational interactions between undergraduate students and older adults, but this is largely limited to the realm of service learning. It tends to focus on undergraduates' interactions with long-term care residents and students' perceptions of and attitudes toward aging and older people (Park, 2014). Among the few studies that examine community-residing older adults, the majority focus on volunteering (Krzeczkowska, et al., 2021)–the often socially designated status of able-bodied older adults after retirement versus their role as a mentor. Although useful for helping to reduce ageism and enhance civic-minded values, such intergenerational interactions generally do not lead to close social connections nor do they have a substantial positive impact on mental health or the ability to flourish (Knight et al., 2014).

Fewer studies demonstrate that intergenerational interactions foster close social connections and mental health when they are person-centered and focused on organic meaningful engagement (Campbell et al., 2023; Marcum & Koehly, 2016). Although these types of programs typically have substantial benefits for both younger and older participants, they are relatively rare because it is difficult to facilitate and measure reciprocal organic intergenerational interactions over an extended period of time (Kaplan, 2004). Yet, in view of population aging and the ongoing mental health crisis, there is a great need to understand how close intergenerational bonds can be better promoted (Carr & Gunderson, 2016).

The World Health Organization (WHO) recently substantiated the role of arts/creativity as a strategy to promote both close social connections and improve mental health (Fancourt & Finn, 2019). Specifically, co-engagement in a creative process requires a level of vulnerability that lays a foundation for trust, necessary for building close and meaningful relationships (MacLeod et al., 2016). This socio-cognitive process is enhanced and particularly beneficial for mental health when it involves creative movement (i.e., dance). This is because simultaneous creative movement activates neural pathways that lead to a merging of the "self" and "other," and when this involves trustful interpersonal touch it promotes homeostatic regulation that is also beneficial for mental health (Yan et al., 2024).

In general, artistic/creative movement exercises are especially useful tools to improve mental health and flourishing because they help individuals work through communicating emotional states (Bailey, 2022). When combined with the long-recognized importance of physical activity (Prochnow & Patterson, 2022; Reiner, Niermann, Jekauc, & Woll, 2013) the benefits are likely enhanced. Growing research suggests that various creative physical movement programs have a beneficial impact on both young (Burkhardt & Brennan, 2012; Atkins, Deatrick, Gage, et al., 2019_) and older adults' (Wu, Chi, Lee, et al., 2021) physical and mental health. Yet, we identified only one study of an intergenerational dance program based on a sample of community-residing adults. This program had a positive impact on social connections and well-being, but results were limited to qualitative information (Atkins, Deatrick, Gage, et al., 2019).

One major criticism of the intergenerational intervention literature surrounding social connections and mental health is that it lacks methodological rigor. Although there are suggested strategies that could be reasonably accommodated, such as the use of experimental design and consideration of both qualitative and quantitative data (Peters et al., 2021), challenges surround objective measurement of close social connections. Along these lines, an SNA approach appears to be promising because it allows researchers to analyze and visualize network dynamics to not only evaluate the efficacy of an intervention, but to also inform program design and implementation (Valente, 2012). Insights gained from SNA can enhance communication, facilitate change, and encourage meaningful relationships. Thus, we expanded upon an innovative social network approach (Gesell, Barkin, & Valente, 2013; Valente et al., 2015), and used network theories and techniques specifically designed to gauge social connectedness within groups (Feeman, 2004).

Mental health is often evaluated in terms of qualitative accounts and/or a single-item quantitative assessment (Peters et al., 2021). This is problematic because mental health is a multidimensional construct that is linked to human well-being and functioning. It can be argued that it is ideal to focus on the promotion of positive mental health opposed to simply the mitigation of negative mental health (i.e., mental illness) (Seligman, 2010; Thoits, 2011). Although there is no agreed upon specific multidimensional measurement strategy for mental health, the concept of flourishing has recently emerged as the gold standard for intervention-related purposes (Ciarrochi et al., 2022). In general, flourishing (i.e., optimal mental health) reflects high levels of emotional well-being as well as psychological and social functioning (Keyes, 2002, VanderWeele, 2017).

Flourishing represents the positive end of a mental health continuum where the negative end is denoted by languishing (i.e., the absence of mental health) and the middle consists of moderate mental health. Across a wide array of outcomes, including social connectedness, school/work performance, and physical health, those who are flourishing are relatively better off (Dahl, Wilson-Mendenhall, & Davidson, 2020). Conversely, those who are languishing are relatively worse off across outcomes, and even more so than those who suffer from severe depression but who are not languishing (Keyes, 2005).

METHODS

SAMPLE

The intergenerational creative movement pilot study included a control group (n=20) and an intervention group (n=20) equally stratified by age (first-generation undergraduate students and college-educated women aged 40-years or older) obtained via a convenience sampling strategy. First-generation college women were specifically recruited through the University's First-Generation Office. A local Cooperative Extension County Agent and State Extension Specialist further recruited participants through flyers, email listservs, social media blasts, and newsletters. Participant characteristics are summarized in Table 1.A total of 40 participants was achieved by the study start date, but one control group participant did not return the survey. Therefore, the final sample size is 39, with 20 participants in the intervention group and 19 participants in the control group. IRB approval was obtained from the [STATE UNIVERSITY]'s non-medical review board, and all information presented here has been deidentified to protect the anonymity of participants.

Table 1. Sample Characteristics: Intergenerational Creative Movement Program Intervention and Control Group (N=39)

Int.	Age	Race	Hisp.	Education	Mar. Stat.	Ctrl.	Age	Race	Hisp.	Education	Mar. Stat.
1	18	Multi	No	HS	Never	21	19	White	Yes	HS	Never
2	18	Other	Yes	HS	Never	22	24	Other	Yes	BA	Never
3	18	Black	No	HS	Never	23	21	White	No	HS	Never
4	18	Other	Yes	HS	Never	24	20	White	No	HS	Never
5	19	White	No	HS	Never	25	21	White	No	HS	Never
6	18	White	No	HS	Never	26	25	Black	No	BA	Never
7	18	White	No	HS	Never	27	20	White	No	HS	Never
8	19	Black	No	HS	Never	28	23	White	No	BA	Never
9	18	Multi	No	HS	Never	29	20	White	No	HS	Never
10	18	White	No	HS	Never	30	23	White	No	HS	Mar.
11	49	Black	No	Grad/Pro	Div.	31	46	White	Yes	Grad/Pro	Mar.
12	53	White	No	Grad/Pro	Mar.	32	60	White	No	BA	Div.
13	48	White	No	BA	Mar.	33	67	White	No	Grad/Pro	Div.
14	44	White	No	BA	Mar.	34	74	White	No	Grad/Pro	Div.
15	50	White	No	BA	Mar.	35	42	Black	No	Grad/Pro	Never

Int.	Age	Race	Hisp.	Education	Mar. Stat.	Ctrl.	Age	Race	Hisp.	Education	Mar. Stat.
16	46	White	No	BA	Never	36	44	White	No	Grad/Pro	Mar.
17	54	Other	No	BA	Div.	37	50	White	No	Grad/Pro	Div.
18	54	White	No	Grad/Pro	Mar.	38	85	White	No	BA	Widowed
19	51	Black	No	BA	Never	39	64	White	No	Grad/Pro	Mar.
20	42	White	No	BA	Never						

PROGRAMMING

The intervention group was invited to participate in eight one-hour-long creative movement lessons at a local county extension office over a three-month period. Each activity focused on some aspect of home. Home was the designated programmatic theme because home is often associated with a sense of security, safety, community, heritage, and identity. For many, home is an emotional experience. For first-generation college students, many have left home for the first time. Mature women's notion of home may have evolved due to various life transitions and turning points.

Each of the eight lesson activities were developed and facilitated by the [STATE UNIVERSITY]'s Director of Dance who has extensive experience in leading movement-based workshops involving prompted reflections. The facilitator was assisted by two undergraduate dance majors, an adult development and aging Extension specialist, and a county family and consumer sciences Extension agent. Program activities are summarized in Table 2.

Table 2. Programmatic Intervention Activity Overview

Week	Theme	Activity	Description
(Intro)	Introduction of Home as the central concept	Introductory Name Game	Participants gathered in a circle with the instructor. Each participant was asked to assign a small movement to their name as they said it to the group. Movements were instructed to be representative of their current mood, or something that personally describes them. First, each participant said their name and completed their short movement for the group. This was repeated twice. Next, participants were encouraged to announce their own name with the corresponding movement, and then say the name of another participant along with their designated movement. This was ongoing until all participants had the opportunity to share their name and movement.
1	Trust	"Hugging Forrest"	Participants split into two randomized groups with Group 1 forming an inner circle and Group 2 forming an outer circle around Group 1. Group 1 was then instructed to close their eyes while Group 2 was encouraged to move about the designated space. Group 2 then was invited for light touching towards Group 1, which included "light taps, swipes, 'typewriter fingers', embraces, hugs, blowing, fanning, guiding partners around the space, and placing participants into poses". This lasted for 3-5 minutes. Following, the groups switched as Group 2 formed the inner circle with instructions to keep their eyes closed and Group 1 was invited for the gentle touching.
2	What are three words that come to mind when you hear the word "home"?	Abstract Gesture Creation	Each individual participant was asked to come up with a small movement or gesture to represent the words that come to mind when they hear the word "home". Participants then split into five separate groups to perform their movements. Then, each group combined their movements into one combination of movements for their group.
3	What is home in its past, present, future and ideal states?	Discussion Bingo	Participants were placed in four groups, each with the task of discussing the concept of home either in its past, present, future or ideal states. Then, each group was instructed to design questions that would be designed to ask someone in hopes of getting a deep and meaningful answer. Each group was asked to come up with two questions based on their assigned theme. Afterwards, participants each had a bingo sheet with all participants names and face in each square and were encouraged to visit each participant to ask them the designed questions.
4	What is a comfortable space within your home?	Listening and Gestural Movement Creation	Participants were split into pairs, with each pair having one person from each generation. They were instructed to first journal, then share with their partner what that space means to them. Each partner then created a series of movements or gestures to represent the answer the other person gave to them. Everyone was encouraged to perform in front of the group if they would like.
5	What is your favorite memory in your childhood home?	Group Movement Creation	Participants were split into groups of 5, with four participants in each group. They were instructed to journal regarding the prompt, and then share with the group. The group then either chose one person's childhood memory to create a movement for or could combine pieces of each person's memory to create a movement.

Week	Theme	Activity	Description
6	Unstructured Home Discussion	Mirroring and Linear Poses	Three groups were set up for this activity, with at least 5 participants in each group. Groups were instructed to play with poses, build off each other's poses, and play with spatial arrangements and levels within the groups through minimal contact to create shapes and movement.
7	The Power of Movement When Discussing Home	Moving through "Bridges and Roads"	Participants were put into two separate groups, each consisting of equal numbers of both generations. Participants took turns within their groups building off the person before' s pose to create linear formations consisting of all participants. After a few rounds, participants were encouraged to be creative and were allowed to move other's poses, weave between other's linear formations, and use levels to create different dimensional spacings.
8	Home: A Fixed Unit or Experience?	Group Movement Creation	Participants were split into groups of 5 and told to journal and discuss the idea of home as a fixed concept or experimental to them. Afterwards, the groups were encouraged without strict instruction to make a movement piece that lasted anywhere from 30 seconds to a couple minutes.

Social network analysis theory and tools for implementation research were followed (Gesell, Barkin, & Valente, 2013; Valente et al, 2015) and expanded upon to adapt for a longitudinal sociocentric framework. Special attention was given to grouping specific participants together (or apart) based on results from previous lesson(s)' network formations. For example, participants who were identified via SNA results to form relatively few and/or weak connections to other participants were strategically placed in subsequent intervention lessons with those who were central to the network and had relatively large number of strong connections.

Our study adhered to rigorous ethical guidelines to ensure the well-being and rights of all participants. Prior to the program's implementation, we obtained approval from the Institutional Review Board (IRB) to ensure that all research protocols met ethical standards for research involving human subjects. Informed consent was obtained from all participants, ensuring they were fully aware of the study's purpose, procedures, potential risks, and benefits. Confidentiality was strictly maintained throughout the research, with data anonymized to protect participants' identities. Additionally, we ensured that participants could withdraw from the study at any time without penalty. Special attention was given to the vulnerable nature of both younger and older participants, particularly concerning their mental health. All physical activities were designed to be inclusive and adapted to the varying abilities of the participants to avoid any risk of harm. Finally, ongoing support was provided to address any psychological discomfort that may have arisen during the study, ensuring a safe and respectful environment for all involved.

STUDY DESIGN AND ANALYSIS

The overall study design was guided by three specific aims:

Aim 1: The impact of the ICMP on well-being was determined by comparing baseline and follow-up flourishing and stress measurements that were ascertained via a survey administered before the first, and after the last, creative movement lesson to both the intervention and control group. Flourishing was measured by a composite score reflected by the mental health continuum (Keyes, 2002), and stress was measured by the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983).

Aim 2: Social network measures that underly the development of social connections were identified with the use of Social Network Analysis (SNA) techniques. Intervention participants completed an SNA survey after each of the eight creative movement lessons, where they rated their feelings of dislike-like and distance-closeness toward each of the other nineteen participants, and also identified if they had any relationships with anyone in the group outside the study time. These quantitative data were visualized and further contextualized with rich qualitative information from semi-structured individual in-depth interviews that included questions regarding the development of social connections, which was then triangulated with ethnographic field observations. The triangulation of multi-method process data is recognized as an effective strategy to optimize intervention components session-by-session (Prochnow et al., 2024).

Aim 3: The long-term efficacy and sustainability of the ICMP was assessed via a process analysis that included information from focus groups that addressed program design, implementation, and experience. Additional information came from questions included in the individual in-depth interviews intended to illicit relatively more open-ended, as well as personal or sensitive, reflections on programmatic experience.

RESULTS AND DISCUSSION

AIM 1: DETERMINE THE IMPACT OF THE PROGRAM ON MENTAL HEALTH

Overall, 55% (SE = 0.11) of intervention participants, compared to only 26% (SE = 0.10) of the control group, exhibited positive changes in mental health over the study period (see Table 3). Adding to the robustness of these survey results, alpha tests for mental health measures demonstrated exceptional psychometric reliability. Moreover, results were based on respective diagnostic thresholds for flourishing (Keyes, 2002) and perceived stress (Cohen, Kamarck, & Mermelstein, 1983).

Table 3 shows that flourishing scores improved among 40% (SE = 0.11) of intervention participants: four participants improved from languishing to moderate mental health, and four participants improved from moderate mental health to flourishing. The benefits of this program for flourishing are supported by a comparison to the control group who saw only 5% (SE = 0.05), or one participant, improve over the study period.

Perceived stress decreased among 30% (SE = 0.11) of intervention participants: four participants experienced reductions from high to moderate stress, and two participants experienced reductions from moderate to low stress. There was a sizable difference in the proportion of the intervention versus control group that experienced a reduction in perceived stress, but to a lesser extent than observed in terms of flourishing. Interestingly, half of the intervention participants that experienced reduced stress were distinct from those who saw improvements in their flourishing. This may suggest that different aspects of the program operate via unique pathways to benefit each of these facets of mental health.

Table 3. Mental Health Outcomes: Intergenerational Creative Movement Program Intervention and Control Group (N=39)

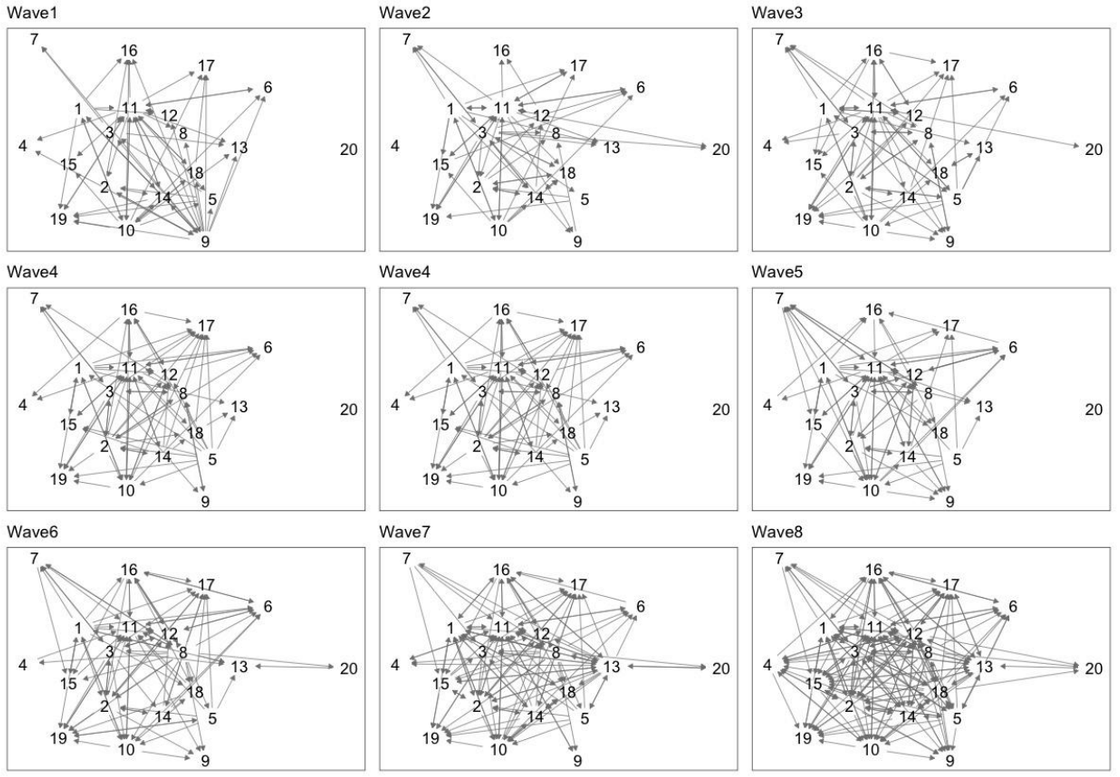
Age Group	Intervention Group	Flourish (T1 | T2)	Stress (T1 | T2)	Control Group	Flourish (T1 | T2)	Stress (T1 | T2)
Student	1	M | M	2 | 2	21	M | M	2 | 2
	2	M | F	2 | 2	22	M | M	2 | 2
	3	M | M	2 | 2	23	M | L	2 | 2
	4	L | M	2 | 2	24	F | F	1 | 1
	5	M | M	3 | 2	25	F | F	2 | 1
	6	M | M	3 | 2	26	M | M	2 | 2
	7	M | F	2 | 2	27	M | M	2 | 2
	8	M | F	2 | 1	28	L | L	3 | 3
	9	L | L	3 | 3	29	M | M	2 | 1
	10	L | M	3 | 2	30	L | M	2 | 2
Forty-Plus	11	M | F	2 | 1	31	M | M	2 | 2
	12	M | M	2 | 2	32	M | M	1 | 2
	13	M | M	2 | 2	33	M | M	1 | 2
	14	M | M	2 | 2	34	F | F	1 | 1
	15	M | M	2 | 2	35	M | M	2 | 2
	16	M | M	2 | 2	36	L | L	2 | 2
	17	M | M	1 | 2	37	M | M	1 | 1
	18	L | M	2 | 2	38	M | M	2 | 1
	19	L | M	2 | 2	39	M | M	2 | 1
	20	M | L	3 | 2			

Notes: L represents languishing mental health, M indicates moderate mental health, and F signifies flourishing mental health. Stress levels are indicated by the numbers, ranging from 1 (lowest stress level) to 3 (highest stress level).

AIM 2: IDENTIFY SOCIAL NETWORK MEASURES THAT UNDERLY THE DEVELOPMENT OF SOCIAL CONNECTIONS

In consideration of space limitations, a series of social network graphs have been conceptualized to depict the evolution of close connections among intervention participants over the eight-week study period (see Figure 1). These graphs, and other SNA statistics, were used each week to plan subsequent intergenerational creative movement lessons. The unique power of this SNA approach was apparent when contrasted with ethnographic field notes, as it became clear that feelings of closeness were not easily observed. For example, some participants appeared to get along with or seemed close with one another, but these observations often did not align with privately reported feelings obtained from SNA surveys after each lesson. In sum, SNA techniques provided information, which was not otherwise easily obtainable, that we used to inform program and lesson development on a week-to-week basis.

Figure 1. Evolution of Close Relationships During the Intervention Period (N=20)



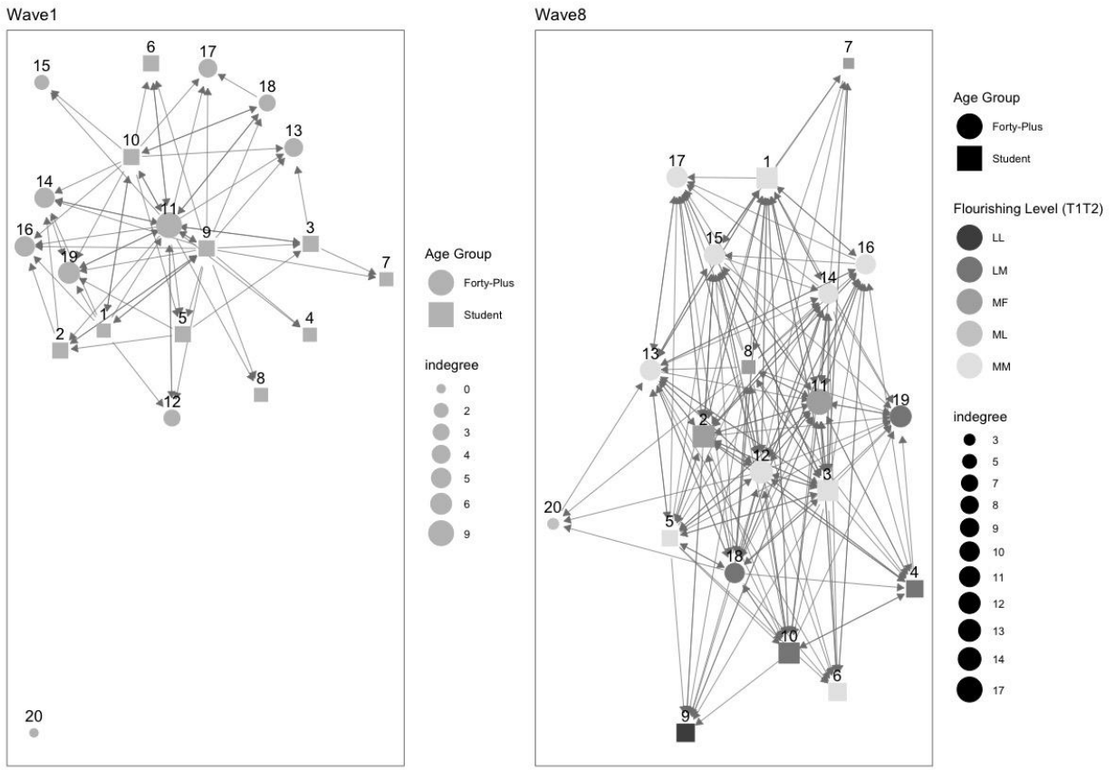
Each of the eight network graphs in Figure 1 is based on the respective weekly intervention lesson that they reflect. Thus, Wave 1 graph depicts each of the 20 intervention participant's ratings of closeness toward other participants that were obtained immediately following the first intergenerational creative movement lesson, and graph 8 depicts ratings obtained after the final lesson. Each node within a given network graph represents a unique participant. Nodes are numbered according to their respective identifiers in Table 3, with numbers 1 to 10 representing undergraduate women and numbers 11 to 20 representing college-educated women aged 40 years or older.

Each edge, or line, between nodes indicate the feelings of being close or very close to the other participant. All graphs are directed, meaning the arrow points to the individual with whom the participant felt close or very close. Thus, an edge with arrows on both ends represents reciprocal feelings. Higher levels of reciprocity are ideal for shaping group cohesion,

which is important for facilitating a sense of belongingness. The observed increasing number of bidirectional arrows over the study period demonstrated that shared feelings of closeness among intervention participants increased over time.

In addition, we provided more detailed graphs in Figure 2, where node size corresponds to indegree, that is, the number of participants who identified as feeling close or very close to a given individual. This reflects one's group position, or level of influence within the group (i.e., indegree centrality). Specifically, we did not want any given participant(s) to have overwhelming influence over the group. To these regards, one participant was found early on to have a uniquely high level of influence. Therefore, each week during our program planning special attention was paid to the grouping of this participant. Results from these efforts can be seen by observing how node 11 at the center of first wave became decentralized in Wave 8 (see Figure 2). Thus, an acceptable level of shared influence among group members was ultimately achieved, which is conducive for forming close connections.

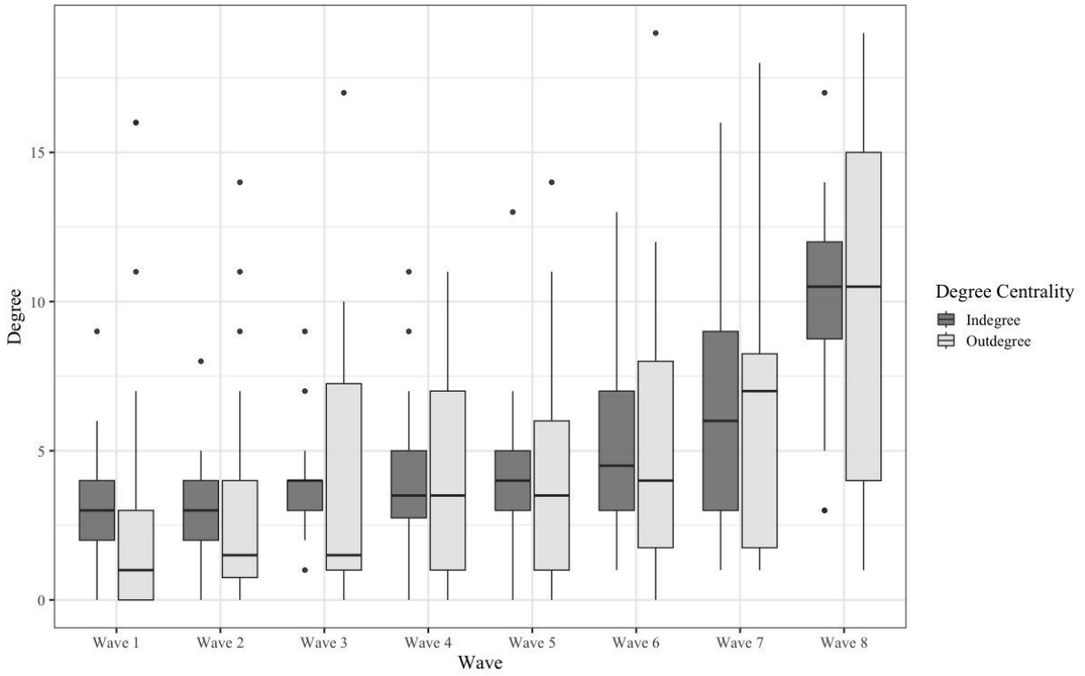
Figure 2. Closeness Ratings of Participants in Week 1 and Week 8 (N = 20)



Group cohesion increased substantially over the study period, depicted by an increasing number of ties (i.e., close connections) observed in each subsequent graph from the first (i.e., Week 1) to the final intergenerational creative movement lesson (i.e., Week 8). Coupled with an absence of independent components, and an increasing rate of reciprocity (i.e., shared feelings), this suggests that ICMP was adept at fostering close intergenerational connections. Additionally, the number of nodes with few ties to other nodes increased over the study period. This is important because a key aspect of the program was to reach especially vulnerable individuals to enhance their social connections and improve their mental health. Figure 3 presents boxplots of the degree distributions for each intervention week. The plots illustrate how indegree—the number of closeness ties received by an individual—and outdegree—

the number of closeness ties expressed by an individual—have increased relatively steadily. In week 1, the median indegree and outdegree were 3 and 1, respectively. By week 8, the median number of ties sent and received in the network increased to 11 for both measures. This indicates that half of the individuals in the network expressed closeness to, or received closeness from, at least 11 others.

Figure 3. In and Out-Degree Distributions of the Intervention Group (N=20)



SUMMARY OF AIM 1 AND AIM 2: CO-DEVELOPMENT OF MENTAL HEALTH AND INTERGENERATIONAL CONNECTIONS

In summary, the overall SNA results suggest that ICMP effectively fostered close relationships among an intergenerational group of non-familial women over a relatively short period of time (i.e., eight weeks). In conjunction with survey results that compared baseline and follow-up flourishing and stress scores between the intervention and control group, development of close connections appeared to have a positive impact on mental health. Experiential findings obtained from thematic analyses of qualitative data (i.e., focus groups and in-depth interviews) revealed that participants felt a beneficial impact from both the development of close intergenerational connections and engagement in creative movement activities.

One key theme that emerged from these qualitative data highlighted how group-based creative movement activities heightened a sense of vulnerability that subsequently manifested into a high level of trust that was essential for forming close connections. While another theme highlighted how engagement in creative movement activities enabled individuals to tap emotional states that were either suppressed or otherwise difficult to articulate. Along these lines, participants expressed that the creative process itself had unique therapeutic effects independent of the development of close social connections.

Although identifying precise causal pathways is beyond the scope of the present paper, it is interesting that among the 55% (SE = 0.11) of intervention participants who exhibited improved mental health over the study period half of those who experienced improvements in flourishing were distinct from those who experienced improvements in perceived stress (Table 3). This caveat requires further empirical attention, as it may point toward how different aspects of our program (e.g., formation of close intergenerational connections, and engagement in creative movement) uniquely underly improvements in distinct facets of mental health (e.g., flourishing vs perceived stress).

AIM 3: ASSESS THE EFFICACY AND SUSTAINABILITY OF THE PROGRAM

Qualitative results derived from semi-structured focus groups and individual in-depth interviews demonstrated that overall experience in the ICMP was viewed positively. All twenty intervention participants expressed enjoyment in the program, and 19 out of 20 indicated that they had strong interest in participating in future iterations of this program. In probing for why participants wanted to participate in this program again, multiple themes emerged related to fulfillment, home, homesickness, space, and touch.

First, a sense of deep fulfillment that resulted from the development of close intergenerational connections was noted. Among first-generation undergraduate women, sources of deep fulfillment were often characterized in terms of a mother-daughter type relationship:

"The (older) women were kind of like my mother figure here. And I know that if I needed something that they would take care of me like a mother." – Participant 3

Among college-educated women aged 40-years or older, sources of deep fulfillment tended to come from opportunities to perform generativity. However, in contrast to younger participants' sentiments, older participants generally characterized this in terms of a dignified mentor-mentee type relationship that provided a sense of purpose:

"I really liked having different generations. I wanted to make sure the younger generation felt heard and seen by trying to be a good mentor."- Participant 12

The programmatic theme of "home" was also influential in shaping these relational sentiments. For example, many of the younger and older participants bonded over feelings related to homesickness as they longed for family members or a place not physically present in their lives. Abstract movement activities related to home were particularly advantageous compared to the activities based on more structured or directed movement. Participants valued the organic environment that fostered close connections:

"I feel like it was kinda like everyone's doing it and everyone seems really awkward about it, so I think I'll be fine. Which I'm not very good at dancing or improv or anything. So like nobody really judged me about it. So we all just kinda had fun." – Participant 17

Participants, especially first-generation undergraduate women, expressed that they would not have felt as comfortable or open participating in such activities if they were solely surrounded by age peers.

An overarching theme across age groups was the importance of having a space to form intergenerational connections. The emphasis placed on the formation of close intergenerational relationships was anchored in the fulfillment that these connections provided, but this was interwoven within a theme of novelty and specialness. In terms of novelty, participants consistently noted how this program provided an opportunity to form bonds that they did not know they were missing. In short, this program extracted participants from the mundane nature of their everyday lives that are structurally rooted in an age-graded culture. Among students this was often expressed in relation to school:

"It was so refreshing to have because (some of the sessions) *were right before a calculus exam or a super stressful class. Also, the friendships and connections I've made with other people, I'm meeting more people that I never would have met."- Participant 1*

For women aged 40-plus this had more to do with expanding general perceptions about society, but more specifically in terms of the status of younger generations.

> *"My favorite part was getting to know and hearing from the college students. I thought they were all fantastic. But more than that, I loved hearing about their experiences."- Participant 18*

The creative nature of this program undergirded the specialness of experiences that participants found to be most impactful. Evidence supportive of this theme aligns with macro-level cultural issues likely at least partially responsible for a long-term decline in social connectedness. For example, many participants noted that after participating in this program they realized that it was rare for them to have a time and place to think about things that are personally meaningful and important to them.

> *"The movement prompts were thought provoking and made you reflect on what was important to you in regard to family and home. It gave you pause to kind of reflect on those things, which was nice because when you're going about your everyday life you don't always think about those things." – Participant 20*

Here, we highlight the unique nature of our program that emphasizes the importance of engaging in these creative activities in a group-based setting. This significantly contrasts with the popularly growing mindfulness movement that indirectly places responsibility for dealing with one's personal circumstances within the individual.

Another aspect of our program that counters macro-level American circumstances is that it facilitated a safe space for creative movement (i.e., interpretive dance) that promoted interpersonal touch (i.e., hugging, or placing a hand on another's shoulder). Dance and interpersonal touch embody fundamental human interactions that form a foundation for close social connections, but they are uniquely uncommon in America. Only in contemporary America is it rare to see people dance outside of professional performances or formal ceremonies (e.g., weddings). Moreover, interpersonal touch is much more common in other cultures, especially as it pertains to non-familial and non-romantic relationships. In sum, creative movement, and especially when it involved interpersonal touch, was a central driver for the development of close intergenerational connections and improvement in mental health.

> *"I think about* (The Hugging Forrest) *often. It made me realize young women need more opportunities to be hugged"- Participant 11*

IMPLICATIONS FOR EXTENSION

Three key takeaways for Extension were identified: First, in terms of programming designed to foster close/meaningful social connections, findings from our study provide unique evidence based on a mixed-methods approach that included SNA diagnostics to more robustly support the use of arts/creativity (Fancourt & Finn, 2019) coupled with movement/dance (Yan et al., 2024). Specifically, co-engagement in a creative movement was found to elicit vulnerability that helped establish a level of trust necessary for building close relationships. However, this strategy may not extend well to male or co-ed group settings. Additionally, folks are generally uncomfortable with the word "dance," so this should be considered in the design of recruitment efforts.

Group-based creative movement is an effective tool to foster close social connections, but intergenerational interactions enhanced efficacy. In view of population aging, future program development should focus on harnessing the power of intergenerational interactions (Carr & Gunderson, 2016). Regardless of whether creative movement activities are involved, it is clear that a person-centered approach that facilitates an organic environment is ideal for the development of close social connections (Rojas, 2019).

Second, regarding programming that is concerned with assessing mental health outcomes, findings from our study highlight the utility of considering positively oriented (Seligman, 2010; Thoits, 2011) multidimensional measures (Ciarrochi et al., 2022). Mental health is a complex construct, and even though there is no single agreed upon conceptualization, flourishing is arguably a particularly promising measure (Keyes, 2002; VanderWeele, 2017) because it has been robustly tied to a range of important life outcomes (Dahl, Wilson-Mendenhall, & Davidson, 2020).

Along these lines, it is important to keep in mind that "flourishing" is synonymous with the positive end of a mental health continuum that includes languishing at the negative end and moderate mental health in the middle. Thus, it is not practical to expect participation in any program to result in flourishing (i.e., optimal mental health), on average. Rather, it would be most effective for program development to focus on targeting and reaching those who are languishing, which essentially equates to a high level of suffering/despair that characterizes society's most vulnerable lot.

Third, the use of social network analyses (SNA) techniques throughout Extension may be advantageous to enhance programming design, implementation, evaluation, and efficacy. The SNA examples shown here were specific to interventions focused on fostering close social connections, but SNA techniques can be applied to a wide range of outcomes (Gesell, Barkin, & Valente, 2013; Valente, 2012; Valente et al., 2015). For example, Chaudhary and Radhakrishna (2018) used SNA in Extension to develop a network map of programs and stakeholders to better understand the diversity and reach of their state's programs. Bartholomay, Chazdon, Marczak, and Walker (2011) used SNA to examine its relationships and outreach to organizations and partners outside of their university. In sum, SNA can be widely used in Extension to foster better understanding of the power of connection between participants and beyond to measure program effectiveness and potential reach outside an Extension office (Bartholomay et al., 2011; Umberson & Montez, 2010).

Findings from the present study are currently being used to inform the sustainable development of ICMP, which will ideally meet the needs of county Cooperative Extension offices across Kentucky and beyond. The present summary of our novel program was intended to provide guidance to Extension specialists and agents who are developing multi-generational programming or looking to demonstrate the mental health and well-being benefit of creating a community through educational programming. Similar to Bartholomay and colleague's (2011) findings, we have also found an SNA to have "great potential for improving reporting, developing internal collaboration, and conducting system-wide impact evaluations" (1).

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