

# Responsibility Development Transfers Across Contexts: Reciprocal Pathways Between Home and Afterschool Programs

Marcela Raffaelli  
University of Illinois at Urbana-Champaign

Sandra D. Simpkins  
University of California, Irvine

Steve P. Tran and Reed W. Larson  
University of Illinois at Urbana-Champaign

We investigated adolescent responsibility across 2 developmental contexts, home and an afterschool program. Longitudinal data were collected from 355 ethnically diverse 11–20-year-old adolescents ( $M = 15.49$ ; 55.9% female) in 14 project-based programs. Youth rated their responsibility in the program and at home at 4 time points; parents and leaders rated youth at Time 1. The first research objective was to evaluate 3 aspects of construct validity concerning scores of responsibility assessed through a new measure. Analyses provided evidence that program- and home-responsibility scores were distinct (i.e., evidence of the structural aspect of validity); that responsibility scores were invariant across age, gender, and ethnicity (i.e., generalizability evidence); and of external validity based on parent reports (i.e., convergent evidence). The second objective was to examine cross-context transfer of responsibility. A series of cross-lagged structural equation models (SEMs) revealed that higher responsibility in each context (home, program) predicted higher responsibility in the other context, even after controlling for the stability and within-time associations. At the last time interval, the program-to-home path was significantly stronger than the corresponding home-to-program path. The third objective was to assess whether these relations were moderated by adolescent ethnicity, gender, age, or years in the program. Multigroup SEMs revealed that pathways of influence did not differ across groups. Taken as a whole, results indicate that experiences in the 2 contexts of home and program lead to interindividual differences in the development of youth self-reported responsibility, but that affordances for responsibility development across contexts change over time.

*Keywords:* adolescents, afterschool programs, developmental contexts, family, responsibility

Responsibility—the extent to which a person dependably fulfills duties and obligations to themselves and others (Eisenberg, Duckworth, Spinrad, & Valiente, 2014; Ochs & Izquierdo, 2009)—is a core competency essential to individual and societal well-being (Partnership for 21st Century Skills, 2009; Roberts, Lejuez, Krueger, Richards, & Hill, 2014). Consequently, research into its development represents an important priority (Costanzo, 2014; Roberts & Pomerantz, 2004). Developmental–contextual perspec-

tives (e.g., Bronfenbrenner, 1979) propose that development occurs in daily contexts (microsystems), and there is evidence that distinct contexts afford different opportunities for developing responsibility. Families have historically represented a key context for responsibility development (Ochs & Izquierdo, 2009; Such & Walker, 2004), but affordances for responsibility within the family may decline as adolescents become engaged in contexts outside the home. In the United States, project-based afterschool programs represent contexts in which adolescents may develop responsibility (Smith, McGovern, Larson, Hillaker, & Peck, 2016). Ecological theory also proposes that development may transfer across contexts as young people apply newly acquired competencies to other areas of their lives (e.g., Bronfenbrenner & Morris, 1998). Numerous studies have examined how levels of responsibility change with age (see Caspi, Roberts, & Shiner, 2005; Roberts & DelVecchio, 2000), but transfer between contexts has seldom been examined. In the current study, we examined adolescent responsibility across two developmental contexts, home and an afterschool program, investigating reciprocal pathways of influence over time.

## Conceptualizing and Assessing Responsibility

Scholars have described various forms of responsibility, such as individual (Bowes, Flanagan, & Taylor, 2001), social (Wray-Lake, Syvertsen, & Flanagan, 2016), and familial (Everri, Mancini, &

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Marcela Raffaelli, Department of Human Development and Family Studies, University of Illinois at Urbana-Champaign; Sandra D. Simpkins, School of Education, University of California, Irvine; Steve P. Tran and Reed W. Larson, Department of Human Development and Family Studies, University of Illinois at Urbana-Champaign.

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Correspondence concerning this article should be addressed to Marcela Raffaelli, Department of Human Development and Family Studies, University of Illinois at Urbana-Champaign, 904 West Nevada Street, MC 081, Urbana, IL 61801. E-mail: [mraffael@illinois.edu](mailto:mraffael@illinois.edu)

Fruggeri, 2015). We conceptualized responsibility as a personal trait or competency that involves being dependable, socially aware, and accountable to others (Ochs & Izquierdo, 2009; Winter, 1992). This conceptualization is consistent with prior developmental scholarship. For example, Eisenberg and colleagues (2014) described a responsible person as someone who meets obligations, keeps promises, and can be counted on to fulfill duties. Similar views of responsibility have been reported by children, adolescents, and adults in various countries (e.g., Dunn, Kinney, & Hofferth, 2003; Ochs & Izquierdo, 2009; Such & Walker, 2004).

Considerable research on responsibility has been conducted under the umbrella of the Big Five personality theory. This perspective identifies responsibility as a core facet of the overarching construct of Conscientiousness (along with additional facets such as self-control, industriousness, and orderliness; Eisenberg et al., 2014; Roberts et al., 2014). Conscientiousness and its underlying facets are connected to a range of positive outcomes, including academic and career success, relationship stability, and psychological and behavioral well-being (see Costanzo, 2014; Roberts et al., 2014; Shanahan, Hill, Roberts, Eccles, & Friedman, 2014), which in turn contribute to societal well-being (Partnership for 21st Century Skills, 2009). Given the importance of conscientiousness for individuals and societies, there have been calls for research aimed at understanding its development (e.g., Eisenberg et al., 2014; Roberts & Pomerantz, 2004). However, Big Five constructs are high-level aggregates that describe general tendencies; therefore, scholars advocate that developmental research focus on lower-level facets (such as responsibility) that reflect specific behaviors, thoughts, and feelings, as these have a greater potential for change (e.g., Mund & Neyer, 2014; Roberts & Pomerantz, 2004).

Our thinking about how responsibility develops draws primarily on developmental-contextual perspectives (Bronfenbrenner, 1979; Weisner, 2001). Bioecological theory holds that development occurs through ongoing, reciprocal interactions between the developing person and the activities, relationships, and roles experienced in specific contexts (Bronfenbrenner & Morris, 1998). In line with this view, scholars propose that young people develop responsibility by encountering obligations and learning to fulfill them successfully (e.g., Weisner, 2001; Wood, Larson, & Brown, 2009). This general process has been demonstrated among adults who take on full-time jobs (Roberts, Caspi, & Moffitt, 2003) or enter committed relationships (Neyer & Asendorpf, 2001). But what contexts afford opportunities for responsibility to develop during adolescence, and to what extent does that development transfer to other contexts? We focused on two contexts—family and project-based afterschool programs. As discussed below, these two contexts provide affordances for responsibility development that should reinforce and build on each other; therefore, we expected to see transfer of responsibility across home and program.

One challenge to studying responsibility development across contexts is that the expression of traits and competencies occurs within specific microsystems (Roberts & Pomerantz, 2004). As such, assessment tools are often tailored to particular contexts (e.g., workplace) or roles (e.g., spouse). Such instruments are not well-suited for examining cross-context associations because measurement artifacts may result in inaccurate or biased results (Roberts et al., 2014). Instead, experts recommend that measures of a particular trait be structured similarly and assess parallel types of

behavior (Roberts et al., 2014; Roberts & Pomerantz, 2004). Accordingly, we designed a measure that assesses responsibility in the two contexts of home and afterschool programs using parallel items. Our first research objective was to introduce this new measure and examine evidence for multiple aspects of validity for the responsibility scores (AERA, APA, & the National Council on Measurement in Education, 2014; Hubley & Zumbo, 2013; Messick, 1995).

## Home and Program as Contexts for Responsibility Development

Our second and main research objective was to examine responsibility transfer between home and program. Across cultures, children's development of responsibility is cultivated within the family (Dunn et al., 2003; Ochs & Izquierdo, 2009). Responsibility is typically fostered through household work, including self-care and family care (Grusec, Goodnow, & Cohen, 1996). Although participation in household work has declined historically in the United States (Hofferth & Sandberg, 2001; Ochs & Izquierdo, 2009), most young people perform a range of tasks that contribute to family well-being (e.g., Hofferth, 2009) and promote a sense of personal responsibility and awareness of obligations to others (Bowes et al., 2001; Ochs & Izquierdo, 2009; Weisner, 2001).<sup>1</sup> Supporting the notion that childhood experiences contribute to responsibility development, conscientiousness increased from middle to late childhood in a European sample (Van den Akker, Deković, Asscher, & Prinzie, 2014). However, levels of conscientiousness dipped from late childhood to mid-adolescence, which might suggest that continued growth depends on experiences in other (nonfamilial) contexts. In the United States, afterschool programs provide novel opportunities for responsibility development (Salusky et al., 2014; Wood et al., 2009). Many programs give high-school-aged youth demanding roles and responsibilities for long-term projects, with the objective of fostering a range of competencies, including responsibility (Roth & Brooks-Gunn, 2003; Smith, McGovern, Larson, et al., 2016). Qualitative United States studies have indicated that youth become highly invested in these projects, and that experiences of overcoming obstacles and fulfilling role demands lead to changes in behavior and internalization of a sense of responsibility (Salusky et al., 2014; Wood et al., 2009).

These largely distinct lines of research document that responsibility develops in the contexts of home and program. A largely neglected question, however, is whether responsibility developed in one context transfers to the other. Bioecological theory posits that experiences in one microsystem lead to changes in competencies and self-concept that are then applied in other contexts (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 1998; see also Ochs & Izquierdo, 2009; Weisner, 2001). Adolescents who develop a sense of themselves as a specific type of person tend to behave in a manner consistent with that self-representation (Grusec et al., 1996; Telzer & Fuligni, 2009; Wray-Lake et al., 2016). Consistent with this view, Salusky and colleagues (2014) concluded that adolescents who took on responsibilities within project-based pro-

<sup>1</sup> National U.S. data are not available for adolescents, but among children aged 9–12, time spent in household work each week (excluding self-care) decreased from over 5 hr in 1981 (Hofferth & Sandberg, 2001) to just over 3 hr in 2003 (Hofferth, 2009).

grams “appeared to internalize the motivations behind responsible behavior” (p. 427). Relatedly, scholars have noted that responsibility has a moral dimension (e.g., [Bowes et al., 2001](#); [Such & Walker, 2004](#)), whereby failure to meet obligations can cause feelings of guilt or shame ([Weisner, 2001](#)). Adolescents’ increased cognitive capacities may also help them recognize opportunities to apply new competencies; for example, youth participating in programs learn empathy and perspective taking ([Pearce & Larson, 2006](#); [Smith, McGovern, Peck, Larson, & Roy, 2016](#)), which may influence their behavior in other contexts.

Research in the field of learning suggests that transfer is most likely to occur between contexts that are similar, such as when they share values and youth experience the same types of challenge, motivation, and reward for their actions ([Barnett & Ceci, 2002](#); [Goldstone & Day, 2012](#); [Smith, Akiva, McGovern, & Peck, 2014](#)). Families and programs both represent adult-supervised intergenerational settings in which youth experience interdependence among members who count on each other to accomplish mutual goals and fulfill shared obligations. Therefore, we predicted transfer of responsibility both from home to program and program to home. The relative influence of these two contexts might differ over time, however, because each context provides different affordances for continued development. For example, effective programs provide youth with novel demands that may foster new levels of responsibility ([Larson et al., 2017](#); [Smith, McGovern, Larson, et al., 2016](#)). Therefore, we might expect home-to-program influences to be stronger when youth first enter a program (reflecting accumulated experiences in the family), but expect program-to-home influences to increase over time.

Studies conducted with samples in the United States have provided preliminary evidence of responsibility transfer from home to other contexts. In families in which responsibility is cultivated, parents expect that children will also behave responsibly outside the home ([Dunn et al., 2003](#); [Gutiérrez, Izquierdo, & Kremer-Sadlik, 2010](#)). Quantitative studies report cross-sectional associations between family responsibilities and related behaviors and dispositions in other contexts, including prosocial behaviors ([Grusec et al., 1996](#)) and competence, task-orientation, and self-direction ([Riggio, Valenzuela, & Weiser, 2010](#)). In two qualitative studies, youth identified attitudes and behavioral patterns learned from parents as an explanation for acting responsibly in completing difficult program obligations ([Salusky et al., 2014](#); [Wood et al., 2009](#)). Collectively, these studies suggest that responsibility may transfer from the family to other contexts, including afterschool programs. We extended this work by using a quantitative longitudinal design and a measure designed to assess responsibility across contexts.

Few United States studies have examined transfer of responsibility from afterschool programs to adolescents’ home lives. Researchers have focused primarily on program effects in the domains of friendships, school, and educational attainment ([Mahoney, Vandell, Simpkins, & Zarrett, 2009](#); [Smith et al., 2014](#); [Vandell, Larson, Mahoney, & Watts, 2015](#)). In qualitative studies, youth and parents reported that responsibility gained in the program transferred to home ([Larson, Pearce, Sullivan, & Jarrett, 2007](#); [Wood et al., 2009](#)). For example, parents described their children as showing gains in diligence, organization, maturity, and helpfulness ([Salusky et al., 2014](#)). This program-to-home path has yet to be evaluated with quantitative methods.

## Individual Characteristics Linked to Variations in Responsibility Transfer

Our third research goal was to explore variations in patterns of responsibility transfer as a function of ethnicity, gender, age, and years of program experience. These factors have been shown or hypothesized to be linked to responsibility development. Because prior research has focused on mean-level differences in responsibility across subgroups, rather than examining how individual characteristics moderate responsibility transfer across contexts, this goal was exploratory.

Our major interest was in potential cultural variations in transfer. It has been proposed that responsibility is “quintessentially sociocultural” ([Ochs & Izquierdo, 2009](#), p. 393), with cultural groups differing in the socialization of responsibility. Indeed, although family responsibilities have declined in the general United States population ([Hofferth, 2009](#); [Hofferth & Sandberg, 2001](#)), they remain common in families from less-advantaged socioeconomic backgrounds, which in the United States includes non-White families. For example, [Telzer and Fuligni \(2009\)](#) reported that European American adolescents spent an average of 0.64 hr per day helping their families, whereas adolescents of Mexican origin or descent averaged 1.3 hr of daily assistance. United States studies have also revealed gender and age differences in mean levels of family responsibilities. Typically, girls perform more household work than boys ([Hofferth, 2009](#); [Riggio et al., 2010](#)) and for both genders, responsibility expectations increase with age (e.g., [Dunn et al., 2003](#); [Orellana, 2001](#)). Because transfer should be greater when demands and expectations across contexts are similar, we examined whether home-to-program transfer was stronger among Latinos, girls, and older adolescents than their respective counterparts.

Few studies have examined whether responsibility development in the program context differs based on youth characteristics, much less examined variations in transfer (for review, see [Fredricks & Simpkins, 2012](#); [Vandell et al., 2015](#)). Studies of social and emotional skills (e.g., peer relations) indicate that youth who participate in programs for years tend to experience greater gains ([Vandell et al., 2015](#)), but it is unclear whether this mean-level difference is reflected in transfer patterns, particularly over shorter time scales. Therefore, we explored possible differences in program-to-home responsibility transfer linked to youth characteristics and length of program involvement.

## Current Study

Relations between responsibility in the two contexts of home and program were examined using a quantitative longitudinal framework. The research objectives were as follows.

1. To introduce a new measure of youth responsibility designed for use across contexts and examine evidence of multiple aspects of validity for scores of responsibility, including evidence of structural, generalizable, and external convergent aspects ([Messick, 1995](#)). We examined the psychometric properties of responsibility at home and in the program, assessing whether youth’s scores differentiated between these contexts and comparing self-reported scores with information from collateral reporters. We also assessed whether the responsibility scores

functioned similarly across groups defined by age, gender, and ethnicity.

2. To examine whether responsibility in one context predicts responsibility in the other context. For example, we evaluated whether higher responsibility in the family predicted subsequent higher responsibility in the youth program while controlling for prior program responsibility. We expected significant, positive cross-lagged paths (i.e., reciprocal transfer); however, we hypothesized that home-to-program paths would be stronger than the reverse direction across earlier time points (reflecting prior assets and skills acquired at home), whereas program-to-home paths would be stronger later (reflecting competencies emerging in the context of the program).
3. To explore variations in responsibility transfer based on youth characteristics. This objective was exploratory and no formal hypotheses were proposed. We tested for differences in the predictive paths between (a) Latinos and other racial/ethnic groups, (b) females and males, (c) older and younger adolescents, and (d) adolescents new to the program and those who had participated for at least 1 year.

## Method

### Overview of Study Procedures

Data were from the Pathways Project, a multimethod, multireporter longitudinal study conducted in 14 youth programs in the United States. In all programs, youth were involved in projects focused on arts, leadership, or science/technology. Programs were selected based on criteria associated with program quality (e.g., at least 100 contact hours, low participant turnover, experienced staff) and other characteristics (e.g., mixed gender). To obtain geographic diversity, we included programs from three study sites (Chicago, central Illinois, and Minneapolis/Saint Paul). Reflecting the larger study's goals, seven programs served primarily Latino adolescents; the others served primarily European American and African American youth. The study followed youth, parents, and program leaders at four time points across a program cycle, typically a school year. All programs completed Time 1 (T1) measures early in the program cycle, and Time 4 (T4) at the end of the cycle; Time 2 (T2) and Time 3 (T3) were spaced approximately evenly in between, taking into account program-specific events related to youth's projects. Study procedures were approved by institutional review boards at the investigators' home institutions. At each program, a member of the research team presented information about the study and gave interested youth a parent information letter (in English and Spanish) that provided instructions for opting youth out of the study. At the first data collection session, youth provided written assent. Youth were asked to provide parental contact information and, with permission, one parent was invited to participate.

The current analysis used longitudinal quantitative data collected from youth participants at each time point, with data collected from parents and program leaders at T1 used for the first research objective. Youth completed structured questionnaires ad-

ministered on small laptop computers (see Raffaelli et al., 2016 for details of youth data collection). Leaders and parents completed paper-and-pencil questionnaires. Adolescents received \$10 at each time point for completing questionnaires; parents received \$10 and leaders \$30 for completing T1 measures.

### Sample

Across programs, most eligible youth (355 of 376; 94.4%) participated in the study.<sup>2</sup> The analytic sample consisted of 355 youth between the ages of 11 and 20 years at T1 ( $M = 15.49$  years,  $SD = 1.42$ ). About half identified as female (55.9%). Youth were ethnically diverse (37.1% Latino; 30.2% African American or Black; 27.0% European American or White; 5.7% other). Most had been born in the United States (88.5%), but 39.0% spoke a language in addition to or other than English at home. The majority of youth (60.7%) lived with two parents (mostly biological or adoptive), 30.5% lived with one parent (mostly mothers), and 8.7% with a guardian or other parent figure. Youth had been in the program for an average of 1.53 years ( $SD = 1.63$ , range = 0–6).

Of the 317 parents who received invitations to participate<sup>3</sup>, 258 (81.4%) completed the T1 questionnaire. At each site, one principal adult program leader provided youth ratings. These leaders ( $N = 14$ ) averaged 14 years of work experience with youth (range = 3–42 years).

### Measures

**Adolescent responsibility at home and in program.** The youth self-report measure was developed based on theoretical and empirical work (e.g., Roberts, Bogg, Walton, Chernyshenko, & Stark, 2004; Roberts et al., 2003) and earlier qualitative research by the investigators (e.g., Salusky et al., 2014; Wood et al., 2009). Several pilot studies were conducted to develop items that (a) tapped into different aspects of responsibility (e.g., behaviors, thoughts), (b) were relevant to both contexts, and (c) were understandable to youth and parents. The final measure consisted of six items (listed in Table 1). Youth rated each statement twice, describing themselves during the last 2 months "in the program" and "at home and with family" using a scale from 1 (*Not at all like me*) to 5 (*Very much like me*). The program and home items were presented in separate sections of the questionnaire. Psychometric analyses are presented in the results section.

At T1, parents completed a parallel version of the youth-responsibility measure (e.g., "My child takes full responsibility for him/herself and others"), rating items from 1 (*Not at all like my child*) to 5 (*Very much like my child*) during the past 2 months. An overall score was computed by averaging ( $\alpha = .75$ ). Parents also completed three items adapted from Fuligni, Tseng, and Lam's (1999) family-obligations measure. Items assessed how often

<sup>2</sup> Of the 21 nonparticipants, three were "opted out" by parents, seven declined to participate, and 11 did not participate for unknown reasons (10 were from a single program that had fluid membership).

<sup>3</sup> Thirty-eight parents did not receive invitations to participate. A subset of youth in the analytic sample ( $n = 18$ ) participated in a program in which parents were not recruited because of funding constraints, three youth asked that their parents not be contacted, and 17 parents were not contacted for other reasons (e.g., youth dropped out of program before parent data collection occurred).

Table 1

Items of the Youth Report of Responsibility in Program and at Home and Standardized Factor Loadings From the Measurement Models

Item	Factor loading on program responsibility	Factor loading on home responsibility
	$\beta$ (SE)	$\beta$ (SE)
1. I take full responsibility for myself and others.	.51 (.05)	.54 (.05)
2. When I make mistakes I blame others. (reversed)	.36 (.06)	.39 (.05)
3. When working with others, I try to keep in mind what is important to them.	.50 (.05)	.53 (.05)
4. Sometimes I don't do exactly what I promised. (reversed)	.39 (.06)	.47 (.05)
5. When working with others, I help make sure all the work gets done.	.68 (.04)	.72 (.04)
6. People can depend on me to do my part.	.63 (.04)	.68 (.04)

Note. All coefficients shown are significant at  $p < .001$ . The loading for Item 1 was set to 1. Overall model fit,  $\chi^2(47)72.36$ ,  $p < .05$ ; CFI = .976; RMSEA = .039; SRMR = .043.

youth typically did household chores (e.g., helping around the house, running errands) on a scale from 1 (*Never or rarely*) to 5 (*Every day*). Program leaders rated youth on their overall level of responsibility using percentage anchors (1 = 0–10% to 10 = 90–100%).

**Individual characteristics.** At T1, youth reported their age, gender, ethnicity, and years participating in the program. For the main analyses, these variables were coded as follows: age group (0 = 11–15 years old, 1 = 16–20 years old); gender (0 = male, 1 = female); two dummy codes for ethnicity (*Latino vs. White/Other* and *Latino vs. Black*); and years of program participation (0 = less than one year, 1 = one year or more). Youth also reported on their living situations, coded as *one-parent household* (0) versus *two-parent household* (1). Other demographic data were collected for descriptive purposes (e.g., language spoken at home, birthplace).

## Plan of Analysis

In preliminary analyses, adolescents who had complete data at all four time points (52% of participants) were compared to adolescents with missing data at one (27%), two (15%) or three (7%) of the data collection points. The four groups did not differ in home or program responsibility at T1, years in the program, or ethnicity,  $F_s = 0.04 - 0.78$ ,  $ns$ ;  $\chi^2(9)13.18$ ,  $ns$ . Two differences were statistically significant: adolescents with complete data were more likely to be in the younger age group than adolescents missing data at one time point, and more likely to be girls than adolescents with any missing data, than expected by chance,  $ps < .05$ . Because these two variables were also of substantive interest (e.g., covariates in some models and moderators in other models), they were included in every analysis as either a focal or auxiliary variable to help better account for missing data (Enders, 2010).

Main analyses were estimated with structural equation models (SEMs) in MPlus v7.11. Indicators of model fit included the CFI (comparative fit index), RMSEA (root-mean-square error of approximation), SRMR (standardized root-mean-square residual), and  $\chi^2$ . Models that fit the data well are indicated by a CFI  $\geq .95$ , RMSEA  $\leq .05$ , and SRMR  $\leq .05$  (Little, 2013). Models were estimated with full-information maximum likelihood to incorporate cases with missing data (Enders, 2010).

**Objective 1: To evaluate scores on a new youth responsibility measure.** The first objective was to examine evidence of multiple aspects of construct validity for scores of responsibility at

home and in the program as reported by adolescents. According to the unified concept of validity, construct validity includes multiple aspects that address whether the meaning of the scores, the use of the scores, and the inferences that can be derived from the scores are likely to be valid (Messick, 1995). We examined three aspects of evidence: score structure, generalizability, and convergent evidence of validity (AERA et al., 2014; Hubley & Zumbo, 2013).

Evidence of the structural aspect of validity was examined through confirmatory factor analysis in SEM. Specifically, we evaluated whether a two-latent-variable model discriminating between home and program responsibility better represented the data than a one-latent-variable model at T1. Model differences were evaluated through the overall model fit and change in CFI ( $\Delta CFI < .01$ ; Little, 2013) between two nested models: (a) a model in which all 12 adolescent-reported responsibility items at T1 loaded on a single latent variable, and (b) a model in which the six home-responsibility items loaded onto a home latent variable and the six program-responsibility items loaded on a program latent variable. We also examined evidence of the generalizability aspect of validity by testing measurement invariance (i.e., configural, weak, and strong; Little, 2013; Millsap, 2011) across demographic groups using SEM. These analyses assessed whether the final measurement model of responsibility had robust psychometric properties and functioned similarly for all youth. In all of these measurement models, the loading of one item was set to 1 to identify each factor. The same items were used to assess responsibility in each context; therefore, we allowed the unique factors of the same item at home and at the program to covary or be related. The covariance between latent variables was included in the model with two latent variables. Measurement models did not include control variables.

Evidence of the external convergent aspect of validity was examined based on bivariate correlations with parent and leader ratings (i.e., parent ratings of youth responsibility and enactment of obligations at home, and leader ratings of youth responsibility). Correlations between years of program experience and responsibility in the program were also examined.

**Objective 2: To examine responsibility transfer across contexts.** We estimated a cross-lagged model (Model 1) that included indicators of program and home responsibility at T1 through T4. The model included three central relational paths: (a) stability paths across time, (b) cross-lagged relations over time, and (c) relations within each time point. Because we control for

stability of responsibility over time, the cross-lagged relations address whether responsibility in one context predicts subsequent changes in responsibility in the other context. The indicators of responsibility were measured indicators—specifically, the averages of the six items comprising responsibility in each context. A model with eight 6-item latent variables did not converge nor did a model that included eight latent variables with three parcels in each. These models were likely too complex given our sample size.

Part of Objective 2 was to evaluate whether home-to-program paths would be stronger than the reverse direction across earlier time points, and whether program-to-home paths would be stronger than the reverse direction across later time points. We estimated a second cross-lagged model including equality constraints on each pair of cross-lagged paths. Three equality constraints were added: (a) The path from Program T1 to Home T2 was set to be equal to the path from Home T1 to Program T2, (b) the path from Program T2 to Home T3 was set to be equal to the path from Home T2 to Program T3, and (c) the path from Program T3 to Home T4 was set to be equal to the path from Home T3 to Program T4. The paths were deemed to be unequal if  $\Delta\chi^2$  across the two models was statistically significant. If  $\Delta\chi^2$  was not significant, the paths were constrained to be equal.

Individual characteristics and background variables were included in this model as statistical controls. Preliminary analyses revealed that ethnicity was significantly associated with birthplace, home language, and family income (detailed results available upon request), therefore, only ethnicity was included in the main analyses. Several control variables predicted each of the eight indicators of responsibility, including youth gender, age, ethnicity, years in the program, and whether they lived with one or two parents. In addition, 13 program dummy codes predicted each of the four indicators of responsibility at the program. Each of these paths was included in the model, but including nonsignificant controls can lead to overcontrolling (Little, 2013). We dropped a predictive path when a control variable did not significantly predict an indicator of responsibility at the  $p < .10$  level. There were two exceptions to this rule. First, in regard to the two sets of dummy codes (i.e., ethnicity, program), all dummy codes were retained if

one was significant. Second, gender and age were always used as predictors of the variables with missing data (Enders, 2010).

**Objective 3: To explore variations in responsibility transfer based on youth characteristics.** We examined whether the predictive paths between home and program responsibility varied across ethnicity, gender, age, and years in program. For each characteristic, we estimated two nested multigroup SEMs. In the first model, all cross-lagged paths described under Objective 2 were estimated separately for each group. In the second model, the stability and cross-lagged paths were constrained to be equal. Overall model fit and  $\Delta\chi^2$  between the two models were used to determine if moderation was present or absent (a statistically significant  $\Delta\chi^2$  across models indicates the presence of moderation).

### Results

Descriptive statistics and bivariate correlations for study variables are presented in Table 2. Adolescents, on average, felt they were responsible *quite a lot* of the time at home and in the program. The strong, positive correlations suggest that adolescents who felt they were responsible were likely to feel that way about their behavior across time and context. Girls and older adolescents reported feeling more responsible than their counterparts. The remainder of the Results section is organized by the three research objectives.

#### Objective 1: To Evaluate Scores of a New Youth-Responsibility Measure

We first evaluated whether youth differentiated between responsibility at home and at the program. The findings from the nested SEMs suggest that they differentiated between the two contexts. The overall model fit was better for the two-latent-variable model,  $\chi^2(47)72.36, p < .05, CFI = .976, RMSEA = .039, SRMR = .043$ , than the one-latent-variable model,  $\chi^2(48)98.53, p < .001, CFI = .953, RMSEA = .055, SRMR = .045$ . Furthermore, the difference between the models was statistically significant, indicating that the two-latent-variable model was a better fit to the data

Table 2  
Descriptive Statistics and Bivariate Correlations for Study Variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. T1 Youth responsibility (program)	—											
2. T2 Youth responsibility (program)	.60***	—										
3. T3 Youth responsibility (program)	.56***	.70***	—									
4. T4 Youth responsibility (program)	.56***	.71***	.69***	—								
5. T1 Youth responsibility (home)	.71***	.55***	.51***	.57***	—							
6. T2 Youth responsibility (home)	.55***	.70***	.58***	.62***	.61***	—						
7. T3 Youth responsibility (home)	.52***	.64***	.66***	.61***	.59***	.73***	—					
8. T4 Youth responsibility (home)	.55***	.62***	.65***	.71***	.61***	.70***	.70***	—				
9. Years in program	.07	.03	.14*	.03	.04	.01	-.01	.09	—			
10. T1 Youth age	.17***	.11*	.11	.16**	.13*	.04	.03	.09	.24***	—		
11. Girls	.11*	.16**	.19***	.19***	.12*	.17**	.15**	.13*	-.01	-.05	—	
12. Two-parent household	.02	-.02	.02	.05	.01	-.03	.01	.04	.04	-.02	-.09	—
<i>M</i>	4.19	4.16	4.13	4.15	4.07	4.00	4.02	4.01	1.51	15.49	.56	.61
<i>SD</i>	.53	.52	.54	.55	.58	.62	.63	.61	1.63	1.42	.50	.49

Note. Household coded as 0 = one-parent household, 1 = two-parent household.  
\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

than the one-latent-variable model,  $\Delta\text{CFI} = .023$ . Standardized factor loadings are presented in Table 1. These findings provide evidence (concerning the structural aspect of validity) that adolescents' scores in this sample discriminated between responsibility at home and at the program.

Next, we tested measurement invariance of the two-factor model across gender, age (ages 11–15 years versus 16–20 years), and ethnicity (Latino versus Black and White/other). Here, we present an overview of the findings; the full results are available upon request. In brief, all of the two-factor models showed partial or full configural, weak, and strong invariance across gender, age, and ethnicity. Specifically, the same items loaded on the latent responsibility factors across groups,  $\chi^2(86-137)93.99-164.11$ , *ns*,  $\text{CFI} = .976-.993$ ,  $\text{RMSEA} = .023-.041$ ,  $\text{SRMR} = .046-.060$  (i.e., configural invariance); the loadings were similar in size across groups,  $\Delta\text{CFI} = .001$  to  $.005$  (i.e., weak invariance); and the item intercepts were similar across groups,  $\Delta\text{CFI} = .002$  to  $.006$  (i.e., strong invariance). Collectively, these findings indicate that the responsibility scores functioned similarly for different groups of youth, providing evidence for the generalizability aspect of validity.

Evidence of convergent validity was examined by computing correlations between adolescents' self-reported responsibility and ratings by leaders and parents. Youth's self-reported responsibility in the program at T1 was not correlated with leader ratings of responsibility ( $r = .08$ , *ns*) or years in the program ( $r = .04$ , *ns*). The former finding may reflect leaders' lack of familiarity with youth; indeed, leader ratings of responsibility were correlated with how long youth had been in the program,  $r = .25$ ,  $p < .001$ . Youth's self-reported responsibility at home at T1 was significantly correlated with parents' ratings of their children's responsibility at home,  $r = .24$ ,  $p < .001$  and one chore item (i.e., extent to which child helps around the house;  $r = .14$ ,  $p < .05$ ).

### Objective 2: To Examine Responsibility Transfer Across Contexts

The longitudinal relations between adolescents' self-reported responsibility at home and at the program were examined using a series of nested cross-lagged SEMs. The model-fit indicators presented in Table 3 suggest that the unconstrained model (Model 1) and the final model (Model 4), which had constraints on the cross-lagged paths except between T3 and T4, fit the data well. Figure 1 presents the standardized path estimates from the final model.

All within-time and across-time relations were statistically significant (see Figure 1), providing evidence of reciprocal transfer of self-reported responsibility. Adolescents' higher responsibility at home predicted higher responsibility in the program, and higher responsibility in the program predicted higher responsibility at home. These cross-time relations emerged even after controlling for the stability and within-time associations of these indicators. Individual differences in responsibility at home and at the program were moderately stable over time. Finally, responsibility in the two contexts was positively related within each time point.<sup>4</sup>

Transfer of responsibility across contexts varied only from T3 to T4. The  $\Delta\chi^2$  between Models 1 and 2 indicated that some of the cross-lagged paths significantly differed in strength (see Table 3). We estimated three follow-up models, each of which tested one pair of cross-lagged paths (i.e., T1 to T2, T2 to T3, T3 to T4).

These follow-up models showed that the cross-lagged paths from T3 to T4 significantly differed in strength (see Models 3 and 4 in Table 3). Specifically, responsibility at the program was a stronger predictor of responsibility at home from T3 to T4 than the opposite direction (bolded paths in Figure 1).

The cross-lagged models addressed the second research objective, establishing the extent to which responsibility in one context predicted responsibility in the other context, above and beyond other common explanatory variables, including the autoregressive effects of responsibility. Detailed results concerning the control variables are available from the authors; here, we summarize significant findings. At T1, responsibility at home and in program were higher with age and if the adolescent was a girl (see Table 2 for bivariate correlations). Ethnic differences were only present at T1, such that Black adolescents had higher program responsibility than Latino adolescents. Years in the program was related to higher program responsibility from T2 to T3, but lower program responsibility from T3 to T4. Finally, there were site differences in program responsibility at T1, T2, and T4.

### Objective 3: To Explore Variations Based on Youth Characteristics

Four separate multigroup models were estimated to test whether ethnicity, gender, age, and years in the program moderated the predictive pathways between home and program displayed in Figure 1. In these models, moderation of the six stability paths and the six cross-lagged paths were tested simultaneously. The findings indicate that these relations were similar across (a) Latino and non-Latino youth,  $\Delta\chi^2(12) = 11.16$ , *ns*; (b) girls and boys,  $\Delta\chi^2(12) = 10.23$ , *ns*; (c) older and younger adolescents,  $\Delta\chi^2(12) = 4.71$ , *ns*; and (d) newer adolescents and more-experienced adolescents in the program,  $\Delta\chi^2(12) = 15.91$ , *ns*. Taken together, these analyses indicate that pathways of transfer did not differ by youth characteristics.

## Discussion

The main goal of the current study was to examine responsibility transfer between two contexts during adolescence. We focused on responsibility at home versus in project-based afterschool programs because they provide similar affordances for responsibility development (e.g., intergenerational relationships, mutual obligations and accountability, potentially demanding tasks), which should increase the likelihood of transfer. Families provide these affordances starting in childhood, whereas in the United States, project-based programs are a novel context that may provide new affordances for responsibility development during adolescence.

Findings elucidate several aspects of responsibility development. Most significantly, with a new measure designed for use

<sup>4</sup> Although these within-time correlations appear to decline over time, the bivariate within-time correlations in Table 2 do not show a similar pattern ( $r_s = .66$  to  $.71$ ). The within-time correlations in the cross-lagged model are residual correlations and represent the association between responsibility at home and at the program after control variables or other predictors were estimated (Little, 2013). One important difference between the T1 within-time correlation versus all other time points is that Times 2 to 4 represent the residual covariance after the stability of each construct is controlled.

Table 3  
Fit Indicators for Cross-Lagged Models Examining Responsibility Between Contexts

Model	$\chi^2$ (df)	CFI	RMSEA	SRMR	$\Delta\chi^2$ ( $\Delta df$ )
Model 1: Model without constraints	148.46*** (97)	.967	.039	.040	
Model 2: Model with the three pairs of cross-lagged paths constrained	162.56*** (100)	.959	.043	.041	14.10***a (3)
Model 3: Model with Times 3 to 4 cross-lagged paths constrained	159.96*** (98)	.961	.043	.041	11.50***a (1)
Model 4: Model without Times 3 to 4 cross-lagged paths constrained	150.70*** (99)	.966	.039	.040	2.24 <sup>a</sup> (2)

<sup>a</sup> All models were compared with Model 1 (top row).  
\*\*  $p < .01$ . \*\*\*  $p < .001$ .

across contexts, we documented two-way transfer of responsibility between home and program. As predicted, longitudinal pathways were significant in both directions for all three time intervals, suggesting a robust bidirectional conduit of cross-context developmental effects. These findings are consistent with ecological theory, which proposes that development in one context will transfer to others as young people internalize and extend newly acquired competencies (Bronfenbrenner & Morris, 1998). Prior quantitative studies have typically examined transfer of program effects in only one direction (e.g., from program to school or peer group; Mahoney et al., 2009; Smith et al., 2014; Vandell et al., 2015) and studies of program-home responsibility transfer have been qualitative (Larson et al., 2007; Salusky et al., 2014; Wood et al., 2009). Current findings indicate that experiences in the two contexts can be mutually reinforcing, perhaps because families and programs place similar demands on young people (Bronfenbrenner, 1979).

The prediction that transfer between contexts would not be equal at all time points was partially supported. Contrary to expectation, home-to-program paths were not significantly stronger than program-to-home paths at earlier time points (although they were larger in magnitude). As expected, after controlling for prior home responsibility, higher responsibility in the program was a stronger predictor of higher responsibility at home across the final

time interval (T3 to T4) compared with the home-to-program path for that same interval. Moreover, stability correlations within the program (but not at home) nearly doubled over time, indicating that interindividual differences in adolescents' views of how responsible they were in the program became more consistent. These findings offer insight into the affordances for responsibility development provided by different contexts.

Programs identified as effective in promoting responsibility development give youth opportunities to take on increasingly difficult roles as they master easier ones (Smith, McGovern, Larson, et al., 2016). There is evidence that experiencing and overcoming challenges associated with program roles and obligations can lead to changes in self and behavior (Salusky et al., 2014; Wood et al., 2009). Consistent with this literature, it appears that internalization of responsibility in the program grew stronger over the course of a program cycle. Ongoing analysis of qualitative data from the larger study suggests this may reflect how the demands youth experience in programs "stretch" them to develop new levels of responsibility (Larson et al., 2017). In turn, youth may bring home responsiveness to others and new ways of thinking. For example, one girl described how having responsibilities in the program helped her recognize the contribution she could—and should—make to her family.

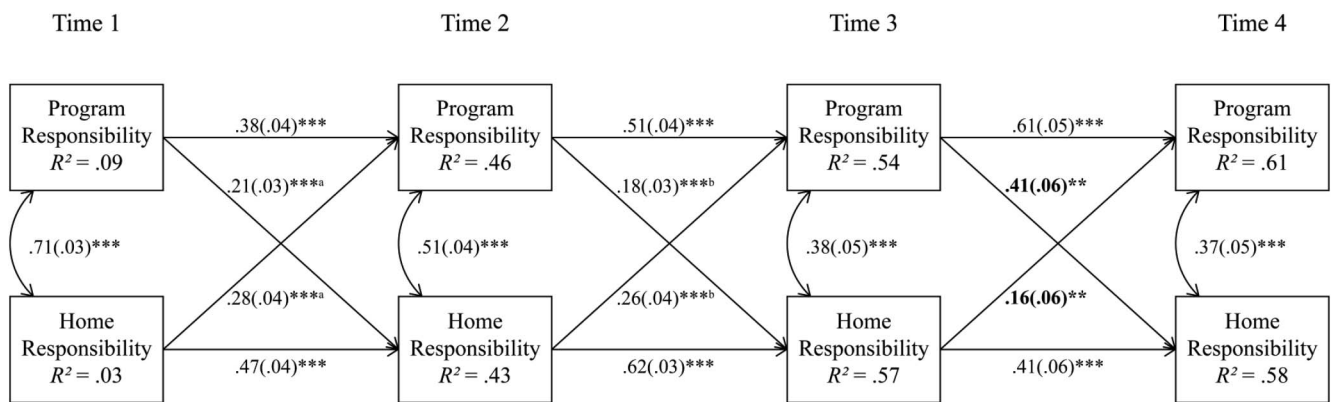


Figure 1. Longitudinal relations of responsibility between contexts: Standardized path estimates and covariances from the cross-lagged model with constraints (i.e., Model 4 from Table 3). Indicators of responsibility are averages of the six items assessing responsibility in each context at each time point. Model included the following control variables: adolescent gender, age, ethnicity dummy codes, years in the program, whether the adolescent lives with two parents, and a set of dummy codes for program. \*\*  $p < .01$ , \*\*\*  $p < .001$ . Paths with the same superscript letter were constrained to be equal. Overall model fit,  $\chi^2(99) 150.70$ ,  $p < .001$ ; CFI = .966, RMSEA = .039, SRMR = .040. Bolded coefficients (between T3 and T4) are significantly different from each other.



[Before the program] I didn't want to do anything at my house. . . . But now it's like, "if I can do stuff outside of my house, why can't I do it in my house?" Now I just help out whenever I can. . . . I started helping out with the laundry. I just help my mom. Sometimes now I go to the grocery store with her. Before I didn't do that because I didn't see why!

Findings related to home responsibility may reflect affordances for responsibility development within contemporary families in the United States. As a result of societal changes, many youth no longer have structured and demanding household obligations. For example, urbanization limits families' reliance on children's household labor, and mandatory education constrains children's discretionary time (Ochs & Izquierdo, 2009). Changes in family structure and organization may also limit opportunities to learn complex household tasks due to increased "outsourcing" of food production and preparation, childcare, and home maintenance (Bianchi, Raley, & Casper, 2012; Foster & Kreisler, 2012). These and other shifts have been linked to declines in children's engagement in household work (Hofferth, 2009; Hofferth & Sandberg, 2001), with young people's household work often involving routine and brief maintenance activities (Bowes et al., 2001; Such & Walker, 2004). Consequently, adolescents may not be stretched at home to learn new forms of responsibility that are then expressed outside the home. There are indications, however, that the home context can provide youth with significant roles analogous to those in afterschool programs. For example, immigrant youth who serve as language brokers perform a range of significant and increasingly complex tasks for their families (Orellana, 2009). And some parents in our study described their children taking on novel responsibilities at home (e.g., helping organize a family move). Research is needed that examines when and how adolescents take on significant family obligations, and how fulfilling obligations affects responsibility development.

A secondary goal of the study was to explore whether dynamics of responsibility transfer differed by ethnicity, age, gender, or years in the program. We found mean-level differences comparable to those reported in previous research on responsibility development, although reciprocal pathways of transfer were not moderated by youth characteristics. At the first time point, home and program responsibility were both higher with age and among girls. These findings align with earlier research showing that responsibility expectations increase with age (e.g., Dunn et al., 2003; Orellana, 2001) and are greater for girls than boys (e.g., Hofferth, 2009; Riggio et al., 2010). Findings for ethnicity and time in the program were less pronounced. There were no initial differences in responsibility at home by ethnicity, but African American youth reported higher levels of responsibility in the program than Latino youth. Moreover, we did not find a consistent pattern of results for years in the program. Most central to our research goal, group-level differences did not translate into differences in process. In analyses controlling for initial levels of responsibility, patterns of responsibility transfer did not vary across subgroups of youth. The lack of moderation suggests that the underlying developmental processes were similar for all youth in the sample.

Finally, the current study contributes to the methodological literature. Following expert recommendations (e.g., Roberts et al., 2014; Roberts & Pomerantz, 2004), we designed a measure to assess responsibility in the two contexts of home and program

using parallel items. We then assessed evidence for multiple aspects of construct validity of the responsibility scores (AERA et al., 2014; Hubley & Zumbo, 2013; Messick, 1995). Analyses indicated that youth's scores differentiated between responsibility at home and in the program and showed similar psychometric properties, regardless of ethnicity, gender, and age. We also found convergent evidence of validity, with scores of youth self-reported responsibility at home being significantly correlated with parental ratings of responsibility and how often the child helps around the house. The correlation between parent and youth ratings of responsibility at home ( $r = .24$ ) was similar to average correlations previously reported in meta-analyses of parent-child concordance on measures of emotional and behavioral outcomes (average  $r = .25$ ; Achenbach, McConaughy, & Howell, 1987) and health symptoms ( $r = .28$ ; De Los Reyes et al., 2015). Leader ratings of youth responsibility in the program did not correlate with youth self-reported responsibility in that context, likely reflecting leaders' unfamiliarity with youth (especially those who were new) or differences in how responsibility was assessed—both of which can lower convergence between self-reports and collateral reports (Roberts et al., 2014; see also Vazire, 2010).

Taken together, these analyses provide initial evidence on three aspects of construct validity for the responsibility scores assessed with our new measure. It should be noted that we relied more heavily on aspects of internal validity (i.e., structural and generalizable aspects of construct validity) because our focus was on examining whether the scores measured the constructs we had intended. It would be helpful to further evaluate additional aspects of external convergent and discriminant validity by comparing scores on the new measure with constructs it theoretically should and should not predict, such as scores on existing measures of responsibility (e.g., familial responsibility; Everri et al., 2015) or conscientiousness (e.g., Jackson et al., 2010). Finally, means on the responsibility measure were fairly high (especially in the program). Possible ceiling effects could be addressed by modifying the response scale (e.g., Moret et al., 2007) or adding items that reflect "higher end" dimensions of responsibility identified by program leaders, such as volunteering for additional work (Smith, McGovern, Peck, et al., 2016).

### Limitations and Contributions

The current study had several limitations. First, the main analyses relied on youth self-reports of responsibility, which raises concerns about shared method variance. Self-reports are a common approach to measuring individual traits and dispositions and are accurate predictors of multiple short-term and long-term outcomes (Roberts et al., 2014). Future research can incorporate alternative self-assessments (e.g., daily diary studies; Jackson et al., 2010) or behavioral or experimental approaches (Roberts et al., 2014). Second, by design we focused on high-quality project-based programs in the United States, and findings await replication in a wider array of programs and in other countries. Third, specific mechanisms underlying transfer were not examined; future research is needed to elucidate these developmental processes. Fourth, we estimated cross-lagged models with manifest variables because models with latent variables did not converge. The models were appropriate, given our questions; however, it will be important to replicate these analyses using latent cross-lagged models.

Such models are advantageous, as the latent indicator of responsibility theoretically should come closer to youth (unobserved) responsibility than a manifest scale (Little, 2013). Latent variables would allow researchers to remove measurement error and account for covariances among the same items on the home and program scales, as these could alter the relations among the constructs over time.

Despite these limitations, the current study contributes to developmental science in several key ways. First, it answers calls for longitudinal research that examines transactions between individuals and situations (Hill & Jackson, 2016; Roberts & Pomerantz, 2004) using repeated measures at relatively short time intervals (Neyer & Asendorpf, 2001). Findings are consistent with the notion that novel environments and experiences can be powerful drivers of development (e.g., Bronfenbrenner, 1979; Roberts & DelVecchio, 2000). The study also contributes to the literature by considering how developmental experiences are connected across contexts (Vandell et al., 2015). Finally, the focus on responsibility represents a novel contribution. Scholars have proposed that responsibility develops from taking on and fulfilling obligations within a specific context (e.g., Weisner, 2001; Wood et al., 2009). To our knowledge, this study is the first to demonstrate responsibility transfer in an adolescent sample using longitudinal quantitative methods.

Study results also have implications for practice. First, findings can be useful for practitioners seeking to understand how assets and skills developed at home contribute to adolescents' work in programs (Morland, 2007). Furthermore, an important test of the efficacy of youth programs is the extent to which youth gain competencies that generalize to other contexts (Smith et al., 2014). Finally, site differences in adolescents' program responsibility at three of the four time points suggest that programs differ in affordances for responsibility development. Examination of program philosophy and structure represents an important avenue for future research.

## Conclusion

Concern about the decline of individual and collective responsibility is widespread in the United States. In his first inaugural address, President Barack Obama called for a "new era of responsibility" (Phillips, 2009) and many emerging adults report that they are not ready to accept the responsibilities of adulthood (Arnett, 2000). Given changes in affordances for responsibility development within the family, other contexts are likely to become increasingly important. The current study indicates that project-based afterschool programs reinforce lessons of responsibility learned at home and provide important opportunities for adolescents to learn and practice responsibility.

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