

**Sages and Seekers: Fostering purpose, identity development, inspiration and wellbeing
through the folk art of intergenerational storytelling**

(working paper)

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Abstract

Storytelling is a folk art with roots as old as humanity itself. Stories form a basis for meaning making, and serve as a psychological tool to build purpose and wellbeing. Storytelling may be especially essential for adolescents, who are struggling to develop an inspired vision for their adult self, and for older adults, whose generativity into old age depends on successful life review.

This project partnered social-affective neuroscientists with intergenerational storytelling practitioners. The overarching aim of this study was to investigate the effects of an intergenerational storytelling intervention on adolescents and older adults' healthy psychosocial development. In a first study, we assessed the effects on adolescents and older adults' healthy development after either an intergenerational storytelling intervention or an intergenerational movie-watching control activity. Fifty-five adolescents and sixty-two older adults within low-socioeconomic status, high minority-population areas of Greater Los Angeles participated in this quasi-experimental study. In the second study, we assessed the effects on adolescents and older adults' healthy development associated with a modified version of the Sages & Seekers curriculum administered in an affluent, mostly White population in Weston, Massachusetts. Sixty-eight adolescents and fifty-three older adults took part in this non-experimental study.

Results showed that the intergenerational storytelling intervention increased adolescents' sense of social connectedness, psychological wellbeing and purpose-in-life. Moreover, adolescents' changing abilities to conceptualize future goals in terms of core values instead of concrete achievements mediated the increases in adolescents' sense of purpose-in-life. Among older adults, the intergenerational storytelling intervention increased generativity and working memory performance. Results also showed that the fidelity to the intervention matters. When

meaning making is not supported by the intervention activities, the positive effects of the intergenerational storytelling intervention were mostly not observed.

By integrating insights from an established educational storytelling program with insights from developmental neuropsychological research on social emotions and meaning making, our project contributes to understanding the psychosocial impact of the folk art of storytelling.

Executive Summary

Overview of project and research objectives

This project partnered Immordino-Yang's lab at USC with Sages & Seekers (www.sagesandseekers.org), a non-profit organization dedicated to conducting intergenerational storytelling interventions. Storytelling is considered an art form that is hypothesized to contribute to character development and wellbeing. The Sages & Seekers intergenerational storytelling intervention supports youth—older-adult pairs in reflecting on values-affirming, emotionally rich personal narratives. At the culmination of an 8-week program, adolescents formalized their experiences by writing and sharing a tribute honoring the meaning they and their older adult partner made together.

The project comprised two studies with the overarching aim of investigating the effects of this intergenerational storytelling intervention on adolescents and older adults' healthy psychosocial development.

Study 1 aimed to assess the effects on psychological wellbeing, purpose-in-life, social connectedness and social-emotional imagination after either the Sages & Seekers intergenerational storytelling intervention or an intergenerational movie-watching control activity. Participants were adolescents and older adults from low-socioeconomic status, high minority-population areas of Greater Los Angeles. In addition, the effects on adolescents' growth mindset, value-based life goals, and civic participation, as well the effects on older adults' generativity and working memory, were compared across the Sages & Seekers intervention and the movie-watching control groups.

Study 2 aimed to assess the effects on psychological well-being, purpose-in-life, social connectedness and social-emotional imagination associated with a modified version of the Sages & Seekers curriculum administered in an affluent, mostly White private school in Weston, Massachusetts. In this study, adolescents' change in reported civic participation was also assessed. Schoolteachers delivered the intervention as part of the 10th grade English curriculum. Instead of making meaning of their experiences explicitly in the culminating tribute, adolescents were instructed to write about the life events of their older-adult partners in a journalistic-style report.

Overview of methods

In study 1, fifty-five adolescents and sixty-two cognitively healthy and functionally independent older adults participated in this quasi-experimental study examining the effects of intergenerational storytelling relative to a control condition. In a *pre- post design*, adolescents completed validated self-reported surveys about psychological wellbeing, purpose-in-life, social connectedness, growth mindset, and social-emotional imagination. Adolescents responded via an open-ended questionnaire about life goals, which were qualitatively categorized as focused on core values or hedonistic gains. Adolescents also responded to open-ended questions about civic participation, which were qualitatively coded as either showing a concrete approach to social problem-solving, based on stipulating specific desired outcomes, or as showing an abstract approach, based in a grounded understanding of different perspectives reached by dialoguing and empathy. Older adults completed validated self-reported surveys of psychological wellbeing, purpose-in-life, social connectedness, generativity, and social-emotional imagination, as well as cognitive testing of working memory.

Study 2 involved sixty-eight adolescents and fifty-three older adults. Adolescents and older adults' completed self-reported measures of psychological wellbeing, purpose-in-life, social connectedness, and social imagination, before and after an intergenerational storytelling intervention delivered by schoolteachers in a modified version of the Sages & Seekers curriculum. Adolescents also responded to open-ended questions about civic participation; these responses were qualitatively coded.

Summary of key findings

In study 1, adolescents' social connectedness improved significantly more in the Sages & Seekers intervention, compared to in the control condition.

Adolescents' psychological wellbeing improved significantly more in the intervention group. Among those in the intervention condition, adolescents with the lowest scores at pre-testing showed the greatest growth.

Adolescents' sense of purpose-in-life improved significantly more in the group participating in the Sages & Seekers intervention, and especially strongly in those with low scores at pre-testing.

The frequency with which adolescents spontaneously mentioned value-based life goals in their open-ended responses mediated the effects of the Sages & Seekers intervention on the increases in purpose-in-life.

Among the older-adult participants, those who participated in the intervention improved their generativity more than those who participated in the control (movie-watching) condition. This was especially true for those with the lowest scores at pre-testing. Older adults with the lowest generativity at pre-testing in the control condition also improved more.

Older adults participating in the intervention marginally significantly improved working memory, and this effect was especially strong among those with the lowest working memory at pre-testing.

In study 2, the results were unexpected, and likely reflect a change to the intervention that the participating school staff made to accommodate their view that a formal, journalistic-style essay, rather than a personally meaningful reflection (tribute), would be more consistent with their academic aims. In this group, adolescents' scores on psychological wellbeing went down following the intervention. This effect was mirrored in the decline observed in adolescents and older adults' social-emotional imagination scores following the intervention.

Overview of discussion

Our intergenerational storytelling proved to be an effective intervention to promote social connectedness among low-SES adolescents. Intergenerational storytelling also promoted wellbeing and sense of purpose-in-life in these adolescents, especially in the ones with lowest scores at baseline. The intervention promoted generativity and working memory performance in older adults.

The results in Study 2, though disappointing, underscore an important premise of this study. Specifically, the act of formulating a personally meaningful and emotional tribute (story) at the end of the intervention is likely instrumental in promoting psychological growth and wellbeing among both adolescents and older adults. Writing a more formal paper about the older-adult partner's story without reflecting on one's own meaning making was ineffective in our sample.

A Sages & Seekers-style program is efficacious, affordable, and potentially scalable. This work contributes to uncovering the psychological mechanisms and behavioral correlates of an

arts intervention that provides adolescents and older adults with opportunities for reflecting on their communities in relation to their future goals, in order to promote healthy development and thoughtful citizenship.

By examining the potential mechanisms by which this intervention succeeded (or not), the work contributes to understanding how value-based goals may enable and explain the effects. This research illustrates for policy-makers the potential benefits of providing adolescents with art-based skills and opportunities for personal reflection in the context of relationships, and the role of values in psychological growth.

In demonstrating the effectiveness of an established arts-based educational storytelling program in promoting healthy development of adolescents and seniors, our work informs practitioners and school administrators about the benefits of intergenerational storytelling. An attractive platform for both age groups, incorporating storytelling could expand the repertoire of educational practices that promote social-emotional learning in communities and schools.

Introduction

Storytelling is a folk art with roots as old as humanity itself. Stories form the basis for self-understanding, group membership, and cultural values. Stories are an art form through which culture and community are built and maintained (Bell, 2010). In constructing a personal narrative, storytelling fulfills the human need to create personal and community identities (Ochs & Capps, 2001).

Given that the art of storytelling is a rich form of human expression, storytelling may be especially essential for adolescents, who are struggling to develop identity and an inspired vision for their future adult self (Immordino-Yang & Gotlieb, 2017), and for seniors, whose generativity into old age depends on successful life review (Erikson, 1980). For both age groups, storytelling provides an opportunity to conceptualize experiences, a process that is associated with purpose and well-being (Scott & DeBrew, 2009).

Adolescents are developing identity, a sense of their future self, and abstract values and beliefs that will shape their trajectory toward adulthood. At the other end of the developmental spectrum, older adults are working on constructing a life review. A life review is a dynamic form of reminiscence that is personal and self-evaluative (Molinari & Reichlin, 1984). At both of these life stages, these developmental processes can be conceptualized as forms of self-narrative construction or storytelling. Like all expressive art forms, storytelling is a way of making meaning of one's experiences, relationships and history as well as of formalizing and expressing one's social values and beliefs. These deeply emotional and cultural processes are also experiential and memory-based. They involve simulation of possible futures and integration of memories and experiences—both one's own subjective recollections and inferred perceptions

about those of others. In this way, storytelling is both an empathic activity and one that connects deeply to personal experience.

Despite growing evidence showing that storytelling promotes positive development, relatively few programs have formally assessed the effects of intergenerational storytelling. Involving elders and youths in social programs can counter the threat of social disconnection and decline in purpose and wellbeing among community members in these age groups (Hawkley, Kozloski, & Wong, 2014; Keyes, 2011; Twenge, Spitzberg, & Campbell, 2019).

This project partnered social-affective neuroscientists with members of an organization that delivers intergenerational storytelling interventions, Sages & Seekers (www.sagesandseekers.org). The Sages & Seekers intergenerational storytelling intervention supports youth—older-adult pairs in reflecting on values-affirming, emotionally rich personal narratives. At the culmination of an 8-week program, adolescents formalize their experiences by writing and sharing a tribute honoring the meaning they and their older adult partner make together.

The project comprised two studies with the overarching aim of investigating the effects of this intergenerational storytelling intervention on adolescents and older adults' healthy psychosocial development. Study 1 aimed to assess the effects on psychological wellbeing, purpose-in-life, social connectedness and social-emotional imagination after either the Sages & Seekers intergenerational storytelling intervention or an intergenerational movie-watching control activity. Participants were adolescents and older adults within low-socioeconomic status, high minority-population areas of greater Los Angeles. In addition, the effects on adolescents' growth mindset, value-based life goals, and civic participation, as well the effects on older adults' generativity and working memory were compared across the Sages & Seekers

intervention and the movie-watching control groups. Study 2 tested the effect of a modified intervention in a high-performing, affluent private school in Weston, MA.

Research questions and hypotheses

Research questions Study 1. Does the Sages & Seekers' intergenerational storytelling intervention increase adolescents' and older adults' psychological wellbeing, purpose-in-life, social connectedness and social-emotional imagination, compared to an intergenerational control activity (movie watching)? Does it promote the development of value-based life goals, growth mindset, and sense of civic participation in adolescents? Does it improve cognitive performance and sense of generativity in older adults?

Hypothesis Study 1. We expected that the intervention would increase psychological wellbeing, purpose-in-life, social connectedness and social-emotional imagination in low-SES adolescents and older adults compared to an intergenerational control activity. We also expected that the intervention would promote the development of value-based life goals, growth mindset, and sense of civic participation in adolescents, and that it would impact cognitive performance and generativity in older adults.

Research questions Study 2. Does the Sages & Seekers' intergenerational storytelling intervention increase affluent adolescents' and older adults' psychological wellbeing, purpose-in-life social connectedness and social imagination, when delivered by schoolteachers as part of the 10th-grade English curriculum?

Hypothesis Study 2. We expected that adolescents and older adults' scores in psychological wellbeing, purpose-in-life, social connectedness and social imagination would increase over the course of the intervention.

Study 1: The effect of the Sages & Seekers’ intergenerational intervention on low-SES adolescents and older adults

Methods

Study design. This was a quasi-experimental intervention study on the effects of an intergenerational storytelling intervention on adolescents’ and older adults’ positive psychological development. The project involved pre-testing, either an 8-week intergenerational storytelling intervention or a movie-watching intergenerational control activity of the same length as the intervention, and post-testing. At the end of the movie-watching control activity, participants were offered the opportunity to partake in the intergenerational storytelling intervention. Figure 1 shows the Study 1 research design.

Figure 1. Study 1 research design.



Recruitment and sampling strategy. Sages & Seekers used a convenience sampling strategy to recruit adolescents and older adults from after-school programs, religious organizations, retirement homes, and community centers serving low-SES areas in greater Los Angeles. To be included, adolescents needed to be between 14-18 years old, enrolled in school, and with no serious disciplinary record. Older adults were required to be 65 years old or older, with no

evidence of cognitive or functional impairment as measured by a cognitive screening test (Brown et al., 2017), and living independently (Lawton & Brody, 1969).

Sample. A total of fifty-five adolescents participated (mean age: 16.39, gender: 22 male/ 30 female, self-reported GPA: 3.27, cultural background: 3 Black/ 2 East-Asian/ 35 Latinx/ 1 Middle-Eastern/ 3 White/ 6 mixed). A total of sixty-two cognitively healthy and functionally independent older adults participated (mean age: 72.97, gender: 39 female/20 male, educational level: 11 high school/ 37 bachelor's or higher degree, cultural background: 17 Black/ 1 East-Asian/ 5 Latinx/ 30 White/ 4 mixed). Of these, forty-seven adolescents and fifty-two older adults took part in the Sages & Seekers intergenerational storytelling intervention. Eighteen adolescents and twenty-five older adults participated in the intergenerational movie-watching control activity. [Of the control participants, ten adolescents and fifteen older adults opted to participate in the Sages & Seekers intervention following the control intervention.] Participants and, if relevant, their legal guardians, signed informed consents and assents. Participants did not receive compensation for their participation, as the program was considered to provide a benefit.

Tables 1 and 2 present adolescent and older-adult participants' information. Among adolescents, by chance the participants in the Sages & Seekers intervention group tended to be in a higher grade at school ($\chi^2_{(4)}=15.6$; $p<0.01$) and ethnic heritage ($\chi^2_{(6)}=13.02$; $p=0.04$), and were mostly Latinx. Older adults differed in ethnic heritage distribution across groups ($\chi^2_{(4)}=11.53$, $p=0.02$); those in the intervention groups were more likely to be Black or White rather than Latinx. Among older adults, the Sages & Seekers intervention group reported observing cultural traditions more than did the movie-watching control group ($t_{(33.65)}=2.49$; $p=0.02$).

Table 1. Adolescent participants' demographic information.

	Sages & Seekers intervention (n=47)	Movie-watching control (n=18)	Statistical test	Significance
Sex (female/male)	26/17	10/8	χ -squared ₍₁₎ =1.7	0.41
Age	16.65 (1.04)	16.1 (1.21)	$t_{(28.11)}$ =1.82	0.08
Grade			χ -squared ₍₄₎ =15.6	0.004
9th	1	6		
10th	7	2		
11th	15	2		
12th	20	8		
Self-reported GPA	3.25 (0.64)	3.28 (0.55)	$t_{(35.44)}$ =-0.17	0.87
Plan to go college?			χ -squared ₍₂₎ =1.66	0.44
Yes	41	17		
Maybe	2	1		
No	0	0		
Classes dropped/failed			χ -squared ₍₆₎ =7.33	0.4
0	27	10		
1	2	2		
2	5	5		
3	3	1		
4	1	0		
5	1	0		
>5	3	0		
Ethnic Heritage			χ -squared ₍₅₎ =13.02	0.04
Black	3	1		
East-Asian	0	2		

Latinx	34	9		
White	1	2		
Middle-Eastern	0	1		
Mixed	5	3		
Bicultural index	66.67 (10.33)	69.81 (10.72)	$t_{(27.04)}=-0.99$	0.33

Table 2. Demographic information for older adults.

	Sages & Seekers intervention (n=52)	Movie-watching control (n=25)	Statistical test	Significance
Sex (female/male)	32/17	19/6	$\chi\text{-squared}_{(1)}=0.88$	0.35
Age	73.82 (11.60)	77.10 (10.85)	$t_{(43.52)}=-1.08$	0.28
Educational Level completed			$\chi\text{-squared}_{(1)}=3.82$	0.57
High School	8	6		
Bachelor's degree	31	16		
Ethnic Heritage			$\chi\text{-squared}_{(4)}=11.53$	0.02
Black	16	1		
East-Asian	1	1		
Latinx	2	5		
White	27	13		
Mixed	3	3		
Observe cultural traditions (0-100)	73.76 (21.42)	52.9 (30.92)	$t_{(33.65)}= 2.49$	0.02
Embrace cultural values (0-100)	74.78 (23.42)	62.71 (33.98)	$t_{(35.10)}= 1.35$	0.18
Proud of cultural heritage (0-100)	87.95 (18.54)	76.00 (31.63)	$t_{(33.90)}=1.52$	0.14

Sages & Seekers intergenerational storytelling intervention. This eight-week Sages & Seekers intergenerational storytelling curriculum was designed to foster positive youth development. One adolescent and one older adult paired up to complete the semi-structured storytelling activities facilitated by a Sages & Seekers practitioner. The intervention was run in groups of approximately 13 adolescent-older adult pairs. Each session lasted 75 minutes.

In week 1, adolescents and older adults in the group engaged in specially designed personal introduction activities. In Week 2, each adolescent spent 3-5 minutes with each adult in a “speed-dating” storytelling activity, so that adolescents could choose their partner for the remainder of the program. Over the remaining five weeks, the pairs engaged in strategically designed storytelling activities with props, such as memorabilia brought from home. The pairs shared and reflected on commonalities and values that emerged. In Week 7, adolescents composed and shared tributes reflecting on the experience of meeting their partners. The program concluded in Week 8 with a debriefing to reveal lessons learned and to provide an opportunity for closure. After each session, adolescents were requested to reflect on their learning and emotions in a short video-diary activity.

The Sages & Seekers interventions were conducted in groups of 13 adolescent—older-adult pairs at Los Angeles-area locations, including Pasadena Senior Center, College Bridge Academy, and Cityview retirement community.

Intergenerational movie-watching control activity. The control condition consisted of intergenerational movie-watching activities that did not specifically support reflecting on personal narratives. The intervention ran in groups of 13 adolescents and 13 older adults and had the same duration as the Sages & Seekers intergenerational storytelling intervention. After introductory activities, adolescent-older adult groups watched movies portraying romance and

friendship. Participants watched *Breakfast at Tiffany's*, *Casablanca*, and *Monster-in-Law*. The movie-watching control activities were conducted at Cityview retirement community and Oasis LA religious community.

Measures for adolescents

Surveys. Adolescent participants were administered self-reported surveys on psychological well-being (Ryff, 1989), general sense of purpose-in-life (Byron & Miller-Perrin, 2009), social connectedness (Lee & Robbins, 1995), and growth mindset (Dweck, 2006). Adolescents also completed the Social Imagination Scale (Immordino-Yang et al., n.d.), which is comprised of four subscales. The Imagined Future Selves (IFS) sub-scale measures the extent to which participants think and imagine the future. Imagined Community Agency (ICA) sub-scale assesses the extent to which participants reflect on causes and solutions to community challenges. Conceptualizing the Self as Having Multiple Identities (IMI) sub-scale measures the extent to which participants conceptualize and imagine themselves as being a part of many different social groups (family, church, school, etc.). Interpreting Difficulty as Important (DAI) sub-scale surveys the extent to which participants interpret difficulties encountered in life as signaling the importance of overcoming these difficulties, versus as a sign that the task is “not for me” and so they should quit.

At baseline only, and in order to further provide with cultural background information about the participants, adolescent completed the Bicultural Index (BCI; Hunter, 2006).

Qualitative analyses. In order to examine the quality of the content of adolescents' life goals, participants were administered the Possible Selves Questionnaire (Oyserman & Markus, 1990). Life goals formulated by adolescents were qualitatively categorized as either value-based or non-value-based. Value-based life goals were defined as goals focused on obtaining character

qualities and personal growth, goals greater than the self such as community-related goals, and goals involving service to others. Representative responses from participants in a previous study were: *“I think I’d still like to help others, so organizations like Red Cross or just do some kind of volunteer work with my free time”*, *“And [I want to] continue being a hard worker and staying humble”*. Non value-based life goals were defined as goals focused on acquiring goods, gaining popularity, status, social comparisons, and hedonistic values. Representative responses were: *“I don’t wanna be homeless”*, *“[I want] to have a nice car”*. A measure of value-based life goals was calculated by tallying all value-based life goals given by each participant. A measure of non value-based life goals was similarly calculated; in this case, we expected to find no effect of the intervention. Inter-rater reliability analysis carried out in a similar sample of low-income LA-area adolescents yield appropriate reliability of the coding scheme (90% ICC).

To study civic participation, adolescents were administered two items pertaining to civic participation from the Forms of Purpose Determination validated interview (Malin, 2008). First, participants were questioned about what they would like to change in the world. Responses were coded as either as abstract or not. An abstract response reveals a desire to build a common understanding or shared belief or value through dialogue, perspective-taking and empathy. For example: *“I wish that everyone in the world was more understanding of one another, [...]I think that it is really important to reach out to others, hear their stories, and put yourself in their shoes”*. A non-abstract response stipulates a specific outcome as a desired change, with an emphasis on civil behavior rather than on values or ideas. For example: *“I want people with differing opinions to get along. There is so much violence and hatred between people”*.

Measures for older adults

Surveys. Older adult participants completed self-reported surveys on psychological well-being (Ryff, 1989), general sense of purpose-in-life (Byron & Miller-Perrin, 2009), social connectedness (Hawkley et al., 2014), generativity (McAdams & de St. Aubin, 1992), and social-emotional imagination (Immordino-Yang et al., n.d.). They also completed self-reported rating items about observing cultural traditions, embracing cultural values, and pride of cultural heritage in a 1-100 scale, where 100 indicated the highest level of agreement.

Psychometric testing. Older adult participants completed the Digit test from the Wechsler Adult Intelligence Scale, Third Edition (WAIS-III) (Kaufman & Lichtenberger, 1999). Working memory was measured by the number of digits correctly retrieved in the backward sub-scale of the Digit Test.

Analytical Plan. For adolescents and older adults in both groups, descriptive statistics were used to summarize data. Independent t-tests were conducted to compare group scores at baseline. We also tested whether outcome variables were correlated at baseline.

For adolescents, ANCOVA built-in regression models were used to test a main effect of treatment (that is, completing either the Sages & Seekers intervention or the movie-watching control activity) on the difference between pre and post scores, as well as on the interaction between the change of scores for each group and the scores at baseline. This effectively controlled for group differences at baseline, which cannot be ruled out when using a convenience sampling strategy. For older adults, ANCOVA built-in regression models were used to test whether group (that is, of completing either the Sages & Seekers intergenerational storytelling or the movie-watching control activity) and scores at baseline predicted changes in scores pre to

post. In all models, the treatment condition was dummy-coded using the movie-watching control activity as the reference treatment.

Finally, we tested whether changes in adolescents’ value-based goals mediated model changes in purpose-in-life. A post-hoc power analysis was conducted to test the robustness of the mediation model.

Results

Effects of the Sages & Seekers intergenerational intervention in adolescents. Summary statistics for all measures collected, and the calculated change of scores used in the analyses are presented in Table 3. Table 4 presents correlations for outcome measures. Groups differed on pre-test scores: the Sages & Seekers intergenerational storytelling group scored significantly lower in social connectedness ($t_{(42.1)}=0.33$; $p=0.04$) than did the intergenerational movie-watching control group.

Table 3. Adolescents’ scores and changes pre to post by condition.

	Sages & Seekers intervention			Movie- watching control			Group differences at Pre	
	Pre	Post	Change Score	Pre	Post	Change Score	Statistical test	Significance
Psychological wellbeing	83.09 (16.14)	83.49 (9.13)	0.84 (13.75)	87.33 (9.78)	91.14 (9.91)	1.36 (3.43)	$t_{(50.75)}=-1.28$	0.21
General life purpose	68.59 (14.44)	76.57 (10.26)	8.68 (13.88)	74.39 (9.64)	77.79 (9.85)	0.93 (3.1)	$t_{(46.41)}=-1.86$	0.07
Growth mindset	29.27 (5.00)	30.57 (4.74)	1.14 (3.85)	30.94 (4.39)	32.14 (4.79)	1.79 (3.98)	$t_{(35.58)}=-1.32$	0.20
Social connectedness	34.07 (11.68)	36.13 (10.12)	2.70 (9.66)	40.06 (7.56)	39 (11.37)	-3.25 (7.89)	$t_{(42.16)}=-2.11$	0.04
Imagined Future Selves	41.61 (5.81)	43.05 (6.52)	1.07 (6.01)	42.71 (4.81)	43.21 (5.94)	-0.38 (2.26)	$t_{(21.51)}=-.88$	0.39
Imagined Community Agency	28.56 (4.45)	29.05 (5.08)	1.36 (3.22)	29.39 (4.43)	30.57 (4.13)	0.00 (2.8)	$t_{(23.23)}=-1.57$	0.13

Conceptualizing the Self as Having Multiple Identities	35.57 (5.13)	37.59 (5.02)	2.39 (4.74)	36.28 (3.97)	37.07 (3.85)	-0.14 (3.53)	$t_{(28,43)}=-1.33$	0.19
Difficulty as Important	29.91 (7.74)	33.16 (7.13)	3.5 (6.5)	34.5 (5.26)	35.51 (6.17)	0.31 (3.77)	$t_{(24,28)}=-2.61$	0.02
Value-based life goals	0.8 (0.82)	1.24 (1.01)	0.4 (1.08)	0.89 (1.02)	0.64 (0.84)	-0.21 (0.98)	$t_{(26,08)}=-0.33$	0.74
Non value-based life goals	2.73 (1.1)	2.21 (1.09)	-0.53 (1.38)	2.89 (1.28)	2.43 (1.51)	-0.43 (1.45)	$t_{(27,54)}=-0.45$	0.65

Table 4. Pearson correlations of adolescents’ scores at pre-testing. * p<.05; ** p<.01; ***

p<.001.

	General life purpose	Growth mindset	Social connectedness	Imagined Future Selves	Imagined Community Agency	Conceptualizing the Self as Having Multiple Identities	Difficulty as Important	Value-based life goals	Non-value-based life goals
Psychological wellbeing	0.75***	0.21	0.6***	0.44***	0.37**	0.33**	0.4**	0.14	-0.11
General life purpose		0.28*	0.67***	0.61***	0.54***	0.54***	0.47** *	0.28*	-0.2
Growth mindset			0.08	0.23	0.33**	0.26*	0.39**	-0.11	0.05
Social connectedness				0.42**	0.38*	0.43**	0.32*	0.21	-0.2
Imagined Future Selves					0.56***	0.6***	0.3*	-0.01	0.1
Imagined Community Agency						0.65***	0.49** *	0.12	-0.16
Conceptualizing the Self as Having Multiple Identities							0.6***	0.13	-0.06
Difficulty as Important								0.08	-0.09

Value-based life goals										-0.59 ***
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Adolescents' social connectedness improved significantly more in the intervention group ($b = 1.56$, $SE = 14.91$, $t_{(35)} = 2.11$, $p < 0.05$). This model explained 30% of the variance ($R^2 = 0.30$, $F_{(3,35)} = 5.01$, $p < 0.01$) in adolescents' social connectedness.

Adolescents' psychological well-being improved significantly more in the intervention group ($b = 2.12$, $SE = 19.28$, $t_{(48)} = 2.9$, $p < 0.01$). Among those in the intervention group, adolescents with the lowest scores at pre-testing showed the greatest growth ($b = -2.29$, $SE = 0.21$, $t_{(48)} = -3.18$, $p < 0.01$). This model explained 69% of the variance in psychological well-being ($R^2 = 0.69$, $F_{(3,48)} = 34.99$, $p < 0.001$).

Adolescents' sense of purpose-in-life improved significantly more in the intervention group ($b = 2.03$, $SE = 20.99$, $t_{(51)} = 2.76$, $p < 0.01$), especially among those with the lowest scores at pre-testing ($b = -1.9$, $SE = 0.27$, $t_{(51)} = -2.67$, $p < 0.01$). This model explained 58% of the variance in sense of purpose-in-life ($R^2 = 0.58$, $F_{(3,51)} = 23.08$, $p < 0.001$).

Regardless of condition, value-based life goals increased more among adolescents with the lowest initial scores ($b = -0.49$, $SE = 0.26$, $t_{(50)} = -2.35$, $p < 0.05$). This model explained 31% of the variance in change in value-based life goals ($R^2 = 0.31$, $F_{(3,59)} = 7.6$, $p < 0.001$). No significant changes were found on growth mindset or social-emotional imagination.

Although not a formal hypothesis of this project, we also assessed whether the frequency with which adolescents spontaneously mentioned value-based life goals in their open-ended responses mediated the effects of the Sages & Seekers intervention on the increases in purpose-in-life. We found that this was the case. Receiving the Sages & Seekers intervention predicted an increase in value-based goals ($b = 0.74$, $SE = 0.29$, $p = 0.014$), and increases in value-based goals

were a significant predictor of sense of purpose-in-life ($b = 3.66$, $SE = 0.78$, $p < 0.00$). The Sages & Seekers intervention was no longer a predictor of sense of purpose-in-life after controlling for the mediator, value-based life goals ($b = 2.29$, $SE = 1.79$, $p = 0.206$), consistent with full mediation. Approximately 31% of the variance in sense of purpose-in-life was accounted for by the predictors ($R^2 = 0.31$, $F_{(2,51)} = 11.72$, $p < 0.00$). The indirect effect was formally tested using the Sobel test, and indicated that the indirect coefficient was significant ($b = 2.15$, $SE = 1.06$, $p = 0.03$). A post-hoc analysis of power of this finding, taking into account an $\alpha = .05$ and $R^2 = 0.31$, leads to a power of .99, indicating the robustness of this result.

In an exploratory analysis, we also found changes in adolescents' conceptualization of social and community problems. Data suggest that adolescents moved from a concrete understanding of civic participation (e.g. "I wish everyone got along") to a more abstract understanding (e.g. "we should use dialog and empathy to understand others"). Table 5 presents frequencies for coded responses on civic participation pre and post-testing.

Table 5. Counts of coded responses to civic participation questions in Study 1. "Number of responses" provides tallies for the numbers of participants whose response fell into the relevant category.

Group	Coded response	Number of responses	
		Pre	Post
Sages & Seekers storytelling intervention	Abstract understanding	5 (11.9%)	15 (36.6%)
	Concrete understanding	37 (88.1%)	26 (63.4%)
Movie-watching control activity	Abstract understanding	5 (27.8%)	4 (33.3%)
	Concrete understanding	13 (72.2%)	8 (66.7%)

Effects of the Sages & Seekers intergenerational storytelling intervention in older adults. A

summary of the results for older adult participants is presented in Table 6. No significant differences between the Sages & Seekers intergenerational storytelling intervention and the intergenerational movie-watching groups were found for outcome measures (all $p > 0.05$). Table 7 presents the table of correlation for outcome measures at pre-testing.

Table 6. Older adults’ scores, change scores entered into analysis, and t-test for scores at baseline.

	Sages & Seekers intervention			Movie- watching control			Group differences at Pre	
	Pre	Post	Change Score	Pre	Post	Change Score	Statistical test	Significance
Psychological wellbeing	91.23 (7.5)	92.11 (7.35)	.34 (7.05)	87.44 (12.52)	89.95 (9.64)	3.24 (11.97)	$t_{(32.54)}=1.39$	0.17
General life purpose	78.52 (7.65)	80.04 (7.97)	.89 (6.87)	77.84 (.91)	77.95 (8.97)	1.10 (5.14)	$t_{(41.58)}=.32$	0.74
Generativity	41.06 (7.48)	47.13 (7.54)	5.79 (7.25)	40.5 (8.17)	42.76 (8.97)	2.25 (8.58)	$t_{(41.71)}=.28$	0.78
Social connectedness	18.23 (2.53)	18.56 (2.29)	.4 (1.71)	17.05 (3.47)	18.11 (2.94)	.44 (2.94)	$t_{(34.99)}=1.38$	0.17
Imagined Future Selves	28.46 (5.31)	29.44 (4.45)	.7 (4.54)	28.24 (5.19)	28.38 (5.51)	.38 (3.50)	$t_{(48.47)}=0.17$	0.86
Imagined Community Agency	28.32 (4.44)	29.20 (3.63)	.38 (3.25)	28.96 (3.29)	28.58 (4.71)	-.37 (3.85)	$t_{(59.48)}=-.69$	0.49
Conceptualizing the Self as Having Multiple Identities	36.26 (3.98)	35.13 (4.31)	-.6 (2.91)	36.52 (3.75)	37.28 (3.98)	.94 (2.78)	$t_{(47.75)}=-.26$	0.79
Difficulty as Important	33.31 (6.24)	33.67 (5.76)	.82 (5.63)	33.09 (6.12)	33.72 (6.60)	.11 (3.66)	$t_{(45.24)}=.14$	0.88
Working memory	4.54 (1.36)	4.83 (1.23)	.2 (1.25)	4.23 (1.19)	4.05 (1.25)	-.19 (1.08)	$t_{(45.47)}=.98$.33

Table 7. Pearson correlations of older adults’ scores at baseline. * $p < .05$, ** $p < .01$, *** $p < .001$.

	General life purpose	Generativity	Social connectedness	Imagined Future Selves	Imagined Community Agency	Conceptualizing the Self as Having Multiple Identities	Difficulty as Important	Working memory
Psychological wellbeing	.39***	.25*	.54***	.33**	.17	.09	.42***	.19
General life purpose		.6***	.27*	.43***	.33**	.47***	.4***	.01
Generativity			.25	.33*	.41**	.26*	.48***	-.19
Social connectedness				.14	.19	-.06	.27	.19
Imagined Future Selves					.42***	.33**	.32**	.13
Imagined Community Agency						.24	.38**	.13
Conceptualizing the Self as Having Multiple Identities							.26*	.01
Difficulty as Important								.12

Among the older-adult participants, those who participated in the intervention improved their generativity more than those who participated in the control condition ($b=4.06$, $SE=1.86$, $t_{(60)}=2.18$, $p=0.03$). This was especially true for those with the lowest scores at pre-testing ($b=-0.44$, $SE=0.1$, $t_{(58)}=-4.05$, $p < 0.00$). It is worth noting that older adults with the lowest generativity at pre-testing also improved more following the control condition. This model explained 25% of the variance in generativity ($R^2=0.25$, $F_{(2,60)}=10.04$, $p < 0.00$).

A similar result was found for working memory. Among the older adults, participating in the intervention marginally significantly improved working memory ($b=0.52$, $SE=0.20$,

$t_{(59)}=1.86$, $p=0.06$), and this effect was especially strong among those with the lowest working memory at pre-testing ($b=-0.48$, $SE=0.51$, $t_{(58)}=-4.64$, $p < 0.00$). This model explained 29% of the variance in change of working memory scores ($R^2=0.29$, $F_{(2,59)}=11.78$, $p < 0.00$).

No changes were observed to psychological wellbeing, general purpose-in-life, social connectedness, and social-emotional imagination.

Discussion Study 1

The Sages & Seekers intergenerational storytelling intervention was effective in promoting social connectedness among the low-SES adolescents in our study. The intervention promotes a climate of intimacy that makes people feel connected, like they share values, and like they are supported in meaning making. This study suggests that this art-based intervention might be used to address loneliness, an endemic pain in adolescents (Twenge et al., 2019) and seniors (Hawkley et al., 2014).

The intervention was also effective in promoting psychological wellbeing and purpose-in-life. Most other studies in this vein have been conducted in health contexts (Rieger et al., 2018); ours is particularly useful in that the intervention was community based. The study's focus on purpose-in-life addresses a relatively neglected aspect of positive development (Koshy & Mariano, 2011). Our mediation findings suggest that reflecting on core values underlying life narratives, under the guidance of a mature adult working through their own life review, might help adolescents to conceptualize new purposes and heighten their sense of goal-directedness (Merrill & Fivush, 2016). We showed that the increases in purpose-in-life were mediated by increases in the number of value-based goals, which supports the potential mechanism mentioned above. Interestingly, our study provides preliminary evidence that sharing life narratives and reflecting on values in the context of intergenerational storytelling might

predispose adolescents to show more inclinations towards an abstract understanding of social issues, which may be associated with increased social agency.

The intervention was also efficacious in improving self-reported sense of generativity and working memory performance among older adults. Generativity is a key factor in positive human development in this age stage (McAdams & Olson, 2010). Telling stories makes older adults feel valued as a whole person (Grøndahl, Persenius, Bååth, & Helgesen, 2017), supports cognition (Barber & Mather, 2014), and improves quality of life (Bohlmeijer, Smit, & Cuijpers, 2003), in part by preventing narrative foreclosure, as well as by helping support connection-building amongst life themes (Mager, 2019). Though intervention participants showed more improvement than did control participants in our study, the main effect of scores at baseline for both generativity and working memory suggests that any form of social connection may be helpful for low-score participants.

Study 2: The Effect of a School-Delivered Intergenerational Storytelling Intervention in an Affluent Context

Methods

Study design. This was a non-experimental intervention study on the changes in adolescents' and older adults' positive development following a modified version of the intergenerational storytelling program. The project involved pre-testing, an 8-week intergenerational storytelling intervention, and post-testing. No control group was included in this study. Figure 2 shows the Study 2 research design.

Figure 2. Study 2 research design.



Recruitment and sampling strategy. Adolescents were 10th-grade students at a private school in Weston, MA. School staff recruited older adults from surrounding areas. Older adults were 65 years of age or older, with no evidence of functional impairment, as measured by a functional scale (Lawton & Brody, 1969).

Sample. Sixty-eight adolescents (mean age: 15.9, gender: 39 male/ 29 female, self-reported GPA: 3.4, cultural background: 2 South-Asian/ 1 East-Asian/ 1 Middle-Eastern/ 57 White/ 7 mixed) and fifty-three older adults (mean age: 75.4, gender: 25 male/ 27 female, educational level: 4 high school/ 48 bachelor’s or higher degree, cultural background: 1 Latinx/ 51 White) were included in this study. Of the 68 participating adolescents, four had failed one class and one had failed two classes. Thirty-nine older adults were doing this program for the first time, four for the second time, two for the third time and seven for the fourth time. All participants were functionally independent (mean IADL score= 7.45 [SD=1]). Participants and legal guardians signed informed consents and assents. Participants did not receive compensation for their participation, as the intervention was considered a benefit.

Sages & Seekers intergenerational storytelling intervention. The participating schools’ staff and teachers decided to adapt the manual written by Sages & Seekers to create an assignment version of the intervention that would count for course credit. The structure of the eight-week

storytelling program was the same as in Study 1, but instead of instructing adolescents to write a tribute to reflect on the experience of meeting their partners, students completed a formal report on their partner's life story in a journalistic style. The intervention took place in the classrooms during class hours. Groups were comprised of 6-9 youth—older-adult pairs, depending on the class size.

Measures for adolescents and older adults

Surveys. Adolescent and older adult participants were administered self-reported surveys on psychological wellbeing (Ryff, 1989), general sense of purpose-in-life (Byron & Miller-Perrin, 2009), social connectedness (Lee & Robbins, 1995), and social-emotional imagination (Immordino-Yang et al., n.d.).

Qualitative analyses. To study civic participation, adolescent participants were administered two items pertaining to civic interests from the Forms of Purpose Determination validated interview (Malin, 2008). Qualitative coding was performed as in Study 1.

Analytical Plan. For adolescents and older adults, descriptive statistics were used to summarize data. Correlations for baseline measures were conducted. Paired t-tests were run between baseline and post intervention survey scores for adolescent and older-adult participants.

Results Study 2

Table 8 summarizes participants' scores, as well as the results of the paired t-test conducted. Table 9 presents correlations among pre-test survey scores for both groups. The results of Study 2 were unexpected, and likely reflect a change to the intervention that school staff made to accommodate their view that a formal, journalistic-style essay, rather than a personally meaningful reflection (tribute), would be more consistent with their academic aims. In this group, adolescents' scores in psychological well-being decreased following the intervention

($t_{(58)} = 4.53, p < 0.00$). This effect was mirrored in the social-emotional imagination subscales of Interpreting Difficulty as Important ($t_{(52)} = 2.28, p = 0.02$) and Conceptualizing the Self as Having Multiple Identities ($t_{(53)} = 2.07, p = 0.04$). Among the older-adult participants, scores on Conceptualizing the Self as Having Multiple Identities also decreased in this setting ($t_{(48)} = 2.33, p = 0.02$). The other scores showed no significant change.

Table 8. Adolescents' and older adults' scores.

Measure	Pre	Post	Statistical test	Significance
<i>Adolescents</i>				
Psychological wellbeing	85.35 (8.22)	79.14 (10.21)	$t_{(58)} = 4.53$	0.00002
General life purpose	71.81 (9.89)	68.94 (10.58)	$t_{(53)} = 1.72$	0.09
Social connectedness	40.59 (8.96)	39.19 (7.35)	$t_{(52)} = .7$	0.48
Imagined Future Selves	37.9 (4.92)	37.17 (5.43)	$t_{(53)} = .86$	0.39
Imagined Community Agency	25.19 (4.25)	24.89 (4.55)	$t_{(53)} = .34$	0.73
Conceptualizing the Self as Having Multiple Identities	33.01 (4.62)	31.72 (5.61)	$t_{(53)} = 2.07$	0.04
Difficulty as Important	31.87 (4.99)	30.7 (6.57)	$t_{(52)} = 2.28$	0.02
<i>Older adults</i>				
Psychological wellbeing	88.98 (9.19)	90.24 (8.13)	$t_{(48)} = -.89$	0.37
General life purpose	76.3 (7.99)	76.57 (9.00)	$t_{(48)} = .28$	0.77
Social connectedness	18.4 (2.11)	18.12 (2.52)	$t_{(47)} = 1.94$	0.05
Imagined Future Selves	26.75 (4.25)	26.98 (4.07)	$t_{(47)} = -.16$	0.87
Imagined Community Agency	26.38 (4.32)	27 (3.88)	$t_{(47)} = -.67$	0.5
Conceptualizing the Self as Having Multiple Identities	34.92 (4.42)	33.98 (4.62)	$t_{(48)} = 2.33$	0.02
Difficulty as Important	33.62 (5.32)	34 (4.68)	$t_{(48)} = -.24$	0.8

Table 9. Table of correlations for measures at pre-testing. * p<.05, ** p<.01, ***p<.001.

	General life purpose	Social connectedness	Imagined Future Selves	Imagined Community Agency	Conceptualizing the Self as Having Multiple Identities	Difficulty as Important
<i>Adolescents</i>						
Psychological wellbeing	0.72***	0.16	0.51***	0.43***	0.39**	0.12
General life purpose		0.2	0.63***	0.32**	0.51***	0.11
Social connectedness			0.08	0.13	0.04	-0.06
Imagined Future Selves				0.39***	0.5***	0.18
Imagined Community Agency					0.46***	0.28*
Conceptualizing the Self as Having Multiple Identities						0.14
<i>Older adults</i>						
Psychological wellbeing	0.64***	0.42**	0.42**	0.28*	0.27*	0.44**
General life purpose		0.42**	0.62***	0.51***	0.43**	0.47***
Social connectedness			0.23	0.15	0.17	0.24
Imagined Future Selves				0.53***	0.49***	0.5***
Imagined Community Agency					0.45***	0.51***
Conceptualizing the Self as Having Multiple Identities						0.47***

Despite no main effects on the hypothesized variables, we did find that adolescents moved from a concrete approach to civic participation to a more abstract understanding that involved multiple perspectives across the intervention, replicating the exploratory results from Study 1. Table 10 presents frequencies for coded responses about civic participation pre and post-testing.

Table 10. Counts of coded responses on civic participation items in Study 2. “Number of responses” provides tallies for the numbers of participants whose response fell into the relevant category.

Coded response	Number of responses	
	Pre	Post
Abstract understanding	7 (12%)	16 (28%)
Concrete understanding	52(88%)	43 (72%)

Discussion Study 2

The aim of this study was to assess the effects of an intergenerational storytelling intervention in adolescents and older adults from an affluent area near Boston. The intervention was delivered as part of a standard English course. Instead of writing a personal tribute to their older-adult partners, adolescents were instructed to describe the life events of their older-adult partners as a journalistic exercise.

Contrary to expectation, adolescents showed lower scores in psychological wellbeing and in social-emotional imagination subscales Conceptualizing the Self as Having Multiple Identities and Difficulty as Important following the intervention. Older adults exhibited lower scores post-intervention than pre-intervention in the Conceptualizing the Self as Having Multiple Identities subscale of the social imagination survey. A decline in social connectedness, at a trend level, was also observed.

Though the Study 2 results are disappointing, they do underscore an important premise of the project. That is, the act of formulating a personally meaningful and emotional tribute (story) at the end of the intervention is likely instrumental in promoting psychological growth and

wellbeing among both the adolescent and older-adult participants. Writing a more formal paper *about* the older-adult partner's story without reflecting on *one's own meaning-making* decreases the effect of the intervention. (It is possible, of course, that participants in Study 2 gained formal skills for journalistic writing; this was not a focus of the current investigation, though coders note that the quality of writing in this group was exceptionally strong.)

General Discussion

The overarching aim of this project was to examine the effects of an art-based intergenerational storytelling intervention on adolescents' and older adults' healthy psychosocial development. In Study 1, the Sages & Seekers intervention was compared to an intergenerational movie-watching activity that, while involving stories and group activity, did not specifically support participants' reflecting on their life narratives. Results from Study 1 showed that the intergenerational storytelling intervention promoted social connectedness among the adolescents. The intervention also promoted wellbeing and purpose-in-life among the adolescents, an effect that was particularly strong about participants with lowest scores at baseline. Among older adults, the intervention promoted generativity and working memory performance, suggesting that it improved both social-emotional and cognitive wellbeing. In Study 2, schoolteachers delivered an assignment version of the intergenerational storytelling curriculum. Adolescents were instructed to write an essay describing the life events of their older-adult partners. Results from this study were less promising: though adolescents showed increases in abstract understanding of civic participation, the other positive psychological measures showed no change or decreased from pre- to post-testing in either adolescents or seniors.

Overall, these results suggest that an arts-based storytelling intervention like Sages & Seekers may be helpful in promoting social meaning-making and wellbeing in community

settings, and in particular for increasing adolescents' sense of social connectedness and purpose-in-life. The results were especially strong for participants with the lowest levels of social wellbeing at baseline—both for adolescents and for older adults.

The intergenerational aspect is a comparative advantage of this intervention. Both adolescents and seniors are in need of social connection; setting them up to support each other seems like an obvious strategy for building community social resources. A Sages & Seekers-style program is efficacious, affordable, and could be readily scalable. By engaging a grassroots-style small opportunity-cost program, intergenerational storytelling activities leverage the natural power of conversations and relationships, and are culturally sensitive for a range of users. This intervention approach mirrors opportunities for cultivating purpose and virtues that adolescents and older adults are likely to find in natural relationships, but that may be lacking in the modern age.

In many ways, our project opens as many questions as it answers. In particular, future studies should examine effects of context, such as of ethnic background and socio-economic circumstances of participants. The finding that adolescents' changes in purpose-in-life were mediated by their developing propensity to formulate value-based goals underscores the importance of opportunities for high-level reflection in this age group (Immordino-Yang, 2016); the implications of this finding should be more broadly investigated in schools. By demonstrating the effectiveness of an established arts-based educational program in promoting healthy development of adolescents and elders, our project can inform practitioners and school administrators about the benefits of intergenerational storytelling, an attractive platform for both young and old. Storytelling could expand the repertoire of educational practices that promote

social-emotional learning, contributing to enriching the social and community orientation of schools. Further work in this vein is needed.

These findings, though modest, are important. Adolescents and seniors are among the groups with the highest rates of social isolation (Twenge et al., 2019), lowest rates of mental health (Mojtabai, Olfson, & Han, 2016). Across ages, individuals' sense of purpose, also called generativity among the elderly, is an important predictor of health and even of life expectancy (Stephoe, Deaton, & Stone, 2015). Our findings are consistent with work showing that among older adults, cognitive functioning is supported by social engagement (James, Wilson, Barnes, & Bennett, 2011; Krueger et al., 2009). Especially given the low cost of this intervention and its portability to any community, our study suggests the utility of intergenerational storytelling as an arts-based intervention with promise. Though the results of Study 2 were less impressive, they do underscore a main premise of the study, namely that *meaning-making* and personal connection are key to improving mental wellbeing. Taken together, our studies, along with others conducted in older adults (Mager, 2019), show compelling evidence that opportunities for relationship-based reflection promote healthy development.

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