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The Baltimore Experience Corps Trial: Enhancing Generativity via Intergenerational Activity Engagement in Later Life

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Abstract

Objectives: Being and feeling generative, defined as exhibiting concern and behavior to benefit others, is an important developmental goal of midlife and beyond. Although a growing body of evidence suggests mental and physical health benefits of feeling generative in later life, little information exists as to the modifiability of generativity perceptions. The present study examines whether participation in the intergenerational civic engagement program, Experience Corps (EC), benefits older adults' self-perceptions of generativity.

Method: Levels of generativity were compared in older adults randomized to serve as EC volunteers or controls (usual volunteer opportunities) in the Baltimore Experience Corps Trial at 4-, 12-, and 24-month evaluation points over the 2-year trial. Analyses utilized intention-to-treat and complier average causal effects (CACE) analyses which incorporate degree of intervention exposure in analytic models.

Results: Participants randomized to the EC group had significantly higher levels of generative desire and perceptions of generative achievement than controls at each follow-up point; CACE analyses indicate a dose–response effect with a greater magnitude of intervention effect with greater exposure to the EC program.

Discussion: Results provide the first-ever, large-scale experimental demonstration that participation in an intergenerational civic engagement program can positively alter self-perceptions of generativity in older adulthood.

Keywords: Civic engagement—Generativity—Intergenerational—Randomized controlled trial—Social engagement—Volunteerism

Mature man needs to be needed . . . (Erikson, 1950)

Generativity is care and concern directed towards others, typically younger individuals. Central to most conceptualizations of generativity is a commitment to promoting

the next generation (e.g., Erikson, 1950; McAdams & Destaubin, 1992; McAdams, Hart, & Maruna, 1998). This promotion is thought to occur through multiple mechanisms, including parenting, mentoring, caretaking, civic

engagement, and the creation of resources and tools that enhance the successful development of younger generations. At the individual level, generativity is postulated to stem from multiple motivations, which may operate singly or in concert, including a desire to assist in the continuity of the species, a desire to produce something that outlives the self or create a legacy, a need to be needed, and motives to give back, make a difference, and contribute meaningfully to the lives of others (e.g., Erikson, 1950; Kotre, 1984; McAdams & Destaubin, 1992). The generative concerns and behaviors of individuals, in turn, are an essential foundation of the social capital that allows for individual and collective flourishing in society.

Desires to be generative and engagement in generative activity are thought to attain preeminence in midlife as a consequence of normative obligations and developmental goals (Erikson, 1950; Fleeson, 2001; McAdams, Aubin, & Logan, 1993) and the small body of empirical research on age variations in generativity generally provides support for higher self-perceptions of generativity in middle-aged as compared to young and/or older adults (Fleeson, 2001; Ochse & Plug, 1986; Ryff & Heinicke, 1983; Ryff & Migdal, 1984). However, one hypothesis for the generally observed lower self-perceptions of generativity in older as compared to middle-aged adults is the shrinking expectations and opportunities for generative engagement that often accompany advancing age. The gains in healthy life expectancy over the last century have not been contemporaneously matched with evolutions in our social systems that allow for effective utilization of the large and growing population of older individuals with the potential to make significant generative contributions. Our society is facing a structural lag challenge with respect to capitalizing on the generative potential of our elder citizens (Carlson, Seeman, & Fried, 2000; Freedman, 2002; Fried, Freedman, Endres, & Wasik, 1997; Riley, Kahn, & Foner, 1994). In recognition of this challenge, numerous policies and programs have been developed to provide older adults with opportunities for generative engagement. One such program, Experience Corps (Fried et al., 2004, 2013), was designed to create a new social institution to offer opportunities for generative engagement. This analysis assesses the efficacy of Experience Corps in enhancing both individuals' desire to be generative, as well as actual perceptions of generative achievement, in later life.

Experience Corps

Experience Corps (EC) is a civic engagement program designed to harness the time, energy, and wisdom of older adults to improve academic outcomes of elementary school children. EC volunteers serve in a variety of roles designed to meet important unmet needs of a school as determined by the school principal, commonly assistance with literacy and math instruction and providing children with attention and guidance needed to support positive behavioral development. EC is designed to be an intergenerational win-win,

enhancing the academic and sociobehavioral well-being of elementary school children and providing older adults with an opportunity to fulfill generative desires of meaningfully contributing to others and promoting the next generation while simultaneously exposing older volunteers to social, cognitive, and physical activity associated with more favorable trajectories of health and functioning in later life (Fried et al., 2004; Glass et al., 2004). Originally piloted in 5 cities in 1995, the program has now expanded to 21 U.S. cities. The national EC program joined with AARP in 2011 becoming AARP Experience Corp.

The EC program in Baltimore, MD, was the original site for maturing the gold standard program and then empirical evaluation of the benefits of program participation for older adult volunteers, children, and schools. A randomized controlled pilot trial of 147 older adults and 6 schools in Baltimore provided preliminary evidence for such benefits. Compared to older adults randomized to usual volunteer opportunities in the city, those randomized to serve as EC volunteers showed greater gains in physical activity level, executive function and memory performance, and enhanced perceptions of social support availability (Carlson et al., 2008; Fried et al., 2004). Children in EC versus comparison schools showed higher levels of reading achievement and lower levels of problem behavior (Rebok et al., 2004). Other indicators of enhanced academic performance and psychosocial and physical well-being in older volunteers also trended in the direction of greater benefits for EC participants. These promising findings led to the development of the Baltimore Experience Corps Trial (BECT; [ClinicalTrials.gov](https://clinicaltrials.gov/ct2/show/study/NCT00380562) indicator: NCT00380562), a dual effectiveness trial designed to test the potential benefits of high-intensity (target of 15 hr of volunteer service per week) EC participation over a 2-year period for both older adult volunteers and children and schools (see Fried et al., 2013).

Mental and Physical Well-Being Benefits of Generativity

Experience Corps, as with other similar intergenerational activity and civic engagement programs, was designed to provide older adults with opportunities for fulfillment of their generative desires. Such programs might not only benefit older individuals by providing an outlet for generative engagement, but the fulfillment of generative goals may also provide additional mental and physical well-being benefits. More positive self-perceptions of generativity are correlated with lower levels of negative affect and depressed and anxious mood in middle-aged and older adult samples (Gruenewald, Karlamangla, Greendale, Singer, & Seeman, 2007, 2009; Gruenewald, Liao, & Seeman, 2012; Stewart & Vandewater, 1998). Greater self-perceptions of generativity are also linked to more positive psychological well-being in both mixed-aged and older adult samples (An & Cooney, 2006; Cheng, 2009; Cox, Wilt, Olson, & McAdams, 2010; Landes, Ardel, Vaillant, & Waldinger, 2014; Rothrauff & Cooney, 2008).

Positive perceptions of generativity are also associated with healthier profiles of cognitive and physical functioning. More favorable perceptions of achieving key generative goals, such as being useful to and needed by others, have been found to predict subsequent healthier trajectories of aging in later adulthood, including lower risk of institutionalization, the onset or progression of physical disability, and death (Grand, Grosclaude, Bocquet, Pous, & Albarede, 1988, 1990; Gruenewald et al., 2007, 2009, 2012; Okamoto & Tanaka, 2004; Pitkala, Laakkonen, Strandberg, & Tilvis, 2004). The ability to maintain favorable self-perceptions of generativity may also shape the aging process. Persistently low feelings of usefulness to others, or declines in feelings of usefulness or perceptions of generativity, over time, as individuals age through older adulthood, have been linked to greater risk of mortality and poorer cognitive functioning in later life (Gruenewald et al., 2009; Hagood & Gruenewald, 2014). Thus, there is growing evidence to support connections between having and maintaining favorable perceptions of generativity and psychological, cognitive, and physical well-being in older adulthood.

Enhancing Self-Perceptions of Generativity

The observational investigations reviewed above provide compelling support for the hypothesis that favorable perceptions of generativity may be linked to a happier and healthier trajectory of aging in later life and suggest that such perceptions may be an important target for health promotion intervention. However, investigations to date have assessed perceptions of generativity at one point in time or naturally occurring changes in such perceptions. Thus, it is unclear whether perceptions of generativity can be *modified* by psychosocial or behavioral intervention. The identification of interventions that can be instituted at the individual or community level to enhance older adults' perceptions of generative achievement may provide one mechanism for the promotion of mental and physical well-being for our growing older adult population, and thereby better overall public health. The Baltimore Experience Corps program was explicitly designed to attract older adults to service through an opportunity to fulfill their desires for generative engagement and thereby enhance perceptions of generative achievement (Fried et al., 2004; Tan et al., 2010).

The aim of the current analysis is to evaluate whether EC engagement can, in fact, have a positive effect on perceptions of generativity over time, examining both the effect of EC participation on the desire to be generative, as well as perceptions of generative achievement, or the perception of playing a generative role in the lives of others. Theoretical constructions of generativity often posit that the desire to be generative is linked, but also distinct, from generative activity and perceptions of that activity (i.e., perceptions of generative achievement; e.g., McAdams & Destaubin, 1992). We also conceptualize generative desire

and achievement as separate, but mutually reinforcing, components of generativity. That is, the desire to be generative may fuel generative engagement which provides an opportunity to perceive generative achievement. Likewise, feelings of generative achievement may promote continued desire for generative engagement. Thus, we hypothesize that both forms of generativity may be enhanced by EC engagement. Specifically, the aim of the current analysis is to evaluate whether older adults randomized to EC participation, as compared to those randomized to a usual volunteer opportunity control group, have more favorable perceptions of generative desire and generative achievement, over a 2-year participation period. Such evidence would indicate that both the desire to engage in generative activity, as well as perceptions of achievement in fulfilling such a desire, can be positively modified.

Method

The BECT is a dual effectiveness trial of the impact of the EC program on older adult participants and on children in public elementary schools receiving the program. EC is designed to attract older adult participants through the opportunity for generative engagement and then to operate via cognitive, physical, and psychosocial pathways to enhance the health and well-being of older adult volunteers while simultaneously promoting the academic and psychosocial well-being of elementary schoolchildren and the climate and social capital of the school and community in which the EC program resides. The BECT was designed to evaluate benefits for older adult participants and children and schools receiving the program over a 24-month period. A comprehensive overview of the rationale, design, and methods of the BECT is provided by Fried and colleagues (2013).

Participants

Adults aged 60 years or older recruited from the general Baltimore community were eligible for trial participation if they agreed to accept randomization to the intervention or control arms of the trial and, if randomized to the intervention, to serve 15 or more hours per week as an EC volunteer for at least 1 school year (all were encouraged to serve for 2 school years). Participants also had to be functionally literate at a 6th grade level or above (as determined by Wide Range Achievement Test [WRAT]-4; Wilkinson & Robertson, 2006), cognitively intact enough to be able to assist teachers and children in an effective and safe manner (as determined by Mini-Mental State Exam [MMSE]; M. F. Folstein, S. E. Folstein, & McHugh, 1975; cutoff of ≥ 24), and if randomized to be an EC volunteer, to be able to travel to the assigned school, pass a criminal background check required by the school system, and behave in a manner appropriate for an elementary school environment. As depicted in Figure 1, following initial screening of 2,675 individuals, a

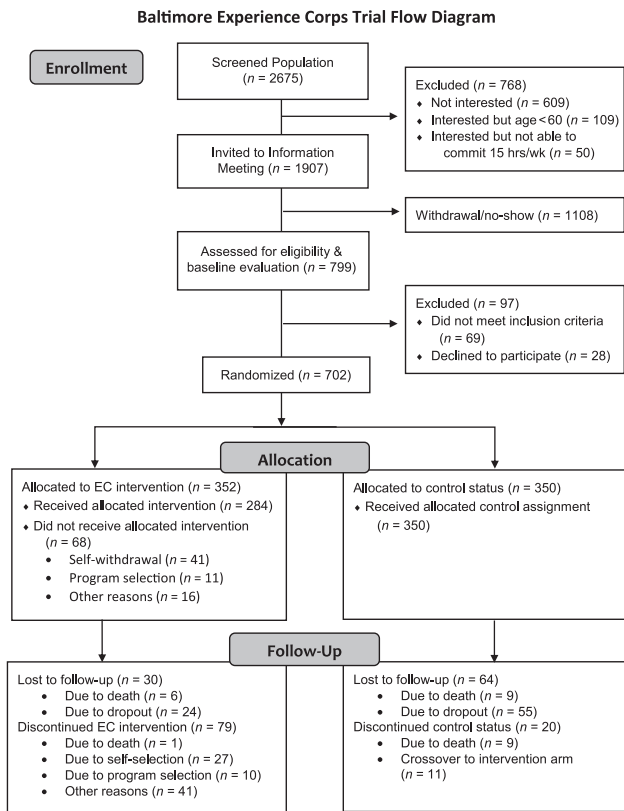


Figure 1. Baltimore Experience Corps Trial CONSORT flowchart.

total of 702 participants were randomized to the intervention ($n = 352$) or control ($n = 350$) arms. Postrandomization, 68 participants in the intervention arm did not proceed to a volunteer position in the school due to self-selection ($n = 41$), program selection ($n = 11$; e.g., deemed inappropriate by EC Program or school staff for school placement), or other reasons ($n = 16$; e.g., unable to attend training program). Participants were enrolled into the trial over a 4-year period (cohort year 1: $n = 155$, cohort year 2: $n = 223$, cohort year 3: $n = 156$, cohort year 4: $n = 168$).

Control participants were referred to the Baltimore City Commission on Aging and Retirement Education (CARE). CARE provides referral to a wide array of volunteer opportunities for older adults in the city (except for Experience Corps during the trial period). Volunteer opportunities offered through CARE are often, but not always, of lower intensity and duration (e.g., committed hours, duration of volunteer activity), and typically lack the opportunity for intergenerational generative engagement, as compared to that characterized by EC service (see Fried et al., 2013).

Materials and Procedure

Study assessments were conducted at baseline and at 4-, 8-, 12-, 16-, 20-, and 24-month follow-ups. Data were collected via 2- to 3-hr in-person interviews or briefer (<1 hr) telephone interviews (8, 16, and 20 months). Perceptions of generative desire and generative achievement were

evaluated at the baseline, 4-, 12-, and 24-month assessments. The present analyses also utilize sociodemographic and health status data collected at the baseline assessment.

Perceptions of generative desire and achievement

Desires to be generative and perceptions of current generative achievement were assessed with a measure developed for the BECT. Respondents were asked to rate their agreement (1: *disagree strongly* to 6: *agree strongly*) with 7 items assessing *generative desire* and 6 items assessing perceptions of current *generative achievement*. Scale items are detailed in Table 2. To confirm the hypothesized two-factor structure of the new measure, we conducted a maximum likelihood factor analysis of the 13 scale items. Results indicated two factors with eigenvalues greater than 1, together accounting for 51.2% of the variance in the items' variance-covariance matrix. Inspection of the oblique rotated factor loadings indicated that the generative achievement and generative desire items loaded strongly and separately on the first and second factor, respectively, although the two factors were moderately correlated ($r = .54$). Given evidence of distinct factors, separate subscale scores were created by averaging items on each subscale. Internal reliability of each subscale was good (generative desire Cronbach's alpha [α] = .82; generative achievement $\alpha = .90$).

Sociodemographic and health status covariates

Sociodemographic covariates included age, sex, race/ethnicity (Black/African American, White/Caucasian, other), education level (high school or less or some college or greater) and yearly household income (<\$15,000, \$15,000–<\$35,000, \geq \$35,000). Health status covariates included number of major morbid conditions (hypertension, cardiovascular disease conditions [myocardial infarction, intermittent claudication, angina, congestive heart failure], stroke, and diabetes) participants reported as diagnosed by a doctor and level of depressive symptomatology as measured with the Geriatric Depression Scale (GDS; Yesavage, 1988; Yesavage et al., 1982).

Analytic strategy

Analyses of potential differences in perceptions of generative desire and generative achievement between the EC and control groups were assessed with both intention-to-treat (ITT) and complier average causal effects (CACE) strategies. The ITT method estimates intervention effects between randomized experimental groups ignoring actual exposure to the treatment among trial participants. Thus, the ITT approach includes both those who complied with, or were exposed, to the treatment, along with noncompliers in analysis of the treatment group. If the objective is an estimate of treatment effects in those who actually were exposed to, or complied with, the intervention, then ITT analysis may bias the estimate of the treatment effect via comparable treatment of compliers and noncompliers in the intervention group.

CACE methods estimate treatment effects between observed compliers in the intervention group and estimated (potential) compliers in the control group (Angrist, Imbens, & Rubin, 1996; Dunn et al., 2003; Jo, Ginexi, & Ialongo, 2010; Stuart, Perry, Le, & Ialongo, 2008). In the current analyses, a commonly used categorical latent variable modeling approach (Jo & Muthen, 2001) for estimating compliance status in the control group was performed using Mplus (Version 7.0) software. Specifically, we relied on a latent class mixture model in which class membership (compliance) is known for some but not all participants (known for those receiving the treatment; unknown for control participants).

The use of CACE models to examine differences in levels of generative desire and generative achievement rests on the following assumptions: (a) assignment to EC intervention versus control conditions of the trial is random (randomization assumption); (b) the potential outcomes for each participant are unrelated to the treatment status of other participants (Stable Unit Treatment Value assumption); (c) no *always-takers* (individuals who would always take treatment regardless of assignment) exist; (d) no *defiers* (individuals who always take the opposite of assigned treatment condition) exist; (e) noncompliance is independent of treatment assignment (outcome exclusion restriction [OER] assumption); and (f) the average causal effect of the treatment is not zero (i.e., a significant effect of treatment exists). Assumptions 1–4 are met by the design of the trial which incorporated randomization and program controls which did not allow for the adoption of a treatment if not assigned (i.e., those assigned to the control condition could not gain access to the EC program to be control condition always-takers or defiers). Treatment group defiers are captured as noncompliers in the current analyses. The OER assumption is tested by comparing results of a model that contains a compliance submodel in which compliance is predicted from treatment status and all relevant covariates with results of a model omitting the compliance submodel; if the CACE estimate for the intervention effect changes significantly when the modeling of compliance is omitted, then the OER assumption has not been met, and the compliance submodel should be retained. Following the suggestion by Jo (2002a,b), in order to minimize bias due to possible violation of the OER, we included the compliance submodel and added covariates believed to be predictive of compliance to the outcome model for all CACE analyses. The validity of such an approach, however, hinges upon the additivity of treatment assignment effect assumption (i.e., a constant average causal effect of treatment assignment regardless of varying values of covariates). The additivity assumption is tested by the iterative addition of interaction terms between treatment condition and covariates to the outcome model; if these interactions are statistically significant, then the additivity assumption has not been met. When interactions are present, the interactive effects and the main effects of the covariates in the outcome model are constrained to be the same between compliers and noncompliers for model identification.

CACE methods use observed compliance rates in the intervention group in the estimation of unobserved compliance in the control group. Thus, estimation of treatment effects may depend on the definition of “compliance” used in analytic models. As participants randomized to the intervention condition were asked to serve as EC volunteers for approximately 15 hr a week over 2 full school years, there was a considerable range of variation in compliance (service exposure hours) that was possible in the intervention group. Given that dose–response effects are plausible (i.e., those who have greater exposure experience greater benefit), a series of CACE models were run for each outcome at each timepoint using quintiles of observed service hour exposure (i.e., the 20th, 40th, 60th, and 80th percentiles of exposure hour distributions at each evaluation period) to define compliance in each analysis. The actual range of cumulative exposure hours at each timepoint among the 284 of the 352 participants who complied to some degree with the intervention were as follows: 4 months = 26–417 cumulative hours; 12 months = 26–826 cumulative hours; 24 months = 26–1,589 cumulative hours (see Table 3 footnote for the cumulative hour cutpoint for each quintile of exposure at each timepoint).

Sociodemographic and health status factors (sex, race, education level, income, major morbidity, depression, and trial cohort year) and the baseline version of each generativity outcome variable were included as covariates in ITT and CACE models, as well as predictors of attrition and compliance in CACE models. Single regression-based imputation was performed for the small rate of missing baseline covariate data: 1.7% of income values, 0.2% of physical activity values, 3.9% of major morbidity values, 0.1% of depression values.

As detailed in Figure 1, there was a moderate degree of attrition over the 24-month trial period. The number and proportion of enrolled participants who completed the 4-, 12-, and 24-month study evaluations that are the focus of the current analyses were as follows: 4 month ($n = 593$ [84.5%]), 12 month ($n = 558$ [79.5%]), and 24 month ($n = 560$ [79.8%]). Missing data on dependent variables was directly modeled in CACE analyses (Jo et al., 2010) and addressed with the multiple imputation mechanism in SPSS for ITT analyses. Intervention effects on generativity outcomes at the 4-, 12- and 24-month follow-ups were modeled separately in ITT and CACE analyses.

Results

Descriptive statistics for sociodemographic and health status covariates in the full cohort and in intervention and control conditions are detailed in Table 1. The items composing each generativity measure, Cronbach’s alpha reliability coefficients, and mean scores at each evaluation are detailed in Table 2. Generally, participants began the trial with moderately high levels of generative desire and generative achievement.

Table 3 details the results for covariate-adjusted ITT and CACE analyses for both generativity outcome measures at

Table 1. Participant Characteristics

	Entire cohort (<i>n</i> = 702)	Control participants (<i>n</i> = 350)	Intervention participants (<i>n</i> = 352)
	<i>M</i> (<i>SD</i>) or %	<i>M</i> (<i>SD</i>) or %	<i>M</i> (<i>SD</i>) or %
Sociodemographic characteristics			
Age (60–89)	67.4 (5.9)	67.4 (5.8)	67.4 (5.9)
Female	85	85	85
Race			
Black/African American	92	93	92
White/Caucasian	5	4	6
Other	3	3	2
Education			
≤high school/general education development test	44	43	45
≥Some college	56	57	55
Income			
<\$15,000	30	29	30
>\$15,000–<\$35,000	36	37	35
>\$35,000	34	34	35
GDS	1.1 (1.7)	1.2 (1.8)	1.1 (1.6)
Major morbidities (0–5)	1.9 (1.1)	2.0 (1.1)	1.9 (1.1)

Note: GDS, Geriatric Depression Scale.

Table 2. Generativity Measures

	Baseline (<i>n</i> = 701)	4 months (<i>n</i> = 589)	12 months (<i>n</i> = 538)	24 months (<i>n</i> = 532)
Generative desire (1: <i>disagree strongly</i> to 6: <i>agree strongly</i>)				
I want to make a difference in the lives of others.				
I want to give back to my community.				
I want to create new things or ways of doing things.				
I want to share my experiences with other people.				
I want to mentor people younger than me.				
I want to do something that will be valuable to others for a long time.				
I want to show people younger than me how to do things.				
Generative desire subscale ($\alpha = .82$)	5.62 (.48)	5.62 (.47)	5.56 (.51)	5.57 (.55)
Generative achievement (1: <i>disagree strongly</i> to 6: <i>agree strongly</i>)				
I feel like I make a difference in my community.				
I feel like I will do things that will last for a long time.				
I feel like I will be remembered for a long time.				
I feel like I am doing things that will leave a legacy.				
I feel like I am giving back.				
I feel like I am making a difference in the lives of others.				
Generative achievement subscale ($\alpha = .90$)	5.18 (.82)	5.32 (.70)	5.23 (.76)	5.30 (.75)

the 4-, 12-, and 24-month evaluations. Tests of the exclusion restriction and additivity assumptions were met for all but four models: the 20th percentile, 24-month model for generative desire; and the 60th percentile, 4-month, the 40th percentile, 12-month, and 40th percentile, 24-month models for generative achievement. Since the additivity assumption was not met for these three models, results should be interpreted with caution (i.e., that the CACE will be stronger for some participants and weaker for others, depending on their sociodemographic, health, and cohort status).

ITT analyses indicate that participants randomized to the EC arm of the intervention had significantly higher levels of generative desire and generative achievement at all three time points (see Table 3). When intervention versus control group differences in generative desire and generative achievement were examined in CACE models, a significantly greater magnitude of difference between the two groups was observed with an increasing level of volunteer exposure hours used to define compliance with the intervention. For descriptive purposes, effect size (ES) estimates

Table 3. Regression Coefficients Representing Mean Difference in Experience Corps Intervention Versus Control Group Participants for Each Generativity Measure at the 4-, 12-, and 24-Month Evaluations in ITT and CACE Analyses Utilizing Graded Definitions of Exposure to Define Compliance With the Intervention

	ITT	CACE (20 th percentile of exposure)	CACE (40 th percentile of exposure)	CACE (60 th percentile of exposure)	CACE (80 th percentile of exposure)
Generative Desire (subscale)					
4 months	0.075* (0.031) ES = 0.182	0.124* (0.054) ES = 0.263	0.186* (0.080) ES = 0.394	0.247* (0.112) ES = 0.523	0.456* (0.211) ES = 0.966
12 months	0.075* (0.034) ES = 0.173	0.036 (0.033) ES = 0.070	0.203** (0.005) ES = 0.393	0.341** (0.127) ES = 0.660	0.652* (0.310) ES = 1.260
24 months	0.132*** (0.039) ES = 0.256	0.242*** (0.068) ^a ES = 0.436	0.357*** (0.101) ES = 0.643	0.560** (0.179) ES = 1.009	1.120*** (0.249) ES = 2.018
Generative Achievement (subscale)					
4 months	0.151*** (0.040) ES = 0.290	0.056 (0.050) ES = 0.080	0.041 (0.060) ES = 0.059	0.677* (0.305) ^a ES = 0.969	0.747** (0.284) ES = 1.069
12 months	0.110* (0.044) ES = 0.189	0.021 (0.049) ES = 0.028	0.009** (0.059) ES = 0.012	0.348** (0.156) ES = 0.465	0.933* (0.466) ES = 1.249
24 months	0.101* (0.047) ES = 0.159	0.009 (0.044) ES = 0.012	0.297** (0.104) ^a ES = 0.398	0.442** (0.167) ES = 0.592	1.792* (0.827) ES = 2.399

Notes: All outcome models include the following covariates: baseline level of generativity outcome variable, age, sex, race, education, income, depression, number of major morbid conditions, and trial cohort year. Exposure percentile cutpoints (number of cumulative hours of Experience Corps participation): 4 months (20th = 143 hr; 40th = 179 hr; 60th = 211 hr; 80th = 255 hr); 12 months (20th = 279 hr; 40th = 450 hr; 65th = 501 hr; 80th = 573 hr); 24 months (20th = 291 hr; 40th = 684 hr; 65th = 945 hr; 80th = 1,061 hr). Cohen's *d* ES estimates calculated as: (mean generativity outcome in Experience Corps group – mean generativity outcome in control group)/pooled *SD* across the two groups). ES can be interpreted against the following conventions: small: >0.20, medium: ~0.50, large: >0.80. CACE, complier average causal effects; ES, effect size; ITT, intention to treat.

^aExclusion restriction and additivity assumptions were not met.

p* < .05, *p* < .01, ****p* < .001.

representing the magnitude of the difference in mean levels of each generativity outcome in the Experience Corps intervention versus control group participants in each ITT and CACE analysis are noted below the beta estimates presented in Table 3. As noted in Table 3, greater ES estimates were observed as a function of the greater level of exposure to the intervention used to define “compliance” with the intervention in CACE models, suggesting a more positive effect of EC engagement as a function of greater exposure to the program (i.e., a dose–response relationship).

Discussion

To our knowledge, the current findings represent the first-ever experimental demonstration that participation in an intergenerational civic engagement program can enhance perceptions of both generative desire and generative achievement in older adults. Higher levels of generative desire and generative achievement at multiple periods over a 2-year follow-up were observed in EC participants as compared to controls in both ITT and CACE analyses. Further, CACE analyses suggested a greater magnitude of effect on generativity variables when a greater degree of exposure to the intervention was utilized to define compliance with the intervention. Such findings suggest that “more really is more” when it comes to degree of engagement in intergenerational activity, like EC, and shifts in self-perceptions of generativity.

Numerous observational studies have demonstrated that perceptions of generativity are linked to actual engagement in generative behavior (Cheng, 2009; Cox et al., 2010; Gruenewald et al., 2007, 2009; McAdams & Destaubin, 1992), but the correlational nature of these investigations has rendered it difficult to discern the direction of influence among generative behavior and generative perceptions. Although these variables are likely linked in a bidirectional fashion, the current experimental demonstration that randomized participation in an intergenerational generative activity program can actually enhance perceptions of generativity is a critical piece of the puzzle regarding how these perceptions are shaped in later life. Such findings also have import for the development of generative activity programs, as the fulfillment of such motives is an often-cited impetus for participation in EC and other similar volunteer programs (Barlow & Hainsworth, 2001; Okun, 1994; Tan et al., 2009).

EC-induced enhancement of self-perceptions of generativity may result in a number of additional benefits, including the better mental health, more favorable trajectories of cognitive and physical functioning, and greater longevity of those with more favorable perceptions of generativity documented in longitudinal observational investigations (e.g., Grand et al., 1988, 1990; Gruenewald et al., 2007, 2009; Hagood & Gruenewald, 2014; Okamoto & Tanaka, 2004; Pitkala et al., 2004). The exploration of connections between generative perceptions and these indicators of

health and well-being over time in the BECT is an important objective of future analyses. Although an enhanced perception of being generative is an important benefit in its own right, the additional benefits that may flow from positive perceptions of generativity with advancing age could further increase the public health impact of civic engagement health promotion programs like EC.

There are some limitations of the present study. One limitation is that participants generally entered the trial with fairly high levels of generative desire and achievement, this may have limited the ability of EC participation to induce large enhancements in perceptions of generativity. Similarly, trial participants also engaged in volunteer behavior at high rates (over 75%) at baseline and trial participation enhanced the rate of non-EC volunteer engagement in both groups (over 85% in both groups at follow-ups; data not shown). The finding of greater enhancement of generativity in those randomized to EC participation even against the backdrop of high rates of other forms of contributory behavior in both intervention and control participants suggests that generative intergenerational engagement, such as is characteristic of EC volunteer service, may be a key active ingredient for the enhancement of self-perceptions of generativity. Nonetheless, future research will be needed to more definitively confirm that this is specific to intergenerational generative service as compared to other forms of high-intensity volunteer engagement. Attrition over the follow-up is a second limitation. Although attrition is common in real-world, longitudinal behavioral trials, and was addressed with appropriate statistical imputation procedures in the current analyses, a notable loss to follow-up (~15%–20% from 4- to 24-month evaluations) did occur over the trial period. However, the likelihood of missing data (primarily due to trial attrition) was not affected by preparticipation levels of generativity (data not shown), limiting concerns that initial self-perceptions of generativity might have shaped likelihood of postrandomization trial engagement. A third limitation relates to the predominantly minority (African American) and female (85%) trial sample, which may limit generalization of findings to other racial/ethnic groups of elders or to elder men. Nonetheless, the trial was successful in recruiting a population of older minority adults not typically included in behavioral and health promotion interventions and which may be best poised to benefit from the hypothesized health and well-being benefits of EC participation.

There are many notable strengths of this study. First, and foremost, is that this study represents the first large-scale experimental demonstration that perceptions of generativity can be enhanced by high-intensity, high time commitment, intergenerational civic engagement in a real-world context. The second is that evidence for the beneficial effect of EC participation on perceptions of generativity were provided with both traditional ITT analyses and CACE analyses which demonstrated that a greater “dose” of exposure may achieve greater positive effects. High-intensity service for an extended period

may be key to significant benefits for elder volunteers and those they serve. A third strength is the demonstration of the benefit of intergenerational civic engagement in enhancing older adults’ perceptions of generativity within a program that is currently in operation in 21 cities across the United States. The present results provide support for recruitment assertions and participant motivations that EC participation can fulfill desires to give back and make meaningful contributions to others and the next generation. Furthermore, the current existence of this program in 21 U.S. cities means that these benefits of participation may have been realized by a sizable number of elders who have participated in the program and many more who will participate in the future. These results may also encourage the expansion of the program to additional locales.

Conclusion

In conclusion, the present analyses provide experimental evidence that older adults’ participation in an intergenerational civic engagement program can enhance their perceptions of generative contributions. Not only is feeling generative a desired end in its own right, but older adults may also benefit from the better mental and physical well-being typically observed in those who feel more generative in observational studies. Thus, these results suggest that in helping others, older adults may be helping themselves, as well. Given that the children and schools who are the recipients of older adults’ generative care may also benefit tremendously, these findings provide additional support that Experience Corps and similar programs may be important vehicles for improving public health.

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