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Gratitude Moments as Predictors of Self- and Other-Orientation Indicators in a Racially/Ethnically Diverse Sample of US Young Adolescents during the COVID-19 Pandemic

Andrea M. Hussong [1,*], Rachel Petrie [1], Adrianna Richards [1], Ria Shelton [1] and Allegra Midgette [2]

[1] Department of Psychology and Neuroscience, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599, USA
[2] Psychological and Brain Sciences, Texas A&M University, College Station, TX 77843, USA
* Correspondence: hussong@unc.edu

Abstract: Scholars posit that gratitude may enhance other-oriented beliefs and behaviors and dampen self-oriented ones through a cycle of upward generativity. We examined associations between gratitude as an indicator of self-orientation (i.e., materialism and entitlement) and other orientation (i.e., connection to nature; attitudes, beliefs, and conversations about social justice; prosocial behavior) in the US youth across six months as moderated by race/ethnicity and gender. Specifically, Study 1 evaluated the psychometric performance of the gratitude moments scale in a more racially and ethnically diverse sample than that included in the original scale development. In study 2, we evaluated pre-registered hypotheses among the youth who completed surveys in October 2020 and again in January 2021 (n = 812). These hypotheses tested (1) whether there were ethnic/racial differences in the measure of children's gratitude; (2) whether there were reciprocal associations over time between children's gratitude and indices of self and other orientation; and (3) whether these reciprocal associations varied as a function of youth race/ethnicity and gender. The results of study 1 found that the gratitude moments scale demonstrated high reliability and validity in racially/ethnically diverse young adolescents (n = 89). Using moderated nonlinear factor analysis in study 2, we found only one difference in how the gratitude moments scale performed as a function of race/ethnicity or gender. In cross-lagged panel models, gratitude moments did not predict subsequent self- and other-orientation indices, though youth with lower social justice attitudes and greater prosocial behavior showed increases in later gratitude moments. Prosocial behavior was more strongly and consistently related to self- and other-orientation indices than gratitude. These findings are consistent with models of prosocial behavior as a catalyst for the development of additional forms of other-oriented beliefs, attitudes, and actions that may underlie the development of an other-oriented purpose.

Keywords: gratitude; prosocial behavior; youth; self-orientation; other-orientation; materialism; entitlement; civic engagement

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1. Introduction

A core task of adolescence is the development of identity and relatedness [1,2]. This task requires youth to balance their focus and interests as they pertain to the self and to others around them. Indeed, youth come to define themselves within the context of others and to understand others through the lens of their own experiences—this makes self- and other-oriented interests intricately tied rather than opposing. The study of gratitude, which requires a balance of self-focus (what one has or has received) and other-focus (the role of others in what one has or has received), may provide one avenue for better understanding relations among indices of self and other orientation in youth. In the current study, we examined associations of gratitude with materialism and entitlement (indices of self-orientation) and with feelings connected to the natural world; attitudes, beliefs,

and conversations about equity and social justice; and prosocial behavior (indices of other orientation). We examined these associations in a racially/ethnically diverse sample of US youth across a six-month period during the pandemic: a societal period of heightened conflict between self- and other-oriented policies and actions. Given prior findings that suggest cultural influences on the development of gratitude [3], including those evident among ethnic/racial subgroups of the US youth [4], we examined racial/ethnic differences among youth in our measure of gratitude and in how gratitude predicted and was predicted by indices of self and other orientation.

1.1. Gratitude Moments

Adults and adolescents who more strongly endorsed gratitude traits reported greater life satisfaction, better health outcomes, and more successful relationships (see [5–9]). Yet, beyond these individual benefits, gratitude may drive youth to pursue other types of intrinsic goals and fulfill higher-order needs (such as self-expression, purpose, and self-actualization [10]). As a prosocial emotion, gratitude may also inhibit individual selfishness in the service of others [11].

Much of the research literature examines gratitude as a personality trait or enduring life orientation; however, others view gratitude as an emotion, state, or socio-emotional process [12]. In our work on the development of gratitude in children, we found that parents and scholars identify aspects of gratitude that involve noticing gifts or affordances received from others, making sense of such receipts through thoughts (attributions of beneficence on the part of the giver) and feelings (positive emotions linked to receiving), and acting on those feelings to express gratitude [13]. Although more of a state model, this notice-think-feel-do approach to understanding gratitude is related to trait gratitude and theoretical precursors of gratitude in children (i.e., empathy [14]) and is predicted by parenting behaviors related to empathy and gratitude socialization ([13]; though see Petrie, 2022 [15]). The gratitude moments survey, in turn, assesses how frequently youth engage in these four components of gratitude, departing from the most widely used measures of trait gratitude that assess self-perception and attitudes [12]. Although both moments of gratitude and trait approaches provide meaningful windows into how youth experience gratitude, here we focus on how gratitude moments, rather than traits, relate to indices of the self and other orientation to reduce the potential for youth's self-perceived positivity bias to confound effects and because trait gratitude may be continuing to develop during this developmental period. However, we also acknowledge that much of the work on gratitude awaits replication and consideration of how gratitude moments may differ across youth based on factors such as race/ethnicity or gender.

Other approaches to studying gratitude have already explored this question, finding cultural and gender variations in how youth perceive and express trait gratitude [16,17]. The work regarding racial/ethnic variation is more descriptive yet does not evaluate cultural mechanisms that underlie observed differences. For example, Mendonça [18] showed that children aged 7–14 from the United States reported greater concrete gratitude (i.e., gratitude for material items received) compared to those from China and Republic of Korea who showed more connective gratitude (i.e., gratitude for relationships underlying the act of receiving). Children from Russia, Turkey, Guatemala, and Brazil fell somewhere in between. Following the same sample, Freitas [19] showed that despite these differences in the extent and type of gratitude expressed by children across these countries, gratitude tended to develop from concrete to connective gratitude in each of the seven countries.

Such cross-cultural studies often draw upon distinctions between individualistic (i.e., cultures that emphasize self-determination, the pursuit of self-interests, and self-actualization) and collectivistic (i.e., cultures that emphasize group goals and interdependence [20]) societal values. However, more recent work suggests that these two orientations are perhaps better considered to be orthogonal rather than opposing and that variation within societies may sometimes be greater than that between societies, particularly when societies are defined by country [19,21]. Regardless, these two orientations are thought to

be strongly linked to self-construal, shaping cognition, emotion, and motivation [22] and, in turn, the extent to which individuals are self- and other-oriented.

When used to understand racial/ethnic differences within the US, prior work has often assumed that European Americans are more individualistic and less collectivistic than those from the three largest minority groups (African, Asian, and Latin Americans [21]). Yet, Coon and Kemmelmeier [21] demonstrate that racial/ethnic groups within the United States vary in the extent to which they endorse individualism and collectivism. In their studies, African American college students reported greater individualism than European- and Asian Americans. In addition, African American and Asian American college students reported higher collectivism than European American students, as expected, with Latino Americans in the middle on both scales (not differing from their peers). These findings suggest that complex relations among individualistic and collectivistic perspectives could underlie self-construal and, in turn, related constructs such as gratitude.

Recent findings focused on gratitude expression underscore how such complexity can be distinguished across racial/ethnic groups within the US. Contrary to their expectations, Merçon-Vargas & Tudge [23] did not find differences in gratitude expression in European American children compared to African American, Hispanic, and Brazilian immigrant children. On the other hand, they found that Hispanic and Brazilian immigrant children were more likely to express verbal gratitude than concrete gratitude compared to African American children. Ultimately, their study encourages further study on within-society variability in the development of gratitude.

Such results suggest two conclusions that may guide future research. First, racial/ethnic minority groups within the US may vary significantly from one another in the extent to which they emphasize both individualism and collectivism, cautioning against treating these groups as monoliths [21]. At the same time, research into global prosocial behavior and emotions has suggested that there may be more similarities than differences across racial-ethnic groups in terms of moral emotions and behaviors. For instance, Carlo [24] found that Mexican American and European American youth only differed in three out of six prosocial behavior types (e.g., altruistic prosocial behavior versus anonymous prosocial behavior) and showed no difference in empathetic concern and perspective-taking (combined into a global sympathy score).

Second, although evidence concerning racial/ethnic differences in how youth experience and express gratitude is mixed (drawing from that within the US and across international contexts [4,19,23,25]), gratitude may yet hold similar benefits for all youth regardless of race/ethnicity. For instance, gratitude has been found to improve protective factors for high-risk behaviors in African American youth [17]. Additionally, in a sample of Asian American youth, researchers found that gratitude was a facilitator of overall well-being [26]. Gratitude was also found to promote positive mental health outcomes in a sample of Latin American youth [27]. Similar arguments may hold for gender differences in gratitude, with girls often more likely to report gratitude than boys, perhaps due to a stronger social or other orientation but not necessarily reaping more benefits (see [8,28]). In the current study, we examined potential racial/ethnic and gender differences in associations between gratitude moments and indices of self and other orientation.

1.2. Gratitude and Indices of Self-Other Interests

In the study of purpose, scholars note that youth differ in the extent to which they are attracted to other-oriented life goals (involving the intention to contribute to the world beyond the self) and self-oriented life goals (often connected to achievement, wealth, and personal success [29,30]). A well-developed purpose, however, is defined by some as integrating a focus on the self and others, resulting in a stable, organizing life aim that guides behavior toward something that is both personally meaningful (self-focused) and contributes to the world beyond the self (other-focused [31]). Adolescence itself is a period in which balancing self- and other-focused thoughts, beliefs, and actions undergoes rapid change, as balancing autonomy and relatedness is a central task of this period [1,2]. Thus,

understanding the precursors to self- and other-oriented components of purpose in youth, including indicators of self- and other-oriented interests, is central to the developmental tasks of adolescence more broadly.

Gratitude is among the factors that may contribute to how youth experience self- and other-oriented interests, beliefs, values, and actions [6]. Similar to purpose, gratitude requires a balance of self-focus (what one has or has received) and other focus (the role of others in what one has or has received). Moreover, gratitude is posited to contribute to reciprocal relations with several indicators of both self- and other-oriented interests during this developmental period. In this study, we focus on indicators of other orientation that include holding social justice attitudes and beliefs, undertaking social justice conversations, having positive connections with (our collective) nature, and engaging in prosocial behavior.

Scholars have studied at least three mechanisms that are thought to underlie associations between gratitude and prosocial behavior more broadly [32]. The first of these, in the form of upstream generativity, suggests that being on the receiving end of experiences that generate gratitude promotes the desire to reciprocate both directly and indirectly to others in a pay-it-forward manner [32,33]. Indeed, Tudge and colleagues [34] posit that such positive reciprocity is what makes gratitude a moral virtue. In turn, findings from a series of experiments with college students showed that appreciation received from helping others, in turn, led to self-efficacy and social worth, motivating future prosocial behavior [35]. Moreover, receiving help led children as young as four to view benefactors more positively, which correlated with upstream reciprocity (i.e., being more generous toward a new child [36]) and greater prosocial behavior [37]– suggesting that this mechanism may come online early in development.

As a positive emotion, gratitude may also spur greater prosocial behavior and social connection through mechanisms posited by the broaden and build theory [38,39]. In this view, positive emotions generate broad thought-action repertoires that build physical, intellectual, and social resources, which enrich problem-solving, social connection, resilience, and recovery. Algoe [40] suggests that gratitude, in particular, serves to build and sustain social relationships. Consistent with this view, Froh and colleagues [32] showed that greater gratitude in middle school students predicted greater social integration three and even six months later.

Consistent with these mechanisms, Ma and colleagues [41] showed that gratitude and prosociality had a moderate, positive correlation in a meta-analysis of 91 studies, with stronger effects in vivo than the self-reported recall of gratitude experiences. Intervention and experimental studies support these results. For example, engaging in gratitude activities as part of a school-based intervention program (i.e., three good things, benefit appraisals, and gratitude letters) enhanced not only self-reported gratitude but also prosocial intentions at the post-test [42]. Even in preschool-aged children, grateful emotions have increased the likelihood of helping behaviors, including those directed toward strangers, in experimental studies [37].

In addition to these mechanisms, we suggest that gratitude serves to increase other-oriented interests by increasing awareness of the positive impact of others on youth's lives. This shifting of attention (the notice part of the notice-think-feel-do model of gratitude moments) opens the door for greater knowledge and empathy regarding the experiences of others and our interconnections. For this reason, gratitude may also predict stronger beliefs, attitudes, and behaviors surrounding social justice or equity issues, as well as a stronger connection to the natural world that we share. Testing similar associations, a daily diary study by Oosterhoff [43] showed between- and within-person (within-day) positive associations between gratitude and environmentalism as well as helping behavior in a college sample. In addition, they found no such associations between gratitude and standard political or social movement behavior. These findings support cross-sectional associations between gratitude and some, though not all, indicators of other orientation. The current study extended this work by testing reciprocal associations between gratitude and the indices of other orientation among youth over the course of an academic year.

Conversely, Kiang and colleagues [44] noted that gratitude could be inversely related to self-oriented interests and linked to outcomes such as materialism and entitlement. These authors describe the receiving of gifts, benefits, favors, or material goods as part of both a gratitude and materialism loop. When such receipts are met with recognition of beneficence on the part of the benefactor, gratitude is more likely to result. However, for individuals focused on status and possession, such receipts may feed into social competition and upward social comparisons, leaving youth feeling isolated. Gratitude and materialism may become inversely associated across adolescence due to cognitive maturation that promotes less egocentric and more abstract thinking, leading to the increased recognition of the conflict between the benevolent and hedonistic values that underlie the two and greater emphasis on how gratitude and materialism differentially impact social motives and relationships (connection versus isolation).

Materialism has been shown to be positively correlated with entitlement [45], which describes an individual's sense of what they deserve or what is owed to them [46]. As noted by Kiang [44], materialism has also been related to lower levels of well-being and life satisfaction, though also to higher self-efficacy and fewer emotional problems [46]. Numerous scholars have examined associations between self-reported gratitude and materialism in youth [10,44,47]. For example, Fu and colleagues [48] showed that adolescents' financial entitlement predicted less sympathy one year later, which, in turn, predicted less gratitude and prosocial behavior. Chaplin [49] showed that children (aged 11–17) who self-reported more grateful dispositions also reported less materialism and that youth who kept a gratitude journal donated more to charity. Lambert [50] showed that higher life satisfaction mediated the association between greater experimentally induced gratitude and lower subsequent materialism. It has even been found that gratitude-based marketing and advertising campaigns could reduce materialism and shift buyer preferences away from concrete items and towards more experience-focused purchases [51]. However, we are aware of no work that examines whether the associations between gratitude and these self-oriented indices are reciprocated, such that gratitude diminishes in the face of greater entitlement and materialism over time.

1.3. The Current Studies

Here, we report findings from the results of two studies. Study 1 evaluated the psychometric performance of the gratitude moments scale in a more racially and ethnically diverse sample compared to that included in the original scale development [12]. In addition, we examined cross-sectional associations between gratitude and indicators of convergent validity (i.e., trait gratitude, empathy, and positive affect), divergent validity (i.e., negative affect), and concurrent validity (i.e., the proposed outcomes for study 2—materialism, connections with nature, and social justice attitudes, beliefs, and conversations). In Study 2, we used a short-term longitudinal design with a larger sample to evaluate pre-registered hypotheses (https://osf.io/eg7pf accessed on 15 February 2023), testing (1) whether there were ethnic/racial differences in the measures of children's gratitude, including differential item functioning and scale impact as well as in indices of reliability and predictive validity; (2) whether there were reciprocal associations over time between children's gratitude and their attitudes toward materialism, connections with nature, and social justice across the eighth grade; (3) whether these reciprocal associations varied as a function of youth race/ethnicity and gender. In addition to these pre-registered outcomes, we included prosocial behavior and entitlement as additional indicators of self and other orientation in these analyses. Although we did not anticipate that our measures of gratitude would show racial/ethnic differences in item functioning, scale impact, reliability, or predictive validity, we expected that youth's gratitude would be more strongly associated with social justice issues and prosocial behavior (which also concern social relationships) than with materialism, connections with nature, or entitlement (which are not focused as directly on interpersonal connection).

2. Materials and Methods

2.1. STUDY 1 METHOD

This investigation was part of a larger data collection effort that included a variety of studies designed by scientists affiliated with the Character Lab Research Network (CLRN): a consortium of schools across the country working collaboratively with scientists to advance research on wellbeing.

2.1.1. Participants

CLRN seeks to help researchers test their interventions with a broad population of public middle and high school students in the United States. Demographic data found in the Common Core of Data (NCES) were used to define the population of schools from which participating schools were sampled. To facilitate research and recruitment, this population of schools was divided into strata using k-means cluster analysis [52]. Character Lab then recruited schools (and their students) within each of these strata and matched researchers and studies to specific strata. This study was conducted with students at schools in a stratum defined as large, racially, and ethnically diverse, suburban, and urban, which represent 15% of all middle schools and 13% of all high schools in the United States. In districts that approved our study, all students in attendance at schools in the relevant stratum during the predetermined data collection window were invited to participate in CLRN research activities, but not all were randomly assigned to our study. Students had an equal chance of being randomized to any of the study conditions running in their school. The sample of participants for the pilot study with complete data (with 16 partial cases omitted) included 83 eighth-grade students (aged 13–16; M = 13.92; SD = 0.62) from a single school who completed an online survey in the spring of 2019. Of these, 44% of students identified as female, 37% as African American/Black, 29% as Hispanic/Latin, 24% as non-Hispanic White, 9% as Asian/Asian American, and <1% as American Indian/Native American or Multiracial. Demographic characteristics were coded from school systems record data which provided the response options indicated above (only two gender groups were identified).

2.1.2. Procedures

CLRN simultaneously administered multiple independent studies regarding social, emotional, physical, and/or academic well-being among this student population, of which ours was one. Each study tested a different set of hypotheses, was pre-registered separately and was designed by a different team of scientists. This study was primarily conducted on school computers (though personal computers were occasionally used by students attending school remotely due to the COVID-19 pandemic) during class time in participating schools over the course of a two- to three-week window. On a predetermined day, a teacher proctor at each school administered CLRN research activities to students. To introduce the study, teachers read a script that explained to students that all research activities were part of an educational research initiative at their school, that they were not being graded, that participation was optional, and that teachers would not see their answers. When students participated in person, teachers also instructed them to focus on their own computers and not to look at classmates' screens. Upon logging into the CLRN platform, all students first viewed an assent screen that reiterated this information and, in addition, explained that parents would not see their responses and that their names and any other unique identifying information would not be shared with researchers. Students who agreed to participate were then directed to the survey. All study procedures for data collection were approved by Advarra, which provides Institutional Review Board services for all Character Lab studies; the analysis of de-identified data was deemed exempt by the Institutional Review Board at the University of North Carolina at Chapel Hill.

2.1.3. Measures

Demographic Characteristics. We coded demographic characteristics to describe the sample based on school system records that Character Lab linked with the survey data.

Gratitude Moments Scale. We assessed participants' gratitude with a 13-item gratitude moments scale [12]. Participants reported how often they noticed having or having been given something, their thoughts about why someone gave them such gifts, their positive feelings related to receiving gifts, and their behavioral expressions of gratitude in the past week using a 5-point response scale ranging from 1 (not at all) to 5 (11 times or more). The mean of the items formed a highly reliable scale score for analyses (M = 3.44; SD = 0.86; $\alpha = 0.92$).

Child Trends Gratitude Scale. Participants also completed the child trends gratitude scale (Positive Indicators Project, 2013). The youths indicated how much each of the four items described them on a scale ranging from 1 (not at all like me) to 5 (exactly like me). A mean of the items formed the scale for analysis (M = 3.93; SD = 0.81; $\alpha = 0.78$).

Empathy. Participants completed 15 items from the children's empathic attitudes questionnaire (CEAQ [53]; one item was deleted in error). The items assessed feelings and reactions relating to empathy and included items such as "I understand how other kids feel" and "I am happy when a teacher says my friend did a good job." Participants rated the extent to which each item was similar to them using a response scale that included: 1 (no), 2 (maybe), and 3 (yes). The CEAQ showed moderate internal reliability in the samples of children and young adolescents ($\alpha = 0.77$) and established convergent validity with the child self-report Bryant empathy scale (r = 0.57 [53]). A mean of items formed the scale for analysis (M = 2.27; SD = 0.40; $\alpha = 0.83$).

Positive and Negative Affect. The youth's positive and negative effects were assessed using 10 items from the positive and negative affect schedule for children (PANAS-C [54]). Participants indicated the extent to which they had felt each of five single-word positive (happy, cheerful, proud, joyful, lively) and negative (sad, scared, miserable, afraid, mad) affect descriptors over the past month, with responses ranging from 1 (not at all) to 5 (all the time). The full PANAS-C positive affect subscale has shown strong internal reliability ($\alpha = 0.89$) and discriminant validity with the children's depression inventory ($r = -0.55$, $p < 0.001$) and the state-trait inventory for children—trait anxiety scale ($r = -0.30$, $p < 0.01$) in a sample of fourth through to eighth graders [54]. A mean of each subset of five items formed the scales for the positive (M = 3.30; SD = 0.95; $\alpha = 0.90$) and negative (M = 3.57; SD = 0.92; $\alpha = 0.79$) effects.

Materialism. We assessed participants' attitudes toward materialism and upward social comparisons using seven items drawn from two scales. Three items were included from the consumer involvement scale (CIS [55]), which assessed material dissatisfaction (e.g., "I wish my family could afford to buy me more of what I want"), and four reverse-scored items (e.g., "I have all the things I really need to enjoy in life") were drawn from the happiness subscale of the material values subscale (MVS [56]). Response options for all items ranged from 1 (strongly disagree) to 4 (strongly agree). The mean of items (after reverse scoring) formed the consumer material values scale for analysis (M = 2.31; SD = 0.84; $\alpha = 0.79$).

Connection to Nature. We administered a shortened version of the connectedness to nature scale [57] to assess youths' sense of connection to the natural world around them. Participants were asked to indicate their general agreement with seven items describing relations to nature, with responses ranging from 1 (strongly disagree) to 5 (strongly agree). Sample items included "I often feel a sense of oneness with the natural world around me" and, "I think of the natural world as a community to which I belong." Scores on the seven items were then averaged to produce scores for analysis (M = 3.26; SD = 0.77; $\alpha = 0.72$).

Social Justice Attitudes, Beliefs, and Conversations. The youth completed three subscales drawn from the youth civic and character measures toolkit [58] to assess civic beliefs and socialization. The youth completed the six-item sociopolitical discussion with parents' and friends' subscale. For each item, the youth rated the frequency with which their family engaged in sociopolitical discussions on a scale from 1 (never) to 5 (very often). The mean

of these items formed the family social justice conversation scores for youth (M = 2.56, SD = 0.79; α = 0.80). Participants also completed the critical consciousness subscale. Youth rated their agreement with three items concerning political attitudes about equality on a scale ranging from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating beliefs that there is current political inequality between various groups. The mean of these items formed the social justice beliefs scale (M = 3.58, SD = 1.07; α = 0.88). Participants also completed the social responsibility personal values subscale, which consisted of four items. Youth indicated the importance of items concerning social responsibility on a scale ranging from 1 (not at all important) to 5 (extremely important). The mean of these items formed the social justice attitudes scale (M = 4.01, SD = 0.79; α = 0.79).

2.2. STUDY 2 METHOD

2.2.1. Participants

A total of 1094 students attending six participating schools completed the surveys at time 1 and 578 completed the surveys at time 2. We limited the analysis to 812 of these youth who had at least three scale scores of the core eight at time 1. Of these, 496 had no missing data at time 1, 492 had at least one scale score at time 2, and 253 had no missing data at time 2. The number of youths with no missing data at either time point was 187. A series of t-tests explored various missing data comparisons to identify differences in the youth based on key demographic and scale scores assessed at time 1 (i.e., gratitude; materialism; connection with nature; social justice attitudes, beliefs, and conversations; prosocial behavior; entitlement; race/ethnicity; age; and gender). Those with no missing data at time 1 (n = 496) versus some missing data (n = 488) were less likely to be Black ($t(811) = -2.52$; $p = 0.01$) and more likely to be white ($t(811) = 2.13$, $p = 0.03$) and Latin ($t(811) = 1.95$, $p = 0.05$), but no other differences emerged. Those lost to attrition (with no time 2 data; n = 406 versus n = 578) showed no differences in any indicators, including race/ethnicity. Finally, those with no missing data at either time point (n = 187 versus n = 797) had lower social justice attitudes ($t(778) = -2.00$, $p = 0.05$), higher entitlement ($t(544) = 2.85$, $p < 0.01$), and were less likely to be Black ($t(811) = 4.14$, $p < 0.001$) and more likely to be white ($t(811) = -3.82$, $p < 0.001$), Latin ($t(811) = -2.72$, $p < 0.01$), and female ($t(811) = -3.27$, $p < 0.01$). In the sample with no missing time 1 or time 2 scale scores, 124 youth identified as Black, 54 as white, and 46 as Latin.

The analysis sample of 812 included seventh and eighth-grade students who were, on average, 12.74 years old (range = 11–15), roughly and evenly split across grades with 42% self-identifying as male and 58% as female (though other gender identity options were not available). Students predominantly self-identified their race or ethnicity as Black (77%), Hispanic/Latin (18%), or white (19%; see more details under demographic characteristics), and 70% reported receiving free or reduced-price lunch.

2.2.2. Procedures

Students participated in a two-time point, school-based study facilitated by CLRN, as in the pilot study. Students completed the 40 min online survey either in school or remotely in October 2020 (given that the participating school operated in a hybrid mode during this period of the COVID-19 pandemic) and in school in January 2021 (when in-person instruction had resumed). As in the pilot study, the following measures were administered at time points 1 and 2 (see study 1 for descriptions): the gratitude moments scale, the consumer material values scale, the connectedness to nature scale, and the social justice attitudes, beliefs, and conversations scales. The psychometric properties for all scales are reported in Table 1. Additional scales assessed the constructs below.

Table 1. Psychometric properties of Study 2 in analysis sample.

Variable	Time	Mean	SD	Cronbach's α
Gratitude Moments	1	3.36	0.98	0.92
	2	3.59	0.93	0.92
Connection to Nature	1	3.45	0.62	0.75
	2	4.21	0.91	0.75
Materialism	1	2.54	0.65	0.84
	2	2.57	0.63	0.82
Social Justice Attitudes	1	3.78	0.83	0.73
	2	3.88	0.83	0.80
Social Justice Beliefs	1	4.29	0.97	0.76
	2	4.00	0.85	0.81
Social Justice Conversations	1	2.74	0.86	0.81
	2	2.78	0.86	0.82
Prosocial Tendencies	1	2.99	0.63	0.83
	2	2.99	0.61	0.82
Entitlement	1	2.66	0.91	0.82
	2	2.75	0.93	0.84

2.2.3. Measures

Demographic Characteristics. We coded demographic characteristics based on school system records that Character Lab linked with the survey data. Given the larger sample size in Study 2, we coded youth race/ethnicity using three dummy codes, with African American/Black (n = 603) serving as the reference group for the Latin youth (regardless of racial identity; n = 123), non-Hispanic white youth (n = 44), and additional racial/ethnic groups (including multiracial, Asian, American Indian, and unknown reported race; n = 42). Gender was coded as male (0) and female (1), as no other options for gender identity were available in the school records. We coded the receipt of free or reduced-price lunch as no (0) or yes (1) as a proxy for reduced social resources. We also obtained the youths' age from these records.

Prosocial Tendencies Scale. We assessed participants' prosocial behaviors using the 21-item prosocial tendencies measure (PTM-R [59]). Youth indicated the extent to which they felt that each statement described them, with response options ranging from 1 (does not describe me at all) to 5 (describes me greatly). Four items were reverse scored (e.g., "I feel that if I help someone, they should help me in the future"). The mean of all the items formed the prosocial behavior scale for analyses (see Table 1 for descriptive statistics).

Entitlement. Participants' beliefs relating to entitlement were assessed using the psychological entitlement scale (PES [60]). Participants were asked to rate their agreement with each of the nine statements, with response options ranging from 1 (strongly disagree) to 5 (strongly agree). Except for one reverse scored item (i.e., "I don't need to get special treatment"), higher scores indicated more entitled beliefs (e.g., "I deserve to be the first to get things that I want", "Things should go my way"). Item scores were averaged to produce the entitlement scale for analyses (see Table 1 for descriptive statistics).

3. Results

3.1. STUDY 1 RESULTS

3.1.1. Reliability and Construct Validity of Gratitude Moments Scale

Cronbach's alpha reliability for the 13-item scale was strong (α = 0.92) and acceptable for sub-scales (notice α = 0.71; think = 0.69; feel = 0.81; do = 0.84). As estimated in MPLUS, a one-factor confirmatory factor analysis using the full information maximum likelihood to address item-level missing data fit the data well ($\chi 2(65) = 81.4$, $p = 0.08$; RMSEA = 0.05 [0.00–0.08]; CFI = 0.97; TLI = 0.96). All items loaded significantly on the underlying factor,

and the internal reliability for the factor was high (McDonald's Ω = 0.92 [0.89–0.94 using a 90% confidence interval]).

3.1.2. Convergent Validity

A structural equation model predicted the three convergent validity indicators (trait gratitude, empathy, and positive affect) from the single latent factor for estimating gratitude moments from the 13 item indicators. The resulting model fit the data well ($\chi 2(101) = 123.85$, $p = 0.06$; RMSEA = 0.05 [0.00–0.08]; CFI = 0.96; TLI = 0.95; SRMR = 0.06). More frequent gratitude moments were associated with trait gratitude (b = 0.50; z = 6.00, $p < 0.001$; R2 = 0.38), empathy (b = 0.10; z = 2.27, $p = 0.02$; R2 = 0.07), and positive affect (b = 0.25; z = 2.31, $p = 0.02$; R2 = 0.07).

3.1.3. Divergent Validity

A structural equation model predicted the single divergent validity indicator (negative affect) from the single latent factor to estimate gratitude moments from the 13 item indicators. The resulting model fit the data reasonably well ($\chi 2(77) = 105.31$, $p = 0.02$; RMSEA = 0.07 [0.03–0.10]; CFI = 0.94; TLI = 0.93; SRMR = 0.06) though, as posited, gratitude moments were not associated with negative effects (b = −0.07; z = 0.62, $p = 0.53$; $R^2 = 0.00$).

3.1.4. Concurrent Validity

A final structural equation model regressed five outcomes (i.e., materialism, valuing nature, and social justice attitudes, beliefs, and conversations) on the latent factor for gratitude moments. The resulting model fit only moderately well ($\chi^2(125) = 183.49$, $p = 0.00$; RMSEA = 0.08 [0.05–0.10]; CFI = 0.90; TLI = 0.88; SRMR = 0.07). The results showed that more frequent gratitude moments were associated with stronger social justice beliefs (b = 0.27; z = 3.01, $p = 0.00$; $R^2 = 0.11$) and conversations (b = 0.21; z = 2.33, $p = 0.02$; $R^2 = 0.07$), but not with social justice attitudes (b = 0.07; z = 0.57, $p = 0.57$; $R^2 = 0.00$), materialism (b = 0.06; z = 0.67, $p = 0.67$; $R^2 = 0.01$), or connections with nature (b = 0.14; z = 1.56, $p = 0.12$; $R^2 = 0.03$).

3.1.5. Summary

The results indicate that the gratitude moments scale demonstrates high reliability, strong convergent and divergent validity, and modest concurrent validity in a diverse sample of young adolescents.

3.2. STUDY 2 RESULTS

3.2.1. Approach

We followed our pre-registered approach (https://osf.io/eg7pf, accessed on 15 February 2023). We used moderated non-linear factor analysis (MNLFA) to combine items into scales for the gratitude measure to evaluate differences in scale performance across students based on race/ethnicity and gender (following [61]; hypothesis 1). We first confirmed the factor structure of all measures using exploratory and confirmatory factor analyses prior to creating scale scores (conducted at time 1). We used moderated non-linear factor analysis to test hypotheses about ethnic/racial differences in our gratitude measures (hypothesis 1). We then used a two-time-point model to evaluate cross-time associations between gratitude and self-other indices (hypotheses 2 and 3) within a residualized change framework. Though not included in our pre-registered approach, we included entitlement and prosocial behavior as additional indicators of self-other interests and a covariate to index socioeconomic status based on whether the participant received free or reduced-price lunch at school, as well as participant age.

3.2.2. Hypothesis 1: Measurement Models

Exploratory factor analysis using the maximum likelihood estimation of all scales assessed at time 1 regarding self- and other-orientation (i.e., materialism; connection with nature; social justice attitudes, beliefs, and conversations; and entitlement) as well as the subscales of prosocial behavior tendencies measures (given a large number of items, we focused on subscale coherence rather than the full scale) indicated that all were unidimensional with all items loading at 0.35 or higher, with one exception. A single item on the entitlement scale had a lower loading (below 0.20) and was omitted when creating the scale score for subsequent analysis (Cronbach's α at t1 = 0.82; t2 = 0.84).

The moderated non-linear factor models used all 12 items from the time 1 data collection, giving more complete data. Nine participants that were missing all-time 1 gratitude items were omitted from these analyses (leaving a sample of n = 803). We tested impact and differential item functioning as a function of racial/ethnic group membership (using three dummy codes, with African American/Black [n = 603] as the reference group for Latin youth [regardless of racial identity; n = 123], non-Hispanic white youth [n = 44], and additional racial/ethnic groups [that included, as in study 1, multiracial, Asian, American Indian, and unknown reported race; n = 42]) and gender (coded 0 [male] and 1 [female]). In the first model, we regressed the latent factor mean and variance for gratitude moments on all race/ethnicity and gender indicators. Because we found no significant associations (at $p < 0.05$), we did not retain these parameters in subsequent analyses. In the second set of models, we tested differential item functioning by regressing each of the 12 gratitude moments item intercepts and slopes (i.e., factor loadings) on the race/ethnicity and gender indicators, one item at a time. From these serial analyses, we identified all significant associations (again at $p < 0.05$, identifying four DIF associations). We then pooled significant effects across items into a simultaneous model and used a Benjamini-Hochberg correction for multiple testing to trim non-significant effects. No items had a significant loading DIF, and only one item (Q7: "I understood that someone gave me something that they didn't have to give me or that I didn't earn") showed significant intercept DIF, such that this item loaded more strongly for white youth than for African American/Black youth (b = 0.64; t = 3.23; $p < 0.001$). No other gender or racial/ethnic differences in the factor means or item functioning were found. The results of the final MNLFA model for time 1 were used to create scores for all participants at both times 1 and 2.

3.2.3. Hypotheses 2 and 3: Multiple Group Residualized Change Multivariate Regression Models

We estimated the model within a multiple-group framework to test hypotheses 2 and 3 simultaneously. More specifically, this model regressed time 2 gratitude moments on time 1 gratitude, substantive predictors, and covariates to test whether self- and other-oriented indices predicted greater gratitude over time, as well as time 2 self-other indices on time 1 self-other indices, gratitude, and covariates to test whether gratitude predicted increases in these self-other indices over time (hypothesis 2). We elected to address missing data via multiple imputations as estimated within Mplus version 8.4(Muthén & Muthén, Los Angeles, CA, USA) [62]. Due to dichotomous exogenous variables (with no missingness) and continuous exogenous variables (with missingness), we were unable to use full estimation maximum likelihood estimation to address missingness within Mplus, given the distributional assumptions of this approach.

This model was first estimated within a multiple-group framework using four groups: Black/African American, Latin, non-Hispanic white, and multi-racial/additional racial groups. To test for racial/ethnic differences across the groups, we constrained parameters associated with hypotheses (time 2 gratitude regressed on time 1 self-other index and time 2 self-other indices on time 1 gratitude) to be equal across groups and examined the chi-square. (Note that the baseline model in which these parameters were unconstrained across groups was just identified, so changes from the unconstrained to the constrained model fit were reflected in the constrained model chi-square alone.) A non-significant

chi-square suggested that the constraints held and that there were no differences across racial/ethnic groups in these over-time associations ($\chi 2(42) = 54.17$, $p = 0.10$). This model was then re-estimated within a multiple-group model using two gender groups: female and male. Once again, a non-significant chi-square suggested that constraints held and that there were no gender differences in these over-time associations ($\chi 2(14) = 17.00$, $p = 0.26$), in contrast to hypothesis 3.

Given the lack of group differences, we interpreted the main effects within a re-estimated single-group model (testing hypothesis 2). The results are reported in Table 2. We found that gratitude moments at time 1 predicted none of the time 2 self-other indices over and above covariates and that these indicators were stable over time. However, youth with lower social justice attitudes (b = −0.11; t = −2.38; $p < 0.05$) as well as greater prosocial behavior (b = 0.18; t = 2.40; $p < 0.05$) at time 1 showed residualized increases in gratitude moments at time 2.

Table 2. Results of cross-lagged residualized-change multivariate regression analyses.

		Time 2 Outcomes							
	Time 1 Predictors	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
	Female	−0.06 −1.30	0.09 1.19	0.19 **2.49** *	−0.01 −0.17	0.01 0.13	0.09 0.90	0.03 0.50	0.09 1.12
	Age	0.01 0.39	0.03 0.49	0.01 0.12	−0.04 −0.85	0.06 1.32	0.07 1.05	0.05 1.30	0.03 0.52
	Free/Reduced Price Lunch	**0.10** **2.08** *	−0.06 −0.73	−0.05 −0.65	0.05 0.63	−0.11 −1.65	0.03 0.34	−0.04 −0.74	−0.07 −0.85
	Latin v African American	−0.08 −1.31	−0.01 −0.07	−0.719 −1.86	−0.12 −1.29	−0.05 −0.50	−0.25 **−2.10** *	0.02 0.22	−0.28 **−2.63** **
	White v African American	−0.06 −0.52	0.13 0.78	−0.34 **−1.98** *	−0.15 −1.00	−0.31 **−2.18** *	−0.16 −0.78	−0.08 −0.70	−0.29 −1.57
	Multi-Racial v African American	−0.02 −0.21	0.29 **2.00** *	0.18 1.29	0.09 0.66	0.13 1.08	−0.26 −1.52	0.08 0.71	0.05 0.36
1	Consumer/ Materialism	**0.57** **14.46** ***	0.07 1.06	0.07 1.12	−0.09 −1.51	−0.05 −0.89	0.04 0.47	0.05 1.08	0.08 1.35
2	Connection to Nature	0.01 0.31	0.36 **4.92** ***	0.07 1.01	0.28 **4.50** ***	−0.02 −0.35	−0.03 −0.40	0.07 1.44	0.11 1.58
3	Social Justice Attitudes	0.05 1.58	0.00 0.00	0.43 **8.31** ***	−0.04 −0.80	0.06 1.57	−0.05 −0.73	−0.04 −1.08	−0.11 **−2.38** *
4	Social Justice Beliefs	0.04 1.44	−0.11 **−2.25** *	−0.01 −0.16	0.21 **4.96** ***	−0.06 −1.41	0.11 **2.11** *	0.02 0.72	−0.03 −0.74
5	Social Justice Conversations	0.03 1.09	0.05 0.81	0.02 0.33	0.07 1.64	0.60 **14.64** ***	0.10 1.62	0.01 0.33	0.04 0.97
6	Entitlement	0.09 2.71 **	0.06 0.90	−0.09 −1.83	0.02 0.39	−0.02 −0.36	**0.58** **10.17** ***	**−0.08** **−2.30** *	−0.04 −0.79
7	Prosocial Behavior	**−0.09** **−1.98** *	**0.22** **2.40** *	**0.16** **2.38** *	**0.36** **5.56** ***	**0.14** **2.17** *	−0.06 −0.67	**0.50** **9.75** ***	**0.18** **2.40** *
8	Gratitude Moments	0.02 0.60	0.07 1.51	−0.04 −0.84	0.00 0.01	0.04 0.99	0.09 1.69	0.05 1.71	**0.41** **10.01** ***
	Latin v White	−0.02 −0.19	−0.14 −0.79	0.15 0.82	0.03 0.20	0.27 1.73	−0.10 −0.43	0.10 0.73	0.02 0.09
	Multi-Racial v White	0.04 0.29	0.16 0.78	0.52 2.41	0.24 1.28	0.45 **2.50** *	−0.11 −0.40	0.16 1.11	0.34 1.53

NOTE: Tabled values are unstandardized parameter estimates from the integrated analyses of the 100 dataset imputations (above) and z-tests (below), with * indicating $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$. The numbering of Time 2 outcomes columns corresponds to the time 2 measure of the time 1 predictor with the same number in column 1. Shaded rows indicate race/ethnic group comparisons for alternate coding analysis where white is the comparison group.

Although not specified in our pre-registered hypotheses, we also modeled over-time associations among self-other indices as necessitated for proper model estimations given their high intercorrelation. Cross-time associations showed that youth with greater connections to nature at time 1 showed greater increases in social justice beliefs over time than their peers (b = 0.28; t = 4.50; $p < 0.001$). Compared to their peers, youth with greater social justice beliefs at time 1 had smaller increases in connection to nature over time (b = −0.11; t = −2.25; $p < 0.05$) and greater increases in entitlement (b = 0.11; t = 2.11;

$p < 0.05$). Youth with greater entitlement at time 1 had greater increases in materialism over time (b = 0.09; t = 2.71; $p < 0.01$) and smaller increases in prosocial behavior (b = −0.08; t = −2.30; $p < 0.05$) compared to those with less entitlement at time 1. Youth with greater time 1 prosocial behavior showed the most change over time, including having lower materialism (b = −0.09; t = −1.98; $p < 0.05$), more frequent social justice conversations (b = 0.14; t = 2.17; $p < 0.05$), and stronger connections to nature (b = 0.22; t = 2.40; $p < 0.05$), social justice attitudes (b = 0.16; t = 2.38; $p < 0.05$), and social justice beliefs (b = 0.36; t = 5.56; $p < 0.001$) than their peers.

Significant covariates in the model indicate that girls had a greater increase in social justice attitudes over time (b = 0.19; t = 2.49; $p < 0.05$) and youth with free/reduced-price lunches had a greater increase in materialism over time (b = 0.10; t = 2.08; $p < 0.05$). African American/Black youth had greater increases in entitlement (b = −0.25; t = 2.10; $p < 0.05$) and gratitude (b = −0.28; b = −2.63; $p < 0.05$) than Latin youth. They also had greater increases in social justice attitudes (b = −0.34; b = −1.98; $p < 0.05$) and conversations (b = −0.31; t = −2.18; $p < 0.05$) than white youth as well as fewer increases in feeling connected to nature compared to youth from multiracial and additional racial groups (b = 0.29; t = 2.00; $p < 0.05$). We also re-estimated this model, recoding the comparison group to white youth, and found no differences between white and Latin youth in any outcomes but that multiracial and additional racial groups experienced greater increases in social justice conversations than white youth (b = 0.45; t = 2.50; $p < 0.05$). No other differences were found.

4. Discussion

In the current study, we examined whether gratitude showed positive cross-time associations with indices of other orientation, consistent with an upward generativity hypothesis, as well as negative cross-time associations with indices of self-orientation. After establishing the reliability and validity of our gratitude moments measure in a sample of racially and ethnically diverse youth, we found that gratitude moments did not predict subsequent indices of other orientation (i.e., connections to nature, prosocial behavior, and social justice attitudes, beliefs, and conversations) or self-orientation (i.e., entitlement and materialism). However, youth with lower social justice attitudes and greater prosocial behavior showed greater increases in gratitude moments over time compared to their peers. We can interpret these findings with respect to theories of upstream generativity [32,33]. We also noted that prosocial behavior, rather than gratitude, played a key role in predicting increases in other-oriented indices over time and decreases in self-oriented indices. These findings are consistent with models of prosocial behavior as a catalyst for the development of additional forms of other-oriented beliefs, attitudes, and actions that may underlie the emergence of an other-oriented purpose [11,29,30].

4.1. Prosocial Behavior as an Impetus for Change in Self- and Other-Oriented Interests

In contrast to our predictions, we did not find that youth who reported more gratitude moments in October 2020 had a higher other- and a lower self-orientation in January 2021. In the context of the COVID-19 pandemic in the U.S., this was a period of transition from falling rates on illness and death into a period of surging rates in the cusp of a new variant (omicron [63]). Students participating in the current study were split across schools that returned to school in January 2021 and those that did not. Although the pandemic itself presented societal questions impacting policy and practices regarding individual rights and societal protections, most youths in this study experienced limited interactions with peers due to school closures.

As with other studies of how the pandemic impacted adolescents, we expect that the effects of the pandemic and related societal crises, particularly surging racial tensions in the United States, had multiple complex effects on youth that were best characterized by heterogeneity [64,65]. Thus, one possible explanation for the lack of support for expected associations of gratitude with self- and other-orientation indices is that the pandemic and

racial climate presented a unique context in which opportunities for expressing other-orientation were limited (due to quarantine and related practices) through opportunities for social justice conversations were heightened. Relatedly, as rates of depression and anxiety rose with the pandemic [66], youth may have shifted their attention to the self with growing isolation and loneliness. Although these hypotheses may not be testable with existing data collected during the pandemic, they identify potential moderators to consider in future work. Currently, we know very little about the extent to which isolation, loneliness, mental health, opportunities to engage with others, and shifts in political climate impact associations among indices of self- and other orientation impacted young adolescents.

Although not the focus of the current study, we found that prosocial behavior predicted lower materialism (though not entitlement) as well as greater levels of all other-oriented indices, including connection to nature, social justice attitudes and beliefs, social justice conversations, and even gratitude moments. These associations are important for several reasons. First, they suggest that despite substantial stability in indices of self- and other orientation across the study period, there was enough change present to detect associations with prosocial behavior. Thus, our findings pertaining to gratitude are unlikely solely due to constructing stability. Second, these findings underscore the central role that prosocial behavior plays in shaping self and other orientation. In other words, to understand youth development, their engagement in helping and caring about others is key. Prior research has highlighted how for many youths (such as those attending community college), being able to care for others is central to the development of the self, including conceptualizing what it means to be an adult [67]. That is, youth are often engaged in prosocial actions, such as helping within the home, which has been shown to contribute to higher levels of happiness [68], and engaging in helping community members as a form of civic engagement [69], and these experiences likely contribute to their developing orientation towards the self and others.

Moreover, unlike other self- and other-oriented indices in this study, which focused on attitudes, beliefs, and perceptions, prosocial behavior is focused on youth-initiated actions. Indeed, behavioral indicators may well be a stronger indicator of other orientation than thoughts and feelings alone. In this sense, actions may speak louder or hold stronger effects and better assessments as to whether a youth holds an other orientation than words. Although our measure of gratitude moments included engaging in behaviors, this measure also assessed thoughts and feelings and, thus, may not have been as sensitive to predicted effects.

Interestingly, few reciprocal associations emerged such that although prosocial behavior increased other- and decreased self-oriented indices, the reverse was not found. Indeed, only lower entitlement related to subsequent prosocial behavior through prosocial behavior did not predict subsequent entitlement. This finding does not support posited upstream generativity over time or Kiang's [44] cycles of gratitude and materialism. Rather, our findings are consistent with just one part of this cycle; namely, that focused on prosocial leading to greater gratitude. Prosocial behavior may include engaging in deliberate acts of giving without the expectation of reciprocation, leading to the benefactor generating gratitude in someone else. Regardless of expectation, that giver may reciprocate that prosocial action, leading to gratitude for the original benefactor. In this way, prosocial behavior may lead to gratitude in youth over time as one part of the upstream generativity hypothesis ([32,33]; and consistent with the meta-analysis of [41]). Note, however, that in the reverse transaction that completes the cycle, the idea that gratitude, in turn, leads to prosocial behavior was not found in this study—perhaps for reasons noted above or that our design may not have been timescale to capture this full cycle.

Similarly, findings regarding the negative association between entitlement and subsequent prosocial behavior are consistent with the mechanisms invoked in the materialism cycle described by Kiang [44]. In this cycle, materialism is expected to fuel social competition and comparison that can lead to withdrawal and isolation. Similarly, entitlement may reduce social contacts and narrow opportunities for youth to experience the benefits of prosocial behavior. Moreover, entitlement may serve to place greater value on hedonistic

rewards rather than relational rewards. Although greater prosocial behavior did not predict subsequent reductions in entitlement in the current study, future work is needed to better unpack the transactional mechanisms that could underlie this association in other contexts.

4.2. Few Differences among Youth Based on Race/Ethnicity and Gender

In the current study, we found no racial/ethnic or gender differences in associations among gratitude and the various indices of self- and other-orientation and limited evidence of racial/ethnic, though not gender, differences in the psychometric performance of the gratitude moments measure. Although girls reported higher social justice attitudes than boys, this was an isolated effect. We also found isolated racial/ethnic group differences in social justice attitudes and conversations, entitlement, and gratitude moments. However, without consistent effects and clearly assessed mechanisms, these differences are difficult to interpret. Similar to other scholars who have studied cultural variation in gratitude [19], we assert that greater attention is needed regarding within-group variability and that without consistent findings and the direct ascertainment of mechanistic patterns, isolated racial/ethnic differences reveal little. Instead, these findings suggest greater attention to cultural variation mechanisms to understand within and between group differences when unpacking these associations. Moving beyond societal distinctions in terms of individualistic versus collectivistic or independent versus interdependent orientations, future studies are needed, which can link such macro-level influences with their manifestation at the micro-level by integrating theory and methods from diversity science [70] and related disciplines.

Moreover, we note that studies using methodological approaches such as ours walk a middle ground between two tensions. In perhaps an ideal approach, we would develop a measure for gratitude that is based on the qualitative analysis of focus groups from each context in which we would like to study gratitude—based on gender, race/ethnicity, socio-economic context, and culture, perhaps. However, this approach can be intractable and make cross-group comparisons challenging. This is particularly true when issues of intersectionality are considered in which the social context is defined by complex social identities with varying access to social power [71]. In another approach, measures developed in a singular context are assumed to apply across contexts or to be 'universal'. This approach ignores the importance of context altogether in defining psychological constructs. Serving as a middle ground, the current study directly tests the measure of gratitude and whether it relates to how self- and other-oriented indices differ across contexts defined by race/ethnicity and gender rather than making an assumption. An important limitation of this approach, however, is that aspects of gratitude that may be unique within one context may not be captured in this measure. The problem of understanding contextual factors that shape gratitude and related indices of self and other orientation is thus a challenge for a body of research that uses a variety of approaches.

4.3. Limitations, Conclusions, and Future Directions

The current study demonstrates that engaging in prosocial behavior may lead to increases in other-oriented and reductions in self-oriented interests among young adolescents as surveyed during the COVID-19 pandemic. Moreover, greater gratitude and lower entitlement increased subsequent prosocial behavior, supporting only half of posited underlying transactional mechanisms. Strengths of this study include the cross-time analysis of a racially/ethnically diverse cohort, the use of a moderately large sample of youth, and the inclusion of multiple indices of self and other orientation. However, the study had several limitations as well.

The short follow-up period, particularly due to the fact that this occurred during the COVID-19 pandemic, may not have permitted enough time for these socially embedded cross-time associations to emerge. Indeed, all indices of self and other orientation showed substantial stability over the two-time points. Second, these findings may not be generalized outside of the quarantine and return-to-school phases of the COVID-19 pandemic during

which data were collected. Although the pandemic may present a unique time to examine study hypotheses, opportunities to engage in prosocial behaviors and other forms of interacting with others outside the home may have been limited. Third, and relatedly, youth completed the survey at home during time 1 and either in-home or at school during time 2, depending on whether in-school instruction had resumed. The extent to which such changes in instrumentation impacted the results is unclear. We anticipate that the organization and stress of this return to school period, nonetheless, contributed to study attrition. Fourth, this pattern of attrition resulted in some differences among youth that made data imputation less than ideal; however, listwise deletion is known to result in model bias as well as making the current analytic approach the best, albeit imperfect, way to address this problem. Fifth, our measures of materialism were not previously developed and validated for the youth of this age group. Finally, although the resulting sample demonstrated racial and ethnic diversity, issues pertaining to intersectionality were beyond the scope of our design and analysis. Moreover, the focus on group differences could obscure important within-group heterogeneity that may govern these associations over time.

The results of this study raise questions regarding contextual factors that may underlie inconsistent and sometimes unexpected results regarding gratitude and indices of self and other orientation. Future work is needed to explore mechanisms that link indices of self and other orientation and to understand how such mechanisms are impacted by contextual and individual factors. The implications of this study for policy and practice include the importance of prosocial behavior within curricula and programs that are designed to increase other orientation and decrease self-orientation among youth. Moreover, there may be benefits when focusing on indices of self-orientation and other orientation as a set of program targets rather than on programs that target these interrelated indices individually.

In conclusion, the current study found that gratitude moments did not predict subsequent self- and other-orientation indices through youth with lower social justice attitudes and greater prosocial behavior showed an increase in later gratitude moments. Prosocial behavior was more strongly and consistently related to self- and other-orientation indices than gratitude. These associations did not vary across youth on the basis of gender or race/ethnicity. These findings are consistent with models of prosocial behavior as a catalyst for the development of additional forms of other-oriented beliefs, attitudes, and actions that may underlie the development of other-oriented purposes.

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